

Musculoskeletal disorders among Canadian truck drivers: Results from an intercept study

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Truck drivers – Population at Risk

High risk group

- Long work hours (14+ hours per day)
- Vibration
- Prolonged sitting
- Lifting episodes after sitting
- Awkward postures
- Unhealthy lifestyles
 - Tobacco use, poor diet, lack of exercise,

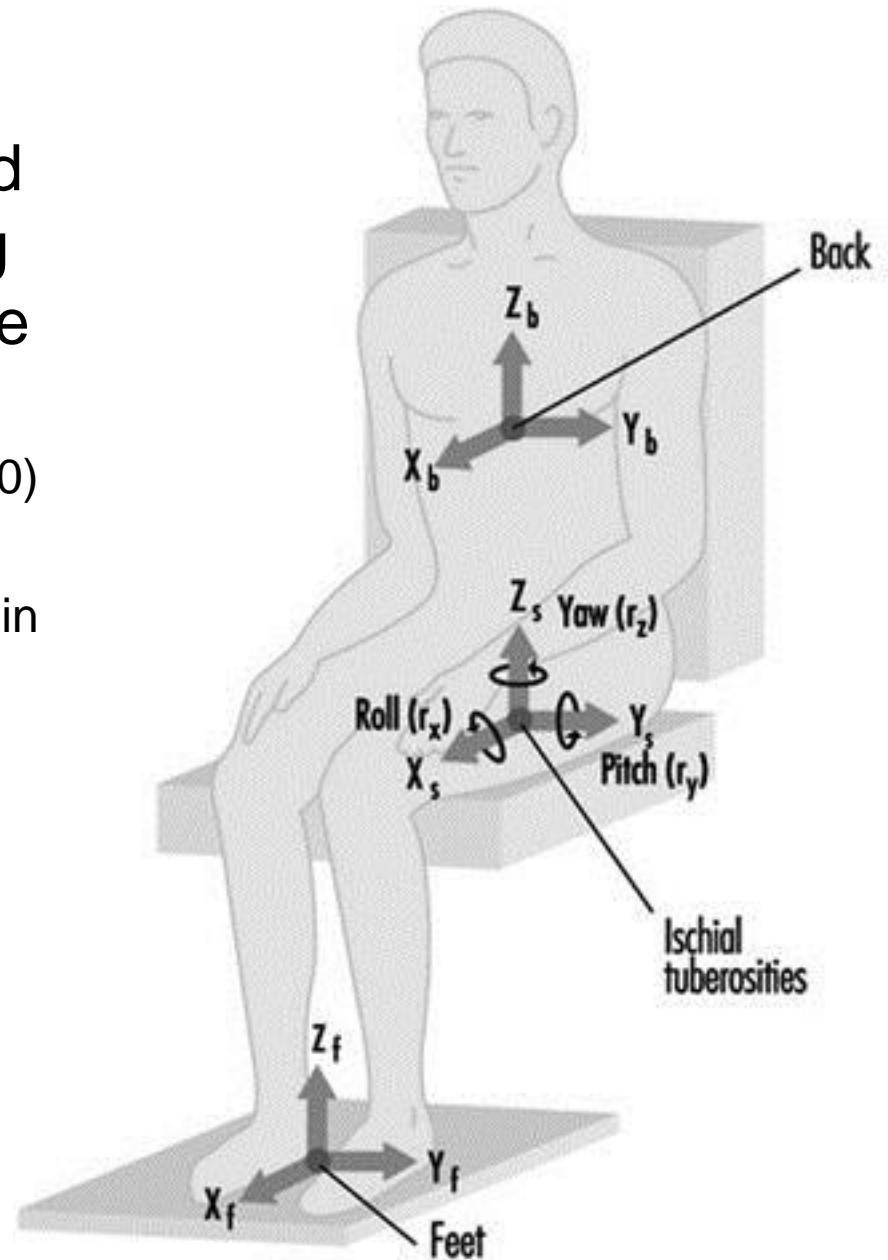


Result

- ↑ **CVD rates (stroke)**
 - hypertension, obesity
 - ↑ **Diabetes**
 - ↑ **Sleep disorders**
 - ↑ **Slips trips and falls**
 - ↑ **Musculoskeletal disorders**
- 
- ↑ **Collisions**
 - ↑ ↑ **Worker's compensation claims**
 - ↑ **Medical costs**
 - ↑ **Pain and disability** ²

