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ENHANCING PHYSICAL ACTIVITY KNOWLEDGE EXCHANGE STRATEGIES FOR
CANADIAN LONG-HAUL TRUCK DRIVERS

Abstract

Purpose: Canadian long-haul truck drivers lead sedentary lives, but are receptive to receiving physical activity information to address health risks. This study examined how Canadian long-haul truck drivers would like to receive physical activity information in order to improve their overall health. The purpose of this study was twofold: 1) explore barriers Canadian long-haul truck drivers have to receiving and using physical activity information and 2) understand how physical activity information should be structured and delivered to these drivers to overcome these barriers.

Design/methodology/approach: Semi-structured interviews were conducted with 12 Canadian long-haul truck drivers. Drivers had on average 14.3 years of professional long-haul driving experience.

Findings: Few drivers had received any physical activity information. Drivers discussed a culture where they perceived both employers and drivers to lack awareness of the importance of physical activity and its impact on health. Drivers explained they were too busy, stressed or tired to be active or to learn about physical activity. Information received by some drivers on this topic was too general to be helpful in changing physical activity behaviours. Drivers mentioned that personalized and accessible physical activity information should be provided to them through multiple methods by their employers, as an aspect of occupational health and safety.

Practical Implications: Future physical activity information strategies should use both passive and interactive mediums to promote physical activity to Canadian long-haul truck drivers.

Originality/Value: This is the first study to assess how Canadian long-haul truck drivers would like to receive trustworthy information that can lead to healthful improvements in physical activity behaviour.

Keywords: physical activity, long-haul truck drivers, health messaging, health promotion,
knowledge dissemination

Enhancing physical activity knowledge exchange strategies for Canadian long-haul truck drivers

Regular physical activity is essential to improve both physical and mental health (Piercy et al., 2018). Research shows that many Canadian adults are physically inactive, with approximately 10% obtaining necessary amounts of moderate and vigorous activity when accelerometer results are assessed (Colley, Garriguet, Janssen, Craig, Clarke, & Tremblay, 2011). Studies show that low amounts of physical activity and sedentary working conditions can contribute to overweight and obesity, and chronic health conditions like diabetes and coronary heart disease (Choi et al., 2010).

North American long-haul truck drivers face many internal and external barriers to physical activity (Passey et al., 2014). Internal barriers, or personal barriers, can include demographic and biological variables (e.g., sex, ethnicity), physical factors (e.g., previous injuries, fatigue), psychosocial factors (e.g., perceived competence, motivation), and behavioural factors (e.g., previous levels of physical activity, smoking) (Bauman et al., 2012). External barriers, or environmental barriers, can include social and cultural factors (e.g., parental roles, support from family), occupational factors (e.g., sedentary working conditions, long working conditions), and aspects of the built environment (e.g., urban design, availability of recreation centres) (Bauman et al., 2012). Long-haul truck drivers in North America have extremely sedentary working conditions where they can find themselves driving approximately 60 hours per week (Apostolopoulos, Sonmez, Shattell, Gonzales, & Fehrenbacher, 2013). High and prolonged occupational sitting times have placed long-haul truck drivers at increased risk for overweight and obesity, chronic health conditions, and early mortality (Apostolopoulos, Sonmez, Shattell, & Belzer, 2010).

A number of qualitative studies have found that long-haul drivers have poor knowledge about physical activity (McDonough et al., 2014; Passey et al., 2014). Passey and colleagues (2014) have attributed this knowledge gap to a lack of available health information. Despite their findings that drivers have access to sources of health information, including the internet, cell phones, stores, pharmacies, magazines, and books, Passey and colleagues (2014) are uncertain what specific physical activity information drivers are actually in need of and how they would make use of that information. Although their findings have shown that drivers wanted to become motivated to change their physical activity behaviours and be accountable to a health coach, their research yielded limited findings about sustainable physical activity behaviour change information strategies in this population. In particular, Passey and colleagues (2014) have mostly attributed a lack of healthful behaviour change to drivers themselves, with little consideration of broader and systemic problems in the profession of long-haul truck driving, as other researchers have done (Caddick, Varela-Mato, Nimmo, Clemes, Yates, & King, 2016; McDonough et al., 2014). Despite this knowledge gap, long-haul truck drivers have indicated that they would be receptive to receiving physical activity information to improve their overall health (Apostolopoulos et al., 2013). Although some research has explored different resources of delivering physical activity information to long-haul truck drivers (Crizzle et al., 2018; McDonough et al., 2014; Passey et al., 2014), no Canadian research has explored how such information should be structured and delivered. Specifically, the work of Crizzle and colleagues (2018) has found there is an information gap in Canada, that pertains to both long-haul truck drivers and their employers, where few up-to-date resources exist that may be able to facilitate health and wellbeing. This is particularly important for Canadian long-haul truck drivers given they are remote workers and require credible information to be made available wherever they may be located.

Truck driver health promotion programs, based on key information needs around health behaviour change that have been implemented in the UK, have resulted in improved health (Varela et al., 2018). The Structured Health Intervention for Truckers (SHIFT) is a multi-component education program designed to help British truck drivers become active, less sedentary, and improve their diet. Feedback from British truck drivers about their unique physical activity needs helped shaped the various components of the program, including one-on-one counselling, health coaching, step challenges, and cab-workouts.

To date, Canadian long-haul truck drivers have not been fully consulted as to the barriers to receiving and using physical activity information and how such information should be structured and delivered to overcome these barriers. As such, a phenomenological study was conducted to answer the following research questions: What barriers to receiving and using this information do Canadian long-haul truck drivers identify? And how would they like to receive physical activity information in order to overcome these barriers and improve their overall health? In identifying barriers to the use of information, a phenomenological approach provides an understanding of the barriers drivers themselves identify, and gives appropriate weight to their knowledge of their own situations. A phenomenological approach can therefore be an important starting point – it can narrow down the focus