The relative contributions of driving, physical activity, and sedentary behavior to weight status and self-reported health among Calgarians

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Background

- The prevalence of overweight and obesity continues to increase among Canadian adults, placing significant burden on the health care system.[1]
- Increased segregation of land uses and increased travel distances has lead to greater reliance on motor vehicles and fewer opportunities for active transportation (i.e., walking and cycling).[2]
- Higher levels of driving increases the risk of chronic disease such as obesity, diabetes, and CVD, while participation in physical activity reduces the risk of chronic disease and provides health benefits.[3,4]
- Increased participation in sedentary screen-based activities such as watching television and using computers may be contributing to the obesity epidemic.[5]
- Studies examining the independent associations of physical activity, sedentary, and driving behavior on weight and general health status are limited.

Study aims

- Examine the associations between time spent travelling by motor vehicle, screen-based activity, and physical activity behavior, and 1) weight status; 2) self-rated health.

Method

Sample recruitment

- A random cross-sectional sample of Calgarian adults completed telephone interviews between July-October, 2007 (n=2199; RR=33.6%) capturing physical activity and demographic characteristics.
- N=1028 also completed a self-administered questionnaire and provided complete data for driving, sedentary, and physical activity behavior, self-rated health, and height and weight.

Variables measured

Driving behavior: Time spent as a driver/passenger traveling in a motor vehicle on a typical weekday and weekend day. Total weekly driving time estimated from summing weekday (multiplied by five) and weekend day (multiplied by two) minutes and dichotomized: <=209 min/week (or <=30 min/day) vs. >210 min/week (or >30 min/day).

Screen-based activity: Average hours per week spent watching television or using a computer outside of the workplace recoded into daily hours and categorized: <2hrs/day, 2-4hrs/day, and; >4hrs/day.

Physical activity: Usual weekly minutes of moderate (including walking) and vigorous physical activity collected using modified items from the Neighborhood Physical Activity Questionnaire.[6,7] Minutes of moderate (<210 vs. ≥210 min/week) and vigorous physical activity were dichotomized (<90 vs. ≥90 min/week). Sufficient physical activity was defined as achieving ≥210 minutes of moderate or ≥90 minutes of vigorous activity per week.

Weight status: Body mass index (BMI) was estimated from self-reported height (meters) and weight (kilograms) and categorized into healthy weight (<25 kg/m^2); overweight (25-29.9 kg/m^2), and; obese (≥30kg/m^2).

Self-rated health: Respondents rated their health overall (poor to excellent) and compared with people of the same age (much worse to much better). Item responses were summed and dichotomized at the median (low vs. high health).

Demographics: Gender, age, country of birth, highest education achieved, home ownership, and number of dependents <18 years of age.

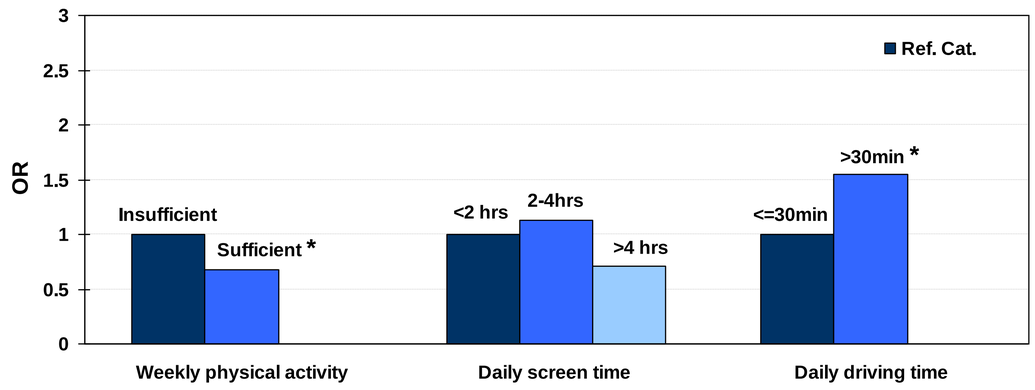
Data analysis

- Logistic regression, adjusted for demographic characteristics, was used to examine the associations between driving, screen-based activity, and sufficient physical activity and the likelihood of:
  - 1) overweight but not obese vs. healthy weight;
  - 2) obese vs. healthy weight, and;
  - 3) high vs. low health status.

Results

- Sample included mainly: women (63%); 41-60 year olds (42%); Canadian-born (78%); university educated (45%); home owners (87%); and those with no dependents (66%).
- 59% with high self-rated health; 15% were obese; 38% were overweight; 47% were healthy weight; 77% were sufficiently active; 85% spent >30min/day driving; and 62% spent <2 hours in screen-based activity.
- Overweight (excluding obese) was associated with driving >30min/day (OR 1.57) and sufficient physical activity (OR 0.69) (Table 1).