Vibration along with prolonged sitting – a combination putting truck drivers at risk for multiple health problems

- LBP (Tiemessen 2008, Bovenzi 2010)
- MSD (Moraes 2016)
- Sleep disorders due to increased pain (Alsaadi 2011)
- Vigilance (Du 2016)
- Balance (Halverson 2013)
- Leading to increased fatigue and crash risk and potential increased fall injury risk



MSDs in Truck Drivers

- In Ontario, back injuries (LTIs) are 19% of all injuries
 - 58% of these injuries are from trucking sector
- 40% of injuries are MSDs
 - From 2009-2012 MSD LTI cost over \$28 million in Ontario for General Trucking
- 35-80% of truck drivers report MSK pain
- MSDs are significant burden to companies, the sector & individual drivers

Objectives

- Characterize extent of MSD burden in long haul truck drivers in Ontario
- Characterize known MSD risk factors in drivers
- Determine risk factors that significantly contribute to reported musculoskeletal discomfort and disability

Methods

- Intercept study at two truck stops in ON
- Scales and items from:
 - WA State Truck Driver Survey (Spielholz 2008); Profile of Truck Drivers in Canada (Dube & Pilon 2006); Renner, 2004; CDC, 2003; NIOSH Truck Driver Survey (Sieber 2009); International Physical Activity Questionnaire 2005; Commercial Vehicle Survey 2001, National Roadside Survey 1999; Canadian Trucking Human Resource Council 2007, CCHS 2008; COPSOQ II (2009)

Methods

- Pilot testing and psychometric testing of questionnaire
 - Cognitive interviews with 9 drivers
 - Items modified to reflect Canadian context
 - Could be completed in 30 min
 - \$10 gift card to truck stop restaurant as incentive
- Study information booth at truck stop
- Approach drivers as they enter truck stop
- Self administer questionnaire

Methods

- Six content areas
 - Demographics
 - Nature of the job
 - Driver perception of job and tasks
 - Musculoskeletal pain and MSD
 - Past 12 months
 - 10-point scales on frequency and severity
 - Compute MSD index
 - $\sum (frequency \times severity)$
 - Perception of injury risk
 - Safety climate

SECTION A: HERE WE WILL ASK ABOUT YOUR JOB AND WHAT YOU THINK OF THE HEALTH OF TRUCK DRIVERS

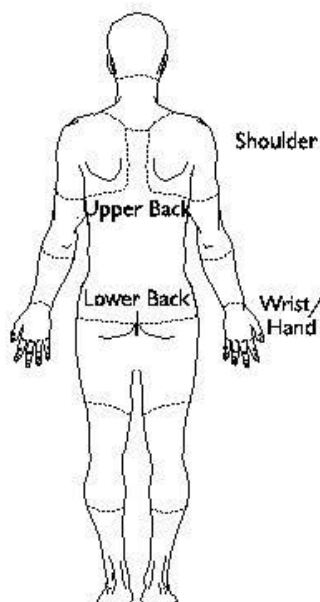
Length of time as a Truck Driver:	_____ years	
Length of time with the company you are currently working for:	_____ years	
Are you:	<input type="checkbox"/> A Company Driver <input type="checkbox"/> An Owner Operator <input type="checkbox"/> Work for a Temp Agency <input type="checkbox"/> A Contract Driver who gets paid to your own business but does not own your truck	
Do you work for a:	<input type="checkbox"/> For-hire carrier (moving other companies' goods)	<input type="checkbox"/> Private carrier (moving your own company's goods, e.g. Tim Hortons, Sysco)
Do you belong to a union?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are you typically a team driver?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Would you classify yourself as:	<input type="checkbox"/> A local driver (short trips and home every night/almost every night) <input type="checkbox"/> A regular route longer distance driver (generally go to the same places but are away from home at least 1 night per trip) <input type="checkbox"/> An irregular route longer distance driver (trips are to different places and are not home on a regular basis)	
What do you usually carry? <i>(check only one)</i>		
<input type="checkbox"/> General freight <input type="checkbox"/> Household goods	<input type="checkbox"/> Liquid bulk <input type="checkbox"/> Dry bulk	<input type="checkbox"/> Forest products <input type="checkbox"/> Other specialized freight

