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The energy expenditure of dressing in patients with stroke

Maharaj, Anupa

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CHAPTER 1

INTRODUCTION

1.1 Background of the study

Foti (2001) asserts that the achievement of functional independence in activities of daily living (ADL), especially in the performance areas of self- care, leisure and work is the core concept of occupational therapy theory and practice. Returning patients afflicted by stroke to their premorbid level of function has long been a challenge for occupational therapists. By establishing whether increased energy expenditure results in participation restrictions for patients with stroke, occupational therapists will be able to adjust their intervention methodology to prioritize endurance training appropriately in the predischarge phase of rehabilitation.

Understanding the physical demands of ADL activities in patients with stroke and comparing them to a control group of patients with hypertension, who are at risk for stroke, is a means of investigating whether increased energy expenditure in ADL tasks for stroke patients results in activity limitation and thus disability. This requires a means of accurately measuring the energy expenditure of patients with stroke and to match this with controls. The triaxial accelerometer has been shown to be an objective and accurate means of measuring physical activity and energy expenditure (Verbunt et al, 2001).

Accelerometry has become an efficient way in recent decades to measure energy expenditure of activities and tasks in daily life (Takeshima et al, 2001). Accelerometry refers to the study of energy expenditure using accelerometers that record and integrate displacement information of an individual. A computer software programme is then able to calculate the caloric expenditure as well as the intensity of the activity. This information can then be compared by

considering gender, age, height and weight in order to measure the energy expenditure of a task and hence the related physical endurance that a task warrants (Takeshima et al, 2001). This can be a therapeutic tool as it can be used to determine baseline data for patients with neurological disabilities to ascertain whether their energy expenditure on ADL differs from a control group of patients who are at risk for stroke.

It is necessary to establish patients' perception of difficulty of tasks as this can also affect their engagement in ADL and hence lead to disability. Participation in a narrow range of activities leads to poor activities health and poor satisfaction thus exacerbating disability (Cynkin and Robinson, 1985).

Knowing the energy expenditure of an activity with patients with stroke can enable the therapist to make a safe progression to teaching patients to re-engage in that ADL task during rehabilitation (Matthews, 2001). Understanding the physical demands of ADL activities in patients with stroke may also enable therapists to consciously work toward building endurance and muscle strength, which are not always a priority in treatment amidst various levels of dysfunction in such pathologies.

Declining budgetary allocation for rehabilitation has warranted the need for occupational therapists to identify underlying causes for disability so as to prioritize treatment aims. It is therefore important to ascertain what underlying causes result in disability such that patients with stroke are unable to engage in ADL independently.

This study will use objective accelerometry measures, and combine the patient's subjective perception of difficulty of ADL activity, time expenditure and actual daily participation in tasks. Using this, the researcher will then be able to establish reasons for participation restrictions in the performance of an aspect of personal management and disability due to the inability to cope with activity demands.

This research will also be useful to other health professions facilitating the reintegration of patients with stroke into the community and re-engaging patients back to their premorbid level of functioning.

1.2 Statement of the Problem

There is an absence of baseline data on the energy expenditure required to execute ADL activities in neurologically impaired patients. Occupational therapists are therefore unable to establish if the increased energy required to execute ADL tasks is exceeding the neurologically impaired patients' endurance and making them unable to execute ADL tasks.

This is an important consideration for South African occupational therapists due to the short lengths of stay in hospital and the declining budgetary expenditure on rehabilitation. Establishing priorities for addressing ADL becomes essential. This will indicate to therapists whether endurance training should be of higher priority than it currently is. Whereas measuring energy expenditure using accelerometers is not a new concept, there has not been research done to establish the energy expenditure of ADL tasks in patients with stroke.

This study will investigate the following factors in ADL performance and its impact on task execution:

- Time required to execute a personal management task
- Energy expenditure of a personal management task
- Perception of the difficulty of ADL tasks
- Activities health and in particular, satisfaction in activity participation

Due to the nature of this research not all ADL tasks can be researched using the above criteria. The following ADL tasks will be considered:

- Dressing upper limbs and trunk (with shirt/ blouse)
- Dressing lower limbs and feet (with pants /skirt, socks and shoes)

1.3 Justification of the Study

Patients suffering from stroke often are debilitated and disabled due to the motor demands and physical limitations which accompany the disease. This often leads to poor engagement in activities of daily living and consequently leads to disability. By developing a protocol for establishing baseline data on how energy expenditure in ADL tasks affects time and engagement in tasks, therapists can reorientate therapy goals to incorporate this in the priority setting in the rehabilitation process.

1.4 Aim of study

The aim of this study is to establish:

- The energy expenditure and time required to execute dressing tasks in patients with stroke and to compare this with a control group at risk for stroke.
- The patients' perception of the difficulty of the tasks executed.
- The level of satisfaction in activities health that patients with stroke experience due to activity limitations in ADL tasks.

1.5 Objectives of the Study:

The objectives of this study are:

- To determine the energy expenditure required for dressing the upper and lower body in patients with stroke and compare this with a control group of patients at risk for stroke
- To determine if there are differences in time required for dressing the upper and lower body between patients with stroke and a control group
- To determine the subjects' perception of activities that are difficult to execute due to their disability
- To determine a profile of ADL activities that subjects with stroke participate in to establish participation restrictions and thereby, gauge the level of satisfaction that subjects with stroke experience within their activities health.