

BRIEF REPORT



Prevalence of Low Mobility and Self-Management Self-Efficacy in Manual Wheelchair Users and the Association With Wheelchair Skills

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Abstract

Objective: To estimate the prevalence of low wheelchair-mobility and self-management self-efficacy and to evaluate the association with wheelchair skills.

Design: Cross-sectional.

Setting: Community.

Participants: Community-dwelling manual wheelchair users (N=123) who were ≥ 50 years of age (mean, 59.7 ± 7.5 y) and from British Columbia and Quebec, Canada.

Interventions: None.

Main Outcome Measures: The 13-item mobility and 8-item self-management subscales from the Wheelchair Use Confidence Scale—Short Form (standardized scores range, 0–100) measured self-efficacy, and the 32-item Wheelchair Skills Test, Questionnaire Version (scores range, 0–100) measured wheelchair skills. A score of 50 was used to differentiate individuals with high and low self-efficacy, and a score of 72 differentiated between high and low wheelchair skills.

Results: The prevalence of low wheelchair-mobility and self-management self-efficacy was 28.5% (95% confidence interval [CI], 20.6–36.4) and 11.4% (95% CI, 5.8–17.0), respectively, and their bivariate association with wheelchair skills was $r = .70$ and $r = .39$, respectively. Of the sample, 16% reported conflicting mobility self-efficacy and skill scores; 25% reported low self-efficacy and high skills. Of the participants, 30% reported conflicting scores between self-management self-efficacy and wheelchair skills, with 8.1% reporting lower self-efficacy than skill.

Conclusions: Low self-efficacy was relatively high in this sample as was its discordance with wheelchair skills. Interventions to address low self-efficacy and/or offset the discordant self-efficacy/skill profiles are warranted.

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Self-efficacy is the belief individuals have in their ability to perform specific behaviors to achieve desired outcomes.¹ According to social cognitive theory it is a central construct for behavior change because it has both direct and indirect influences on what people do.¹ In general, higher self-efficacy specific to health-related behaviors has positive effects on what people do, is associated with lower health risks, and is associated with better

overall health.¹ Furthermore, evidence shows that various forms of the construct have the potential to be modified.^{1,2} Self-efficacy specific to wheelchair use is a new construct defined as the belief individuals have in their ability to use their wheelchair in a variety of challenging situations.³ Given evidence on the benefits of high self-efficacy specific to other areas of health, wheelchair-use self-efficacy is currently receiving research attention and demonstrating positive results related to social participation and wheelchair mobility.^{4,5}

Our previous research indicates that 39% of wheelchair users have low wheelchair-use self-efficacy⁶ measured using the

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Wheelchair Use Confidence Scale (WheelCon).³ Moreover, 27% report having disproportionate levels of self-efficacy and wheelchair skills, which may lead to sedentary lifestyles if people have less self-efficacy than ability or unsafe performance of activities if self-efficacy exceeds ability. Although these estimates contribute to an appreciation of the potential impact of health care and rehabilitation strategies to prevent and minimize the consequences of low self-efficacy in wheelchair users, the estimates are based on a composite score from a multidimensional measure. There remains a lack of evidence on the prevalence of the various and more specific forms of wheelchair-use self-efficacy (ie, mobility and self-management self-efficacy found within the WheelCon measure) that have recently been established using principal components analysis, along with item response theory,⁷ and their association with wheelchair skills. Such specific knowledge will further aid researchers and clinicians to develop and plan appropriate rehabilitation services.

The objectives of this study are to estimate the prevalence of low wheelchair-mobility and self-management self-efficacy. We also estimate the association and amount of discordance between the self-efficacy constructs and wheelchair skills.

Methods

Study design and participants

This is a secondary analysis of cross-sectional data from community-dwelling volunteers from British Columbia and Quebec, Canada, who were aged ≥ 50 years, had at least 6 months of experience with manual wheelchair use on a daily basis, and were able to communicate in either English or French.⁴ Individuals with a Mini-Mental State Examination score < 23 and/or those who were not medically stable were excluded from study. Rehabilitation therapists from various health authorities in British Columbia, seating clinics in Quebec, and community groups provided study information to recruit potential participants.