For the following please indicate how important you think each health item is for **all truck drivers**. If you think that the item is not a problem for truck drivers, then circle '1', if it is a serious problem, circle '5'.

Health Item	No Problem			Major Problem	
Back/knee/hip pain	1	2	3	4	5
Stress	1	2	3	4	5
Being Overweight	1	2	3	4	5
Depression	1	2	3	4	5
Heart Problems	1	2	3	4	5
Breathing problems	1	2	3	4	5
Diabetes	1	2	3	4	5
Eating a poor diet	1	2	3	4	5
Lack of exercise	1	2	3	4	5
Use of illegal drugs	1	2	3	4	5
Sexually transmitted infections	1	2	3	4	5

This Question is about **GENERAL MUSCULOSKELETAL** troubles - so if you have had aches or pains over the last 12 months this is important to complete

In this picture you can see the approximate position of the parts of the body referred to in the questionnaire. You yourself have to decide in which part you have or have had your trouble (if any).

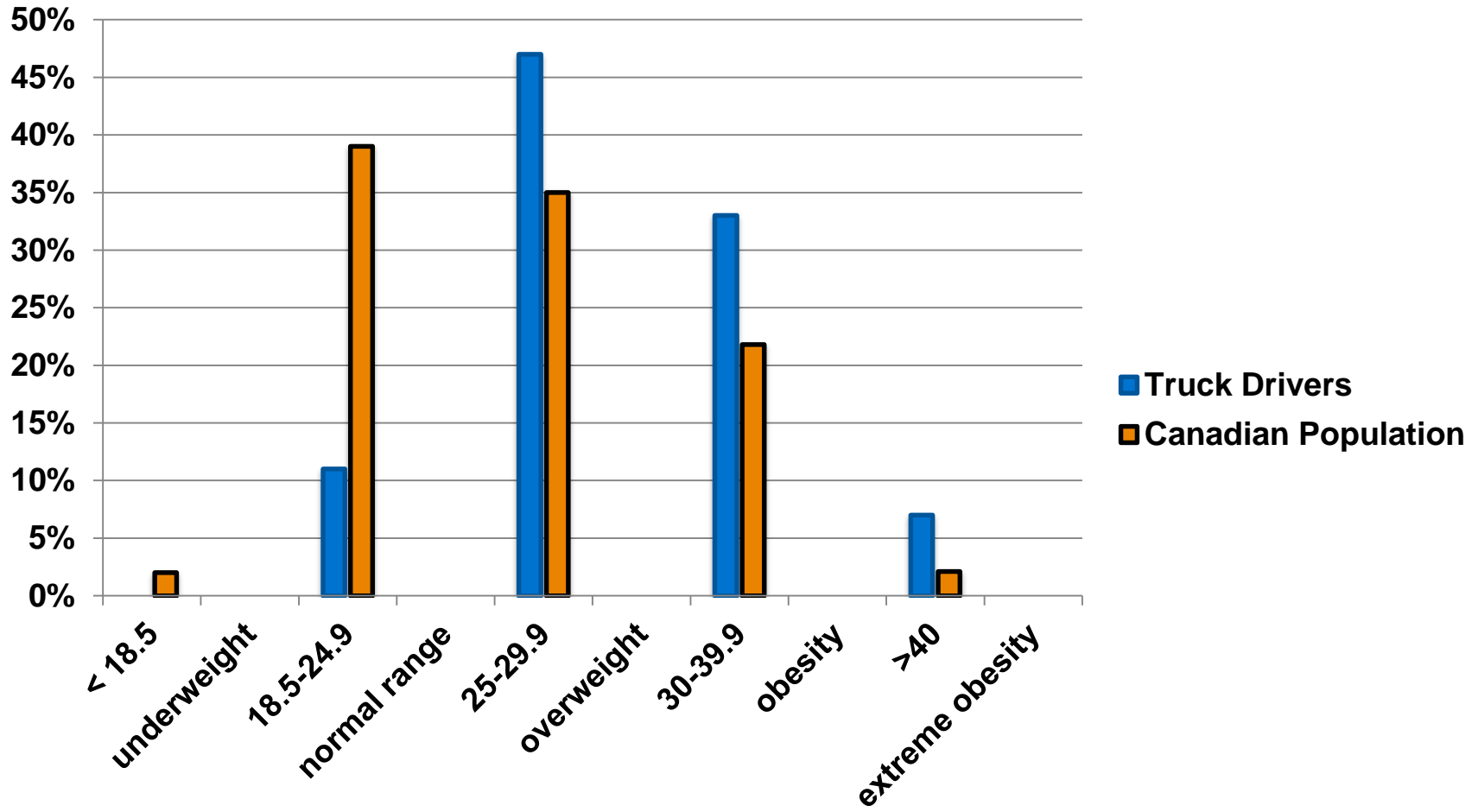


To be answered by everyone	To be answered only by those who have had trouble				
Have you at any time during the last 12 months had trouble (such as ache, pain, discomfort, numbness) that you believe to be work related, with any of these areas of the body in:	During the last 12 months have you been prevented from carrying out normal job activities because of this trouble:	What is the total length of time that the trouble has prevented you from doing your normal job activities during the last 12 months ?	Have you had trouble at any time during the last 7 days , that you believe to be work related?	According to the scale below, what is the level of discomfort in this body part within the last 30 days? 0 No Discomfort 1 2 Fairly Comfortable 3 4 5 Moderate Discomfort 6 7 8 Very Uncomfortable 9 10 Extreme Discomfort	According to the scale below, how often do you have pain or discomfort in this body part within the last 30 days? 0 Never 1 Rarely (few times/month) 2 Frequently (few times/week) 3 Constantly (nearly every day)
