Changes that Occur Among New and Experienced Older Adult Power Wheelchair Users: A Three Month Follow Up

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ABSTRACT

The objective of this study was to present the characteristics of and compare new and experienced power wheelchair users at two time points, baseline and 3 months later. Fifty-six older adult power wheelchair users completed outcome measures assessing participation, life space travelled, wheelchair skills, wheelchair confidence, social support, anxiety and depression. Results of this study indicate that while new power wheelchair users experience trends towards change in many of these areas over three months, experienced wheelchair users do not. Improved participation, subjective perception of wheelchair skills, and wheelchair confidence, as well as decreased anxiety were the areas in which trends towards change were observed.

INTRODUCTION

Mobility disability is the number one form of disability for Canadians 50 years of age and older (Statistics Canada, 2001). The use of a power wheelchair is often used to compensate for mobility impairment and prevalence of use increases with age (Shields, 2004). In fact, wheelchair provision is one of the top three rehabilitation interventions that provide the greatest increase in function and quality of life for people with severe disability. Although there is evidence that power wheelchairs can have a positive influence on the quality of life of older adults, wheelchairs are also among the most commonly abandoned assistive technology devices (National Center for Health Statistics, 1994; Phillips & Zhao, 1993). To date, we have little comprehensive understanding of power wheelchair use among older adults and its impact on health and quality of life. It is important to address wheelchair abandonment issues and ensure that these devices meet users' needs and skill levels.

OBJECTIVE

The long-term objective of this research is to describe the natural history of power wheelchair use during a 2 year period in new and experienced older adult power wheelchair users. In this report, we present the characteristics of and compare new and experienced power wheelchair users at baseline and 3 months later.

METHODS

Design

A longitudinal (2 year) multi-cohort design is being used in this study.

Participants

A convenience sampling strategy is being used to recruit older adult power wheelchair users in two cohorts: those who have had at least six months of experience in using a power wheelchair (cohort 1) and those who are receiving their first power wheelchair (cohort 2). Participants who are ≥50 years of age and have the ability to operate their power wheelchair independently are eligible for this study. Wheelchair users are being recruited from six Canadian cities (Halifax, Quebec City, Montreal, Toronto, London, and Vancouver) using a variety of strategies, including recruitment through disability awareness programs, peer support groups, wheelchair seating programs, and equipment vendors. To date, a total of 56 older adult power wheelchair users have been recruited: 12 new and 44 experienced.

Procedure

Data is being collected based on the time of induction into the study at baseline, and 1, 3, 6, 12, 18, and 24 months post-baseline. Sociodemographic and clinical characteristics are being gathered. Primary outcomes being collected in this study include: activity and participation, life space travelled, objective and subjective assessment of wheelchair skills, and wheelchair confidence, as measured by the Assistive Technology Outcomes Profile for Mobility (ATOP/M), Life Space Assessment (LSA), Wheelchair Skills Test (WST), Wheelchair Skills Test Questionnaire (WST-Q), and the Wheelchair Use Confidence Scale (WheelCon) respectively. Secondary outcomes include measurement of social support using the Interpersonal Support Evaluation List (ISEL), anxiety and depression using the Hospital Anxiety and

Depression Scale (HADS), and performance of socially defined life tasks as measured by the Late Life Disability Instrument (LLDI). All outcome measures except for the WheelCon are available in both English and French and are completed at all time points, with the exception of the WST, which is completed only at baseline and 24 months.

Data Analysis

For the purpose of this report, baseline and 3 month data were analyzed. Descriptive statistics, including means, standard deviations (SD), and frequencies were calculated for the participant characteristics, primary and secondary outcome measures.

RESULTS

The participant demographic and clinical characteristics are presented in Table 1. The mean scores of the primary and secondary measures are presented in Tables 2 and 3.

Table 1: Participant Characteristics

Variable	Power Wheelchair Users		
	New	Exp'd	All
Age in years, mean (SD)	60.8 (9.9)	59.3 (6.2)	59.6 (7.1)
Sex, male (%)	41.7	54.5	51.8
Living situation (%)			
Alone	41.7	59.1	55.4
With Spouse	50.0	27.3	32.1
With Others	25.0	6.8	10.7
Language (%)			
English	50.0	65.9	62.5
French	41.7	29.5	32.1
Other	8.3	4.6	5.4
Diagnosis (%)			
Spinal Cord Injury	0	25.0	19.6
Multiple Sclerosis	16.7	15.9	16.1
Stroke	25.0	9.0	12.5
Lower Limb Amputation	8.3	4.6	5.4
Other	50.0	45.5	46.4
Primary Mobility Device (%) Power Wheelchair	66.7	84.1	80.4
Months Using Power Wheelchair, Mean (SD)	1.8 (2.7)	149.9 (120.7)	122.0 (123.3)
Wheelchair Frame (%)			
Front Wheel Drive	0	4.5	3.6
Mid Wheel Drive	66.7	56.8	58.9
Rear Wheel Drive	33.3	38.6	37.5
Employment Status			
Unemployed	58.3	40.9	44.6
Retired	41.7	52.3	50.0
Volunteer	8.3	31.8	26.8

