

Community Belonging and Sedentary Behaviour Among Métis Canadians: A Gendered Analysis

Abstract

Study Purpose: Framed by intersectionality theory, this study examined how gender and sense of community belonging interact to influence sedentary behaviour during leisure among Métis adults in Canada. **Methods:** Data were obtained from 1,169 Métis adults who completed the Canadian Community Health Survey in 2012. Weighted linear regression models examined associations between sedentary behaviour and community belonging stratified by gender, adjusting for confounders. **Results:** Male gender, younger age, physical activity, and increased socioeconomic status were associated with less sedentary behaviour among Métis adults. Métis men with a very strong sense of community belonging spent 3.6 *fewer* hours per week engaged in sedentary pursuits during leisure than Métis men who reported a very weak sense of community belonging. Conversely, Métis women with a very strong sense of community belonging spent 1 *additional* hour per week engaged in sedentary pursuits during leisure than Métis women who reported a very weak sense of community belonging. These associations remained significant after adjustment for sociodemographic covariates and perceived mental health and overall health, suggesting other factors were influencing these differences. **Conclusions:** A strong sense of community belonging among Métis men may reduce sedentary behaviour during leisure by as much as 30 minutes per day, which may be clinically significant. Increased community belonging among Métis women was associated with increased sedentary behaviour. These findings suggest that interactions between community belonging and gender should be considered when developing interventions to reduce leisure sedentary behaviour among Métis adults in Canada.

Keywords: Métis, sedentary behaviour, community belonging, gender, social determinants of health, socio-ecological, intersectionality theory

Authors

Scott Anderson, MSc, Faculty of Medicine & Dentistry, University of Alberta.

Jennifer L. Copeland, PhD, associate professor, Department of Kinesiology & Physical Education, University of Lethbridge.

Cheryl L. Currie, PhD, associate professor, Faculty of Health Sciences, University of Lethbridge, M3083 Markin Hall, 4401 University Drive, Lethbridge, AB T1K 3M4. Email: cheryl.currie@uleth.ca, Phone: (403) 332-4060.

All authors contributed to the research.

Introduction

Sedentary behaviour is defined as any waking activity with an energy expenditure of 1.5 metabolic equivalents (METs) or less while in a sitting or reclining posture (Sedentary Behaviour Research Network, 2012). Prolonged and excessive sedentary behaviour has deleterious effects on health and has been associated with cardiovascular disease, diabetes, obesity, and all-cause mortality (Proper, Singh, van Mechelen, & Chinapaw, 2011; Thorp, Owen, Neuhaus, & Dunstan, 2011). Sedentary behaviour is ubiquitous; the average Canadian accumulates 9.5 hours of sedentary time per day (69% of waking hours) (Colley, Garriguet, Janssen, Craig, & Clarke, 2011). While sitting is pervasive it is also modifiable, particularly during leisure hours when individuals have more choice over the activities they engage in. Thus, understanding the determinants of sedentary behaviour during leisure is important for designing effective interventions.

An ecologic model of sedentary behaviour acknowledges multiple levels of influence on sedentary activity, including individual, interpersonal, and environmental factors (Owen et al., 2011). A systematic review of research published between 2000 and 2015 highlighted several variables associated with sedentary behaviour during leisure. At the individual level, sedentary adults tended to be older, be female, have a higher body mass index, smoke, and not engage in regular physical activity (O'Donoghue et al., 2016). Results were inconsistent for interpersonal and environmental variables, highlighting the need for additional research (O'Donoghue et al., 2016). A study we published in 2016 found sense of community belonging is an interpersonal variable associated with reduced sedentary behaviour among adults (Anderson, Currie, & Copeland, 2016). A second study found community belonging interacts with household income to influence sedentary behaviour among First Nations adults in Canada (Anderson, Currie, Copeland, & Metz, 2016). Correlates of sedentary behaviour among Métis and Inuit Canadians remain unknown.