Shoulders: <input type="checkbox"/> Yes in right <input type="checkbox"/> No <input type="checkbox"/> Yes in left <input type="checkbox"/> Yes in both	Shoulders: <input type="checkbox"/> Yes in right <input type="checkbox"/> No <input type="checkbox"/> Yes in left <input type="checkbox"/> Yes in both	Shoulders: <input type="checkbox"/> 0-7 days <input type="checkbox"/> 8-30 days <input type="checkbox"/> More than 30 days	Shoulders: <input type="checkbox"/> Yes in right <input type="checkbox"/> No <input type="checkbox"/> Yes in left <input type="checkbox"/> Yes in both	Severity of Discomfort <div style="border: 1px solid black; width: 50px; height: 30px; margin: 0 auto;"></div>	Frequency <div style="border: 1px solid black; width: 50px; height: 30px; margin: 0 auto;"></div>
Wrists/Hands: <input type="checkbox"/> Yes in right <input type="checkbox"/> No <input type="checkbox"/> Yes in left <input type="checkbox"/> Yes in both	Wrists/Hands: <input type="checkbox"/> Yes in right <input type="checkbox"/> No <input type="checkbox"/> Yes in left <input type="checkbox"/> Yes in both	Wrists/Hands: <input type="checkbox"/> 0-7 days <input type="checkbox"/> 8-30 days <input type="checkbox"/> More than 30 days	Wrists/Hand: <input type="checkbox"/> Yes in right <input type="checkbox"/> No <input type="checkbox"/> Yes in left <input type="checkbox"/> Yes in both	Severity of Discomfort <div style="border: 1px solid black; width: 50px; height: 30px; margin: 0 auto;"></div>	Frequency <div style="border: 1px solid black; width: 50px; height: 30px; margin: 0 auto;"></div>
Upper Back: <input type="checkbox"/> Yes <input type="checkbox"/> No	Upper Back: <input type="checkbox"/> Yes <input type="checkbox"/> No	Upper Back : <input type="checkbox"/> 0-7 days <input type="checkbox"/> 8-30 days <input type="checkbox"/> More than 30 days	Upper Back: <input type="checkbox"/> Yes <input type="checkbox"/> No	Severity of Discomfort <div style="border: 1px solid black; width: 50px; height: 30px; margin: 0 auto;"></div>	Frequency <div style="border: 1px solid black; width: 50px; height: 30px; margin: 0 auto;"></div>
Lower Back: <input type="checkbox"/> Yes <input type="checkbox"/> No	Lower Back: <input type="checkbox"/> Yes <input type="checkbox"/> No	Lower Back : <input type="checkbox"/> 0-7 days <input type="checkbox"/> 8-30 days <input type="checkbox"/> More than 30 days	Lower Back: <input type="checkbox"/> Yes <input type="checkbox"/> No	Severity of Discomfort <div style="border: 1px solid black; width: 50px; height: 30px; margin: 0 auto;"></div>	Frequency <div style="border: 1px solid black; width: 50px; height: 30px; margin: 0 auto;"></div>
