Leisure-time physical activity and chronic back disorders in Canadian adults: Results from a longitudinal population-based study

> Adriana Angarita Fonseca Catherine Trask Brenna Bath

2019 SRS Research Conference Saskatoon, September 21, 2019



Background

Low back pain: The leading cause of years lived with a disability (YLD) from 1990 to 2017.

in 126 out of the 195 countries in 2017



Background

Chronic back disorders (CBD) definition:

CBD encompass a variety of pathologies and symptoms localized in the back including the thoracic, and lumbar spine, and pelvis with a duration of at least six months.

Prevalence in Canada (18-65 y.o.): 18.9% in 2007 17.8% in 2014

Bath et al., 2014. Angarita-Fonseca et al., 2019



The Biopsychosocial Mode

Social

Culture, social interactions

Psycho-

Illness behavior, beliefs, emotions, distress

Bio-Neurophysiology Physiologic dysfunction

Waddell, 2004.

Physical activity recommendations

- at least 150 min of moderate-intensity per week, or
- 75 min of vigorous-intensity physical activity per week, or
- any equivalent combination of the two

Insufficient physical activity in Canada



Relationship between physical activity and chronic back disorders



Gaps

The relationship between PA and CBD over time is inconclusive.

Lack of longitudinal studies

Heneweer et al., 2011 Hendrick et al., 2011 Steffens et al., 2016 Shiri et al., 2017



Objective



To investigate the associations between self-reported PA and the prevalence of CBD over time

Methodology

Data source

The National Population Health Survey
Longitudinal 16 years, 9 cycles, 1994/95 - 2010/11
Nationally-representative survey
Biennial



Target Population of the NPHS 17,276 persons 12 years of age or older were recruited in 1994/1995

Sample in the analysis

Canadian adults, 18 years and above
Representing 98-99% of Canadian adults over 18



Covariates (n=26): Age, gender, ethnicity, marital status, education, residence, province, working status, type of occupation, income, depression, distress, smoking, drinking, overall perceived health, number of comorbidities, allergies, arthritis, high blood pressure, migraine, asthma, body mass index (BMI), daily activity, cycle, CBD pattern response, season 11 of reported PA

Statistical analysis

Generalized Estimating Equations (GEE)



Physical activity and CBD within the same cycle

Adjusted for: **Biological factors:** age, sex, Social factors: marital status, province, working status, **Psychological factors** depression, distress **Behavioural factors** drinking, smoking, **Other factors** perceived general health, number of comorbidities, allergies, arthritis, migraine, BMI Methodological factors cycle



Physical activity and CBD within the same cycle

Adjusted for: **Biological factors:** age, sex Social factors: marital status, province, working status, **Psychological factors** depression, distress **Behavioural factors** drinking, smoking **Other factors** perceived general health, number of comorbidities, allergies, arthritis, migraine, BMI Methodological factors cycle

Sex as a effect modifier of the relationship between utilitarian cycling and CBD



Physical activity and CBD within the same cycle

Adjusted for: **Biological factors:** age, sex Social factors: marital status, province, working status, **Psychological factors** depression, distress **Behavioural factors** drinking, smoking **Other factors** perceived general health, number of comorbidities, allergies, arthritis, migraine, BMI Methodological factors cycle

BMI as a effect modifier of the relationship between utilitarian walking and CBD.



Previous Physical activity and CBD in the subsequent cycle

Adjusted for: **Biological factors:** age, sex Social factors: ethnicity, province, working status, type of occupation **Psychological factors** distress **Behavioural factors** smoking **Other factors** perceived general health, allergies, arthritis, migraine, BMI Methodological factors cycle



CONCLUSIONS (based on preliminary analysis)

Prior LTPA appears to be related to CBD, whereas current PA does not

Tailored prevention and management of CBD should consider sex/gender differences

 $\blacktriangleright\downarrow$ CBD in pregnant women who walk as a mean of transportation



CONSIDERATIONS & NEXT STEPS

The NPHS

- Do not represent 100% of Canadians.
- there is no specific information regarding CBD such as location and type of problem
- Not all possible confounders were collected
- Subjective and variable measurement of PA

Ongoing study of the relationship between directly measured PA and CBD (CHMS)

Future work exploring sex/gender differences

The analysis presented in this paper was conducted at the Saskatchewan Research Data Centre (SKY-RDC) which is part of the Canadian Research Data Centre Network (CRDCN). The services and activities provided by the SKY-RDC are made possible by the financial or inkind support of the SSHRC, the CIHR, the CFI, Statistics Canada, and University of Saskatchewan. The views expressed in this presentation do not necessarily represent the CRDCN's or that of its partners.





and Safety in Agriculture CCHSA-CCSSMA.USASK.CA

19

UNIVERSITY OF SASKATCHEWAN College of Medicine MEDICINE.USASK.CA

Thank you





Target Population of the NPHS

17,276 persons 12 years of age or older were recruited in 1994/1995 and were followed-up until 2010/2011.

Sample in the analysis

Canadian adults aged between 18 and 65 years.

Representing 98-99% of Canadian adults aged 18 to 65 years.

Conclusions

Descriptive

Inferential

Alpha level: 0.05

The bootstrap method for robust variance estimation will be used