Sedentary Behaviour Among Métis Canadians

This study used national data collected for the Canadian Community Health Survey (CCHS) in 2012 about three main Indigenous groups in Canada—First Nations, Métis, and Inuit—to examine correlates of sedentary behaviour among Métis adults (Statistics Canada, 2012). Although more than 450,000 Canadians identify as Métis, representing nearly a third of all Indigenous people in Canada, there is a lack of research focused specifically on Métis health and health behaviour (Kumar, Wesche, & McGuire, 2012; Statistics Canada, 2013). The Métis are named as one of the Indigenous Peoples of Canada under section 35 of the Constitution Act, 1982. Currently, the term *Métis* is used broadly to describe individuals with mixed First Nations and European ancestry who identify as Métis (*International Journal of Indigenous Health*, n.d.). Métis organizations in Canada have differing criteria about who qualifies as Métis. The Métis National Council (2011) has adopted the following definition: “Métis means a person who self-identifies as Métis, is distinct from other Aboriginal peoples, is of historic Métis Nation ancestry and who is accepted by the Métis Nation” (p. 2). In this study, a Métis participant was defined as a person who self-identifies as Métis.

Between 1996 and 2006, the Métis population increased by 91%, suggesting many Canadians are reclaiming their Métis heritage (Statistics Canada, 2009). Sense of community belonging is an important part of this reclamation process, as well as an important correlate of health behaviour. In this study, we examined associations between sense of belonging and sedentary behaviour separately for Métis men and women, given that a recent review of knowledge gaps in Métis research identified the need for health studies providing information specific to Métis men (Kumar et al., 2012). A gender-stratified analysis also fits with the tenets of intersectionality theory, which suggests Métis identity, gender, and sense of belonging may interact to influence health behaviour in a non-additive way (Bauer, 2014). Given little has been published about sedentary behaviour among Métis adults, we also examined sociodemographic and behavioural correlates of sedentary behaviour within this population.

Methods

Study Design

Data were obtained from the 2012 CCHS (Statistics Canada, 2012). The CCHS is an annual nationwide survey conducted by Statistics Canada. This cross-sectional survey collects health information from Canadians ages 12 years or older. Those living in institutions, military bases, Indigenous communities, and Métis settlements were excluded from the survey. Thus, the present findings may not be generalizable for Métis adults living in these locations.

Procedure

Data were collected using computer-assisted interviewing, both in person and by phone, between January 1 and December 31, 2012. The 2012 CCHS used a multistage stratified cluster design to ensure samples collected were generalizable to the wider population. This design has been described in detail elsewhere (Statistics Canada, 2012). At a national level, the overall response rate was 68.4% ($N = 61,707$) among participants ages 12 years and older (Statistics Canada, 2012). This study included only those participants who were aged 18 years and older and self-identified as Métis. There were 1,169 individuals who met these criteria and provided valid responses on the outcome of interest (sedentary behaviour during leisure). This study was exempt from institutional ethics board review at the University of Lethbridge, as data were obtained in de-identified form.

Measures

Sedentary behaviour. As part of the CCHS, respondents were asked to report average weekly leisure time (outside of school or work) spent in the following sedentary activities: (a) using a computer, including playing computer games and using the Internet; (b) playing video games such as Xbox, Nintendo, and PlayStation; (c) watching television or videos; and (d) reading. Statistics Canada (2012) calculated total leisure sedentary behaviour time and provided the data in 10 categories beginning at < 5 hours per week and increasing by increments of 5 hours to ≥ 45 hours per week. This variable was used in the present analysis.

Sense of community belonging. Sense of community belonging was examined by asking “How would you describe your sense of belonging to your local community?” on a scale of 1 to 4 (1 = *very strong*, 2 = *somewhat strong*, 3 = *somewhat weak*, and 4 = *very weak*). Although a longer instrument is available, this single question is frequently used to measure this construct (Carpiano & Hystad, 2011; Hagerty & Patusky, 1995; Shields, 2008).

