



Vol. 13, No. 1, March 2006

Promoting Physical Activity for Post-Natal Mothers: The Role of Self-Regulatory Efficacy

BACKGROUND

Despite the many benefits of exercise training, over half of all North Americans do not engage in the recommended amount of physical activity to provide health benefits (Canadian Fitness and Lifestyle Research Institute, 2002; US Department of Health and Human Services, 1999). Women over the age of 25 are at an increased risk for sedentary behaviour (Armstrong, Bauman, & Davies, 2000). Childbearing and motherhood are one possible explanation (Zhang & Savitz, 1996).

The birth of a child is an exciting time for many women. However, new or altered behavioural patterns, e.g., sleepless nights, random feeding patterns, increased time demands, and physical changes may increase the complexity of regular exercise participation (Mottola, 2002).

Social-cognitive theory is a framework used in interventions designed to increase physical activity (Schneiderman, Antoni, Saab, & Ironson, 2001). Physical activity interventions that employ principles of this theory have taught participants specific behavioural skills that enable them to incorporate physical activity into their daily routines (Kahn, Ramsey, Brownson, Heath, Howze, Powell, et al., 2002).

A recent study (Gardner & Brawley, 2005) examined an intervention based on social-cognitive theory and group dynamics principles to increase physical activity participation among post-natal women. The intervention included two treatment conditions: standard exercise (SE condition) and standard exercise plus group-mediated cognitive behavioural training (GMCB condition).

All participants received formal exercise training from a certified instructor. However, GMCB participants received self-efficacy training in initiating and maintaining physical activity. To ensure a balanced design, the amount of intervention contact time was equal. While participants in both the SE and GMCB conditions increased their physical activity, GMCB participants improved significantly more in overall physical activity (minutes and frequency). While both groups improved over time, some people in both the SE and GMCB groups were adhering to their physical activity more than others.

Regardless of treatment condition, we examined higher and lower adherers. We expected the different treatment conditions to affect results because of the difference in the interventions. However, based on social-cognitive theory, we felt that self-regulatory efficacy (i.e., for planning, and scheduling) might also affect the level of adherence.

METHOD

Two extreme adherence groups were formed from the larger study sample (N = 57 post-natal females): higher

adherers or lower adherers. The top 30% were classified as higher adherers (average adherence = 10 hours/wk), and the bottom 30% were classified as lower adherers (average adherence = 1 hour/wk). The final sample consisted of 30 women (N = 14, higher adherers; N = 16, lower adherers).

RESULTS

The results of a multivariate analysis indicated that treatment and planning efficacy correctly classified 80% of the respective group members as either higher or lower adherers ($p < 0.001$). As expected, treatment condition helped us predict the mothers in each adherence group.

In addition, self-regulatory (i.e., planning) efficacy contributed substantially to the correct classification. The higher adherence group had significantly higher self-regulatory efficacy than their lower adherence counterparts (higher adherers = 76%; lower adherers = 58%).

Higher adherers were more able to create a realistic exercise plan, carry out the plans, and create back-up plans to overcome barriers than women who were lower adherers. Findings from the current study support social-cognitive theory. These findings also emphasize that a strong belief in personal self-regulatory skills facilitates persistence and adherence (Bandura, 2004). As Maddux and Lewis (1995) note, "the enhancement of the individual's sense of mastery or personal efficacy in specific situations and across a range of situations is an essential mechanism of change in effective strategies for facilitating adaptation and adjustment" (p. 47).

Clearly, women in the GMCB treatment were better adherers. Interestingly, higher adherers in both conditions had greater self-regulatory efficacy. Interventions targeting a planned change in participants' ability to organize and execute action that fosters adherence to daily lifestyle physical activity may be viable community-based interventions (Brawley, Rejeski, & King, 2003).

Although our research represents a promising intervention, we advocate more long-term, GMCB-type interventions to assess mothers as they move beyond the post-natal period. A key question concerns how to structure interventions to foster maintaining mothers' daily self-managed physical activity. Women with young children are still at risk for sedentary behaviour after the post-natal year. We suggest exploring interventions targeting mothers during the early childhood years.

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Understanding the Early Years Study: Program and Policy Improvements for Children

WHAT IS THIS RESEARCH PROJECT ABOUT?

The Understanding the Early Years Study examines the role of families and communities in the lives of Saskatoon children by measuring kindergarten children's "readiness to learn." The study then compares children's outcomes to the resources accessible in their communities and to their neighbourhoods' characteristics.