Table 2: Mean scores of the primary and secondary measures for the new power wheelchair users

Outcome Measure	New Wheelchair Users Score Mean (SD) (n)	
	Baseline	3 months
ATOP/M* Activity	47.9 (4.0) (n=12)	48.5 (3.8) (n=9)
Participation	46.9 (5.9) (n=12)	52.4 (13.1) (n=9)
LSA	43.6 (21.9) (n=9)	39.0 (17.8) (n=12)
WST	81.3 (7.7) (n=11)	N/A[†]
WST-Q	87.4 (7.0) (n=11)	91.7 (10.6) (n=12)
WheelCon	80.8 (17.5) (n=7)	91.4 (7.7) (n=7)
ISEL	13.9 (2.5) (n=12)	13.9 (3.8) (n=12)
HADS Anxiety	9.7 (5.3) (n=12)	8.3 (5.8) (n=12)
Depression	7.3 (3.8) (n=12)	6.8 (5.1) (n=12)
LLDI§ Frequency	46.2 (9.7) (n=12)	46.7 (9.3) (n=12)
Limitation	47.1 (11.2) (n=12)	50.0 (10.2) (n=12)
ATOP/M* Activity	46.2 (9.7) (n=12)	46.7 (9.3) (n=12)
Participation	47.1 (11.2) (n=12)	50.0 (10.2) (n=12)

Table 3. Mean scores of the primary and secondary measures for the experienced power wheelchair users

Outcome Measure	New Wheelchair Users Score Mean (SD) (n)	
	Baseline	3 months
ATOP/M* Activity	47.1 (4.8) (n=44)	46.9 (5.1) (n=35)
Participation	54.9 (10.4) (n=44)	52.5 (8.8) (n=35)
LSA	43.6 (16.6) (n=39)	41.1 (18.1) (n=43)
WST	81.8 (12.1) (n=44)	N/A[†]
WST-Q	79.0 (19.7) (n=27)	85.4 (12.7) (n=42)

WheelCon	83.1 (14.6) (n=31)	83.2 (16.9) (n=31)
ISEL	13.2 (3.7) (n=43)	13.3 (4.0) (n=44)
HADS Anxiety	7.1 (4.7) (n=44) 5.1 (3.7)	6.2 (4.7) (n=44) 5.1 ± 3.7
Depression	(n=44)	(n=44)
LLDI§ Frequency	50.4 (8.2) (n=43)	50.3 (10.0) (n=44)
Limitation	50.1 (8.7) (n=42)	51.5 (11.4) (n=44)

* T-scores are standardized scores on each dimension for each type. A score of 50 represents the mean. A difference of 10 from the mean indicates a difference of one standard deviation.

§ Raw scores reported.

† The WST was not collected at 3 months.

DISCUSSION

This study described power wheelchair use at baseline and three months later in experienced and new power wheelchair users. Generally, the experienced power wheelchair users were stable with respect to the primary and secondary outcomes. However, there was a trend towards decreased anxiety and increased wheelchair skill from the users' subjective perspective. More change between baseline and three months was observed in the new power wheelchair user cohort. The largest changes occurred in the areas of improved perception of wheelchair skill and wheelchair confidence, increased participation, as well as decreased anxiety. It is interesting to note that the new users' subjective perception of their wheelchair skills was higher than their objective scores. This finding is consistent with previous research that reported that WST-Q scores were higher than WST scores by an average of 3.8% (p<0.004) for adult power wheelchair users (Rushton, Kirby, & CanWheel Research Team, 2012). Future directions for this research include following the trajectory of these two cohorts through the remaining four time points to allow us to describe the natural history over a two year period.

CONCLUSION

New power wheelchair users experience a trend towards improved participation, subjective perception of wheelchair skills, and wheelchair confidence, as well as decreased anxiety between receiving their first power wheelchair and three months later. Experienced power wheelchair users experience little change.

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