Study protocol

After participants provided consent, they met with a trained research assistant who gathered demographic information and explained and administered the self-efficacy and wheelchair skill measures. The ethics boards from all participating sites approved the study protocol.

Measures

The demographic information questionnaire gathered data on sex, age, marital status and health status, and wheelchair-related variables.

The self-efficacy constructs were estimated using the 21-item Rasch-derived WheelCon—Short Form,⁷ which is comprised of mobility (13 items) and self-management (8 items) subscales. Standardized scores from each subscale range from 0 to 100, with higher scores indicating higher self-efficacy. A standardized score of 50 was used to differentiate between high and low self-efficacy.

Wheelchair skills were captured using the Wheelchair Skills Test, Questionnaire Version, a self-report measure comprised of 9 advanced skills and 23 basic indoor and community skills.⁸ Individuals reported their ability (yes/no) to complete each skill. Total percentage scores were derived by dividing the number of skills individuals can do by the total number of applicable skills. Higher scores indicate more wheelchair skill. Scores from this measure are highly correlated with measurements from the performance-based Wheelchair Skills Test, Version 4.1 (Spearman $\rho = .89$).⁸ A score of 72 (ie, 23 basic skills, 32 total skills) differentiated between high and low wheelchair skills in this study.

Ability to perform activities of daily living and depression and anxiety were measured using the Barthel Index⁹ and Hospital Anxiety and Depression Scale,¹⁰ respectively, and were used as sample descriptors. Evidence supports the hypothesized magnitude and direction of the associations between the Barthel Index and Hospital Anxiety and Depression Scale with relevant variables in wheelchair users.³

Data analyses

Descriptive statistics are presented as frequencies and percentages and means $\pm$ SDs.

Prevalence of low wheelchair-mobility and self-management self-efficacy are estimated using proportions and 95% confidence intervals (CIs).

The bivariate association between the self-efficacy constructs and skill was estimated using Pearson correlation coefficient, and the discordance between the variables was evaluated using cross-tab analyses and reported as proportions and 95% CIs.

Results

The mean age of this sample ($N = 123$) of experienced wheelchair users was 59.7 ± 7.5 years; 74 participants (60.2%) were men. Of the participants, 59 (48%) had a spinal cord injury. Sample characteristics are detailed in [table 1](#).

The prevalence of low wheelchair-mobility and self-management self-efficacy ([figs 1A,B](#), quadrants 3 and 4) was 28.5% (95% CI, 20.6–36.4) and 11.4% (95% CI, 5.8–17.0), respectively.

The bivariate association between the wheelchair-mobility self-efficacy and wheelchair skills was $r = .70$, and the association between self-management self-efficacy and wheelchair skills was $r = .39$.

Conflicting wheelchair-mobility self-efficacy and wheelchair skill scores were reported by 16.3% of the sample. Of these individuals, 25% (ie, 4% of the entire sample) reported low self-efficacy and high skill (see [fig 1A](#), quadrant 3). In addition, 24.4% of the entire sample reported having both low wheelchair-mobility self-efficacy and wheelchair skills (see [fig 1A](#), quadrant 4). Thirty percent reported discordant self-management self-efficacy and wheelchair skills. Of these individuals, 8.1% (ie, 2.4% of the entire sample) reported lower levels of self-efficacy than skill (see [fig 1B](#), quadrant 3). Only 9% reported having both low self-management self-efficacy and wheelchair skills (see [fig 1B](#), quadrant 4).

Discussion

Approximately 25% of wheelchair users reported both low wheelchair-mobility self-efficacy and wheelchair skills and

List of abbreviations:

CI confidence interval

WheelCon Wheelchair Use Confidence Scale

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