

Factors Affecting Attendance at an Adapted Cardiac Rehabilitation Exercise Program for Individuals with Mobility Deficits Poststroke

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Objective: The aim of this study was to determine the factors affecting attendance at an adapted cardiac rehabilitation program for individuals poststroke. *Methods:* A convenience sample of ambulatory patients with hemiparetic gait rated 20 potential barriers to attendance on a 5-point Likert scale upon completion of a 6-month program of 24 prescheduled weekly sessions. Sociodemographic characteristics, depressive symptoms, cardiovascular fitness, and comorbidities were collected by questionnaire or medical chart. *Results:* Sixty-one patients attended $77.3 \pm 12\%$ of the classes. The longer the elapsed time from stroke, the lower the attendance rate ($r = -.34$, $P = .02$). The 4 greatest barriers influencing attendance were severe weather, transportation problems, health problems, and traveling distance. Health problems included hospital readmissions ($n = 6$), influenza/colds ($n = 6$), diabetes and cardiac complications ($n = 4$), and musculoskeletal issues ($n = 2$). Of the top 4 barriers, people with lower compared to higher income had greater transportation issues ($P = .004$). Greater motor deficits of the stroke-affected leg were associated with greater barriers related to health issues ($r = .7$, $P = .001$). The only sociodemographic factor associated with a higher total mean barrier score was non-English as the primary language spoken at home ($P = .002$); this factor was specifically related to the barriers of cost ($P = .007$), family responsibilities ($P = .018$), and lack of social support ($P = .001$). No other associations were observed. *Conclusion:* Barriers to attendance were predominantly related to logistic/transportation and health issues. People who were more disadvantaged socioeconomically (language, finances), and physically (stroke-related deficits) were more affected by these barriers. Strategies to reduce these barriers, including timely referral to exercise programs, need to be investigated. **Key Words:** Physical activity—stroke recovery—behavior—aerobic training—resistance training—rehabilitation.

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Introduction

Despite the importance of physical activity for people following stroke in reducing the risk of recurrent stroke and the burden of comorbid vascular diseases, few stroke survivors exercise regularly.¹⁻³ This may be because structured programs are not widely available or accessible.^{4,5} However, evidence is accumulating that an established model of care, cardiac rehabilitation (CR), can serve as the basis for exercise delivery for individuals following conventional stroke rehabilitation.⁶⁻⁹ Given the elevated risk for recurrent stroke and the potential for exercise to mediate many of the modifiable stroke risk factors,¹⁰ the exercise training components as well as risk factor assessment, education, and interventions offered by interprofessional CR providers are suited to promote the long-term health behavior change required for individuals following stroke. Numerous studies from our group and others have demonstrated that CR programming is feasible and confers advantage in terms of cardiovascular fitness, functional recovery, and quality of life for people with motor deficits following stroke.^{6-9,11,12}

While the implications of regular attendance have not been reported specifically for patients poststroke, a dose-dependent reduction in mortality and recurrent myocardial infarction has been demonstrated in patients with cardiac disease who attended a greater number of prescheduled CR sessions.¹³ Greater exposure to the education and exercise programming components is likely to help patients make positive health behavior changes that are long-lasting. In fact, studies have shown that face-to-face verbal instruction with follow-up telephone calls¹⁴ or periodic home visits¹⁵ does not successfully increase physical activity or improve functional outcomes poststroke. Patients with disability need to attend supervised programs for guidance to gradually and safely increase the parameters of the exercise prescription to an intensity, duration, and frequency that will result in functional and vascular benefits, as is delivered in supervised CR programs.

Yet, despite exercise programming being an important clinical element in poststroke care, there is a dearth of studies examining factors that affect regular attendance to prescheduled physical activity sessions. The issues that may affect attendance for able-bodied patients may be intensified for people poststroke. For example, transportation and financial issues may pose greater barriers as many people are not able to resume driving, are on long-term disability, or living on a reduced income as a result of the stroke. Fatigue and depressive symptoms have been reported to be common poststroke and affect exercise adherence and participation in people poststroke and with cardiac disease.¹⁵⁻¹⁷ Barriers to attendance, and the impact of impairments, coexisting conditions, and socioeconomic issues on regular attendance to physical activity programs, have not been investigated. Therefore, the objectives of the present study were to investigate

factors affecting attendance at an adapted CR program for people poststroke and to explore correlates of the 4 most influential barriers.

Methods

Design and Procedure

This was a retrospective questionnaire-based study examining perceived factors that influenced attendance to weekly prescheduled classes in a 6-month group-based exercise and risk factor modification program for people poststroke.

The study was approved by the institution's Research Ethics Board and informed consent was obtained from each subject.

Participants

Participants were individuals living in the community with stroke, who were referred to Toronto Rehabilitation's Risk Factor Modification and Exercise Program following Stroke (TRI-REPS) from outpatient stroke rehabilitation programs, primary care physicians, and the community between January 2011 and July 2013. The TRI-REPS is a substream of the institute's Cardiac Rehabilitation (CR) and Secondary Prevention program and was developed to fill a gap in stroke services for exercise and risk factor management. The program is medically supervised and offered at no charge to patients, except for parking fees. To participate in the program, the patients were 12 weeks or more poststroke with hemiparetic gait. All participants were able to ambulate 10 m or more independently with/without an assistive device, and had no significant limitations due to pain.

Setting: TRI-REPS Program

The participants attended a 90-minute exercise class once a week for 6 months with the balance of the program being conducted in an unsupervised setting. The patients were assigned to 1 of 4 exercise groups (maximum of 5 patients in each group), each supervised by an exercise leader. Education sessions as well as psychosocial and dietary counseling were provided. The case manager prescribed an individualized aerobic training program in the first weekly session, followed by a resistance training program in the following session. The participants were advised to complete 4 additional aerobic and 1-2 resistance training sessions at home, and these were tracked via an exercise diary. All participants were prescribed a range of motion and flexibility routine carried out in class and at home. The patients were required to keep a detailed record of each aerobic and resistance training exercise session. This log was submitted to the case manager at the patients' weekly visit to the center. Walking and elliptical, stationary recumbent, or upright cycling were the modes of aerobic training prescribed

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