Legs and Feet <input type="checkbox"/> Yes <input type="checkbox"/> No	Legs and Feet: <input type="checkbox"/> Yes <input type="checkbox"/> No	Legs and Feet: <input type="checkbox"/> 0-7 days <input type="checkbox"/> 8-30 days <input type="checkbox"/> More than 30 days	Legs and Feet: <input type="checkbox"/> Yes <input type="checkbox"/> No	Severity of Discomfort <div style="border: 1px solid black; width: 50px; height: 30px; margin: 0 auto;"></div>	Frequency <div style="border: 1px solid black; width: 50px; height: 30px; margin: 0 auto;"></div>

Results

- High participation rate (>90%)
- 107 drivers completed questionnaire
- Age 23-67 (mean 50.5)
- Mean 18.4 years as CMV driver
- 9.5 years with current employer
- Most long haul (80%) with 17% having regular routes
- Most carried general freight (55%)

Body Mass Index



Findings

- 61 drivers reported MSK problems
 - Back and leg pain most frequently reported
 - MSD index highest for lower back
 - 9.1 lower back
 - 5.3 wrist/hand
 - 5.1 shoulder
 - 4.6 legs/feet
 - 2.3 upper back

Table 1. Factors associated with WMSDs among Canadian truck drivers (n = 61)

Predictor	Estimate (SE)	Interpretation
Intercept	97.46985 (20.74)	--
Level of control	-6.40171 (2.50)	Control over safety at job increases, MSD risk decreases
Whole body vibration (WBV)	4.82393 (2.24)	Greater levels of WBV results in greater MSD complaints
Work drain	-6.12915 (2.39)	More energy after work predicts lower MSD risk
Marital status	-8.99084 (2.66)	Married or common law situations lower risk of MSD
Education	-6.58065 (2.67)	Higher educational obtainment lowers MSD risk

Conclusion

- MSDs are a significant concern for truck drivers
- Whole body vibration increased MSD problems (increased MSD index)
- Work drain (feeling tired at end of work shift) associated with increased MSD index
- Level of control over safety practices decreased MSD index, suggesting that improving workplace safety climate could reduce MSDs

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