Sociodemographic variables. Data were collected on gender, age, education (less than secondary school graduate, secondary school graduate, and postsecondary graduate), household income (five categories in total, ranging from \$0 to \geq \$80,000), marital status (married/common-law, widowed/divorced/separated, or single/never married), and employment status (currently employed: yes or no).

Behavioural variables. Data were collected on physical activity using a derived variable of energy expenditure values of kcal/kg/day that was created by Statistics Canada. Individuals were categorized into three groups: 1 = *active* (> 3 kcal/kg/day), 2 = *moderately active* (1.5–3 kcal/kg/day), or 3 = *inactive* (< 1.5 kcal/kg/day). Smoking was examined by asking respondents if they smoked cigarettes: 1 = *daily*, 2 = *occasionally*, or 3 = *not at all*. Alcohol use was derived by calculating number of drinks reported per month, with participants stratified into three groups: 1 = *regular drinkers* (alcohol consumed at least once per month), 2 = *occasional drinkers* (alcohol consumed less than once per month), and 3 = *no use* (did not drink in the last 12 months).

Statistical Analysis

The amount of time spent watching television, using computers, playing video games, and reading during leisure were calculated and an overall estimate was created. Data were weighted to represent the general household population of Métis adults living outside of Indigenous communities in Canada; the creation of this weighting variable is described in detail elsewhere (Statistics Canada, 2012).

Regression modelling. Four sets of linear regression models were used to examine associations between exposure variables—namely, community belonging, smoking, alcohol consumption, and physical activity—and sedentary behaviour with 95% confidence intervals. Associations between each exposure variable and sedentary behaviour were first adjusted for

age, followed by other sociodemographic confounders selected a priori based on existing literature (marital status, income, education, and employment; Anderson, Currie, Copeland, & Metz, 2016; Clark et al., 2010; Shields & Tremblay, 2008). A third model included additional control for overall self-perceived health and mental health, as health can confound associations between the exposure variables we examined and sedentary behaviour. Unstandardized beta coefficients in these models represent the change in time spent in sedentary behaviour per week in relation to each exposure variable. The outcome variable, sedentary behaviour during leisure, is made up of 10 incremental categories. A 1-point increase in this category represents a 5-hour (300-minute) *decrease* in sedentary behaviour per week. Thus, an unstandardized beta coefficient of 1.0 and 0.25 represent a 5-hour and 1.25-hour decrease in sedentary behaviour per week for every 1-point change in the independent variable, respectively. To examine the ways in which gender and sense of belonging may interact to influence sedentary behaviour, we stratified the sample by gender and examined associations between community belonging and sedentary behaviour for each gender group.

Data were examined for multivariate outliers before conducting the analysis; none were found. Multicollinearity between variables was examined using variance inflation factors (VIFs) before main effect models were derived. All VIFs were below 5. All confounders were examined for effect modification prior to entry into main effects models using lowess curves; none were found. All analyses were completed in 2014 and run using SPSS version 22.0.

Results

Sample Description

Characteristics of the sample are outlined in Table 1. The sample ($N = 1,169$) was 47.5% male. The most common age range was 35–44 years. Most participants were married and employed, and had completed a postsecondary degree. Almost two thirds of the sample had household incomes that fell below the national average of \$80,000/year.

Prevalence of Sedentary Behaviour

Métis adults were sedentary 25–29 hours/week during leisure (median category; range = 0 to ≥ 45 hours/week). Watching television/videos was the most frequent sedentary behaviour (11–14 hours/week), followed by using a computer (3–5 hours/week), reading (3–5 hours/week), and playing video games (< 1 hour/week).

Table 1
Demographic Characteristics of Sample

| Characteristic | <i>N</i> = 1,169 ^a |
|------------------------------|-------------------------------|
| Gender | |
| Men | 47.5% |
| Women | 52.5% |
| Age | |
| 18–24 | 20.0% |
| 25–34 | 20.6% |
| 35–44 | 21.0% |
| 45–54 | 17.1% |
| 55–64 | 12.9% |
| ≥ 65 | 8.4% |
| Marital Status | |
| Married/common-law | 58.0% |
| Widowed/divorced/separated | 9.0% |
| Single | 32.9% |
| Education | |
| Less than secondary graduate | 8.7% |
| Secondary graduate | 19.1% |
| Postsecondary graduate | 72.2% |
| Household Income | |
| \$0–\$19,999 | 13.1% |
| \$20,000–\$39,999 | 16.0% |
| \$40,000–\$59,999 | 22.4% |
| \$60,000–\$79,999 | 12.1% |
| ≥ \$80,000 | 36.4% |
| Employed | |
| Yes | 59.4% |
| No | 40.6% |

^a Percentages are based on unweighted data.

Correlates of Sedentary Behaviour

Younger age was associated with decreased sedentary behaviour during leisure. After adjustment for sociodemographic confounders, every 1-year reduction in age was associated with a reduction of 3 minutes of sedentary behaviour per week (Table 2, Adjusted Model 2, unstandardized beta coefficient = 0.01 x 300 min given a 1-point increase in this category represents a 5-hour (300-minute) *decrease* in sedentary behaviour per week). Thus, a Métis adult aged 55 years spent 1.75 more hours per week in leisure sedentary behaviour than a Métis adult aged 20 years ($[55 - 20 = 35 \text{ years}] \times 3 \text{ minutes} = 105 \text{ additional minutes per week} \div 60$). Métis

women spent half an hour more per week in sedentary activities than Métis men (Table 2, Adjusted Model 2, unstandardized beta coefficient = $0.11 \times 300 \text{ min} = 33 \text{ minutes}$ less per week for Métis men).

Increased household income, being employed, and being married were all associated with less sedentary behaviour during leisure. Among behavioural correlates, being physically active was strongly associated with less sedentary behaviour. This association was further strengthened by adjustment for sociodemographic confounders. Additional control for perceived health did not influence the size of this effect. Being a non-smoker and consuming alcohol were each associated with less sedentary behaviour during leisure; however, the size of these correlations was very small.

Table 2
Correlates of Sedentary Behaviour: Multiple Regression Models With 95% Confidence Intervals (CIs)^a

| Variable | Adjusted Model 1 ^b | | | Adjusted Model 2 ^c | | | Adjusted Model 3 ^d | | |
|-----------------------|-------------------------------|-------|-----------|-------------------------------|-------|-----------|-------------------------------|-------|-----------|
| | B [95% CI] ^e | SE | β^f | B [95% CI] ^e | SE | β^f | B [95% CI] ^e | SE | β^f |
| Community belonging | 0.20 [0.19, 0.21] | 0.005 | 0.06 | 0.08 [0.07, 0.09] | 0.005 | 0.03 | 0.07 [0.06, 0.08] | 0.005 | 0.06 |
| Alcohol used | 0.22 [0.21, 0.23] | 0.006 | 0.06 | 0.05 [0.04, 0.06] | 0.007 | 0.01 | 0.03 [0.01, 0.04] | 0.007 | 0.01 |
| Non-smoker | -0.04 [-0.05, -0.03] | 0.005 | 0.01 | 0.02 [0.01, 0.03] | 0.005 | -0.01 | 0.01 [0.01, 0.02] | 0.005 | 0.01 |
| Physically active | 0.27 [0.26, 0.28] | 0.005 | 0.09 | 0.36 [0.35, 0.37] | 0.005 | 0.12 | 0.36 [0.35, 0.37] | 0.005 | 0.12 |
| Male gender | | | | 0.11 [0.09, 0.13] | 0.009 | 0.02 | | | |
| Younger age | | | | 0.01 [0.01, 0.01] | 0.000 | 0.06 | | | |
| Not currently married | | | | 0.05 [0.02, 0.08] | 0.016 | 0.01 | | | |
| Never married | | | | -0.10 [-0.12, -0.08] | 0.011 | -0.02 | | | |
| Increased education | | | | 0.18 [0.17, 0.20] | 0.008 | 0.04 | | | |
| Increased income | | | | 0.10 [0.09, 0.10] | 0.001 | -0.13 | | | |
| Employed | | | | 0.72 [0.70, 0.73] | 0.009 | 0.13 | | | |