Saskatoon is one of 12 Canadian communities funded by Social Development Canada to carry out this study, with new projects starting in 21 more communities. The study tries to answer two central questions.

- Are our children doing better now than they were in 2001?
- Are we still changing as a community, so that children achieve better outcomes?

Information from this study will help communities and governments develop policies, programs, and services to best support children and families.

The Saskatoon study is a community-university partnership, led by Communities for Children, Saskatoon's Planning Council for a Child and Youth Friendly Community, and the Saskatchewan Population Health and Evaluation Research Unit (SPHERU) at the University of Saskatchewan (in association with Saskatoon Public Schools and Saskatoon Catholic Schools).

METHODOLOGY

In 2001, 2003, and 2005, kindergarten teachers evaluated each of their students in five areas using the Early Development Instrument (1999):

- physical health and well-being;
- social skills;
- emotional maturity;
- language and cognitive development;
- communication skills and general knowledge.

We conducted a community survey of all programs for kindergarten children and their families and a neighbourhood observation survey of all 56 neighbourhoods in Saskatoon. We then used community mapping to display these data on maps of Saskatoon, illustrating the relationship between physical and social neighbourhood environments, resources, and amenities and children's outcomes for our two community mapping reports on 2001 and 2003 data (Muhajarine, Delanoy, Ellis, Vu, Dyck, & Macqueen Smith, 2005; Muhajarine, Delanoy, Hartsook, & Hartsook, 2003).

Statistics Canada also interviewed a random selection of 500 kindergarten children and their parents in 2001 and 2005 as part of the National Longitudinal Survey of Children and Youth (NLSCY) Community Study (Statistics Canada, 2005a).

KEY FINDINGS TO DATE

Saskatoon has a large population of Aboriginal kindergarten children (18%). We found that these children as a group had much poorer educational outcomes than non-Aboriginal children in every year we measured: scores 2.5 to three times lower than national norms. By 2017, the proportion of Aboriginal children could increase to one in three (Statistics Canada, 2005b). This trend means that the number of Saskatoon children risking poor outcomes could increase even more if this trend is not reversed.

Saskatoon children as a whole are lagging behind the national norms in three of the five areas measured: physical health and well-being; language and cognitive development; and communication skills and general knowledge. Saskatoon parents also have lower scores on positive parenting skills, and Saskatoon mothers have lower scores on maternal mental health than national norms. These factors may contribute to higher levels of behavioural problems in Saskatoon children (1.5 times national norms in 2001). Added to this are the city's higher-than-national average levels of low-income families and single-parent families who may face more parenting difficulties.

We found many associations between neighbourhoods and children's outcomes. Children's outcomes were better in low-income neighbourhoods where more people were employed and worse in ones where people moved more frequently. Children's scores in language and cognitive development were lower in neighbourhoods where licensed childcare facilities were not as accessible. The higher the level of poverty in neighbourhoods and the higher the proportion of single-parent families, the greater the decline in physical health outcomes between 2001 and 2005.

HOW THIS RESEARCH IS MAKING A DIFFERENCE FOR CHILDREN

As part of this study, we have a strong knowledge mobilization program, fuelled by a wealth of data, a good community-university partnership, effective decision-making structures, and community interest.

We have already had some success in our quest to bring our research into identifiable policy. Both the Saskatoon public and separate school boards have based major initiatives (such as literacy programs and full-day, daily kindergarten pilot programs) on the study's research in the past two years. The study team is also advising the public board as they change one of their elementary schools into an integrated learning, care, and community centre.

The provincial government has funded additional speech and language pathologists to work with children, in part based on our findings. Saskatoon Public Library has put more book trailers into neighbourhoods where the study showed that people did not have easy access to libraries. They have also announced plans to build an inner-city branch to serve these neighbourhoods better. We are currently seeking additional funding to develop a Sharing the Early Years KnowledgeAction Network to further our knowledge exchange activities, and are advising other Saskatchewan communities on launching their own studies.

For more information, visit www.spheru.ca (select Reports, then Children's Health) or contact Dr. Nazeem Muhajarine, SPHERU, University of Saskatchewan, nazeem.muhajarine@usask.ca.

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Funding for this work was provided by Social Development Canada. We acknowledge, with thanks, the cooperation of Saskatoon Public Schools and Saskatoon Catholic Schools in this study.