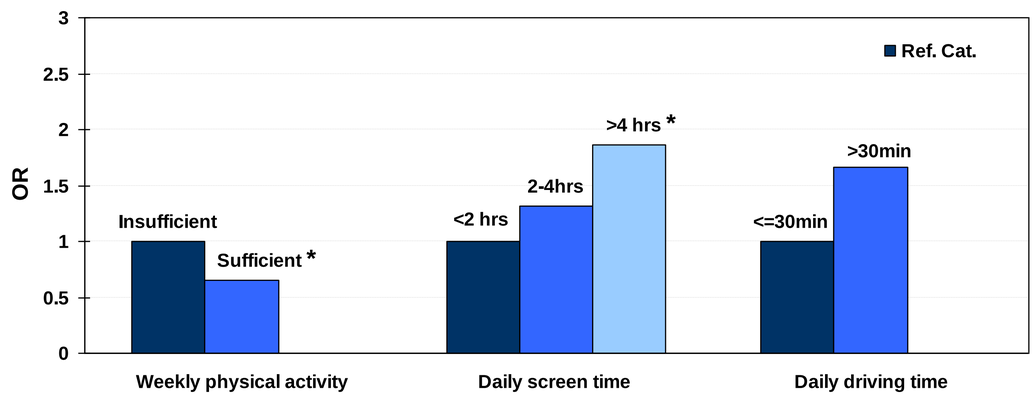
Table 1. Associations between physical activity, screen-based activity, and driving time, and the likelihood of being overweight (n=870)



* P<.05; adjusted for demographic characteristics

- Obesity was associated >4 hrs/day of screen-based activity (OR 1.86) and sufficient physical activity (OR 0.65) (Table 2). A positive linear association was found between hours of daily screen-based activity and the likelihood of obesity (OR 1.02, p<0.05).

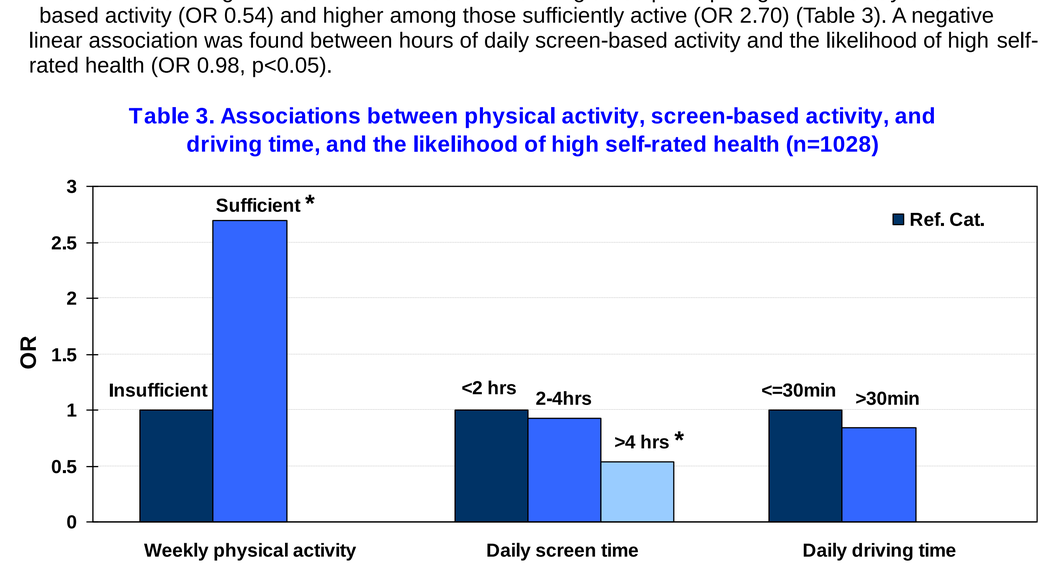
Table 2. Associations between physical activity, screen-based activity, and driving time, and the likelihood of being obese only (n=643)



* P<.05; adjusted for demographic characteristics

- The likelihood of high self-rated health was lower among those participating in >4 hrs/day of screen-based activity (OR 0.54) and higher among those sufficiently active (OR 2.70) (Table 3). A negative linear association was found between hours of daily screen-based activity and the likelihood of high self-rated health (OR 0.98, p<0.05).

Table 3. Associations between physical activity, screen-based activity, and driving time, and the likelihood of high self-rated health (n=1028)



* P<.05; adjusted for demographic characteristics and BMI

Conclusions

- Population-targeted health interventions should focus on decreasing driving and sedentary behavior and increasing physical activity participation in order to reduce weight and improve general health among adults.

References

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