^a Higher beta values in this table correspond to decreased sedentary behaviour during leisure. ^b Model 1 is adjusted for age. ^c Model 2 is adjusted for age, marital status, education, household income, and employment status. ^d Model 3 is adjusted for age, marital status, education, household income, employment status, and overall mental and physical health. ^e Unstandardized beta coefficient. ^f Standardized beta coefficient.

Community Belonging and Gender

As shown in Table 2, before stratification by gender, there was a weak association between sense of community belonging and sedentary behaviour. This changed when the association was examined separately for men and women. Among Métis men, a strong sense of community belonging was associated with *less* sedentary behaviour. In a fully adjusted model, every 1-point increase in community belonging from the lowest possible response (very weak sense of belonging) resulted in a 1.2 hour *decrease* in sedentary behaviour among Métis men per week (Table 3, Model 3, unstandardized beta coefficient = 0.24 or 72 minutes x 300 min given a 1-point increase in this category represents a 5-hour (300-minute) *decrease* in sedentary behaviour per week). As this was a 4-point scale, results indicate that Métis men with a very strong sense of community belonging spent 3.6 fewer hours per week in sedentary behaviour during leisure than Métis men who reported a very weak sense of community belonging.

The opposite was found among Métis women, for whom every 1-point increase in community belonging resulted in a 21-minute *increase* in sedentary behaviour per week in a fully adjusted model (Table 3, Model 3, unstandardized beta coefficient = -0.07). Thus, Métis women with a very strong sense of community belonging spent approximately 1 *additional* hour (63 minutes) in sedentary behaviour during leisure each week than Métis women who reported a very weak sense of community belonging.

Table 3

Association Between Sense of Community Belonging and Sedentary Behaviour Stratified by Gender: Multiple Regression With 95% Confidence Intervals (CIs)^a

| Variable | Adjusted Model 1 ^b | | | Adjusted Model 2 ^c | | | Adjusted Model 3 ^d | | |
|----------|-------------------------------|-------|----------------|-------------------------------|-------|----------------|-------------------------------|-------|----------------|
| | B [95% CI] | SE | β ^f | B [95% CI] ^e | SE | β ^f | B [95% CI] ^e | SE | β ^f |
| Men | 0.54 [0.52, 0.55] | 0.007 | 0.16 | 0.25 [0.23, 0.26] | 0.008 | 0.09 | 0.24 [0.23, 0.26] | 0.008 | 0.07 |
| Women | -0.07 [-0.09, -0.06] | 0.007 | -0.02 | -0.07 [-0.08, -0.06] | 0.007 | -0.02 | -0.07 [-0.09, -0.06] | 0.007 | -0.02 |

^a Higher beta values in this table correspond to decreased sedentary behaviour during leisure. ^b Model 1 is adjusted for age. ^c Model 2 is adjusted for age, marital status, education, household income, and employment status. ^d Model 3 is adjusted for age, marital status, education, household income, employment status, and overall mental and physical health. ^e Unstandardized beta coefficient. ^f Standardized beta coefficient.

Discussion

Métis adults reported engaging in 25–29 hours of sedentary behaviour during leisure per week. This is comparable to First Nations adults living outside Indigenous communities, but slightly higher than the general population average of 20–24 hours of sedentary behaviour during leisure in Canada (Anderson, Currie, & Copeland, 2016). Métis men were less sedentary during leisure than Métis women, which is consistent with research in non-Indigenous populations showing men are generally less sedentary during leisure than women, with some exceptions (O’Donoghue et al., 2016). For example, research has shown that First Nations women are less sedentary during leisure than First Nations men (Anderson, Currie, Copeland, & Metz, 2016).

Community Belonging and Sedentary Behaviour

In keeping with the tenets of intersectionality theory (Bauer, 2014), we found gender and sense of community belonging were social identities that interacted to influence sedentary behaviour among Métis adults. Métis men with a very strong sense of community belonging spent 3.6 *fewer* hours per week engaged in sedentary pursuits during leisure than Métis men who reported a very weak sense of community belonging. It is difficult to comment on the clinical significance of this finding as there is limited prospective data and no experimental data to clearly demonstrate the health effects of changing the volume of sedentary time accumulated. However, from various cross-sectional datasets and using statistical techniques such as isotemporal substitution, we can estimate the potential effects of reducing sedentary time by 3.6 hours per week or approximately 30 minutes per day. Buman et al. (2014) used isotemporal substitution to show that replacing 30 minutes of sedentary time with 30 minutes of sleep per day was associated with a 2.4% reduction in insulin. That study also found that replacing 30 minutes of sedentary time with physical activity was associated with an 11% reduction in insulin and a 2.4% reduction in waist circumference. Thus, while it may depend on what other behaviours are occurring in the place of sedentary activity, a difference as little as 30 minutes per day could, in theory, be associated with reduced health risk.

In contrast, we found that Métis women with a very strong sense of community belonging spent approximately 1 additional hour per week (or 9 additional minutes per day) engaged in sedentary pursuits during leisure than Métis women who reported a very weak sense of community belonging. This association, although small, was unexpected. Regression models were adjusted for sociodemographic factors, mental health, and overall health, suggesting unique pathways beyond income, age, and health may be influencing these associations. These results highlight the need for qualitative studies to gain a more nuanced understanding of gender-based differences in sedentary behaviour among Métis adults, and more gender-stratified quantitative analyses to better understand the impacts of intersecting social identities on health behaviour among Métis women and men.

Behavioural Correlates of Sedentary Behaviour

Increased physical activity was associated with lower sedentary behaviour among Métis adults generally, which is consistent with findings in non-Indigenous populations (Anderson,

Currie, & Copeland, 2016; Anderson, Currie, Copeland, & Metz, 2016; Hu et al., 2001; Jakes et al., 2003). Control for sociodemographic confounders strengthened this association, indicating negative confounding was present. This suggests that unadjusted models underestimated the magnitude of the inverse association between physical activity and sedentary behaviour, at least among Métis adults. Additional control for perceived health did not diminish the strength of this association, indicating that better mental health or overall health does not explain why some Métis adults are choosing to spend time engaged in physical activity rather than sedentary pursuits during leisure.

Being a non-smoker and using alcohol regularly were both weakly associated with less sedentary behaviour during leisure after adjustment for confounders, which repeats findings documented among First Nations adults (Anderson, Currie, Copeland, & Metz, 2016). A systematic review suggests associations between smoking, alcohol use, and sedentary behaviour during leisure are mixed in populations generally (Rhodes, Mark, & Temmel, 2012). The size of these associations suggests these variables contribute little to our understanding of sedentary behaviour among Métis adults and may not be the best focus for future research in this area.

Limitations

These results are limited by the use of a cross-sectional design, which precludes inferences of causation and temporal sequence. Recall bias may be present given that self-report measures were used. The sedentary behaviours examined were not exhaustive, neglecting transport and occupational sedentary behaviour. Reporting of community belonging was obtained using one question; longer instruments are available to examine this construct (Hagerty & Patusky, 1995). Residual confounding may be a concern as factors not measured in this study may have influenced the results. The strengths of this study include the use of a large representative sample of Métis adults living outside Métis settlements in Canada, gender-stratification, and control for the effects of important confounders.

Conclusion

A strong sense of community belonging among Métis men may reduce sedentary behaviour during leisure by as much as 30 minutes per day, which may be clinically significant. An unexpected finding in this study was that community belonging was not associated with less sedentary behaviour among Métis women. These findings suggest that interactions between community belonging and gender should be considered when developing interventions to reduce leisure sedentary behaviour among Métis adults in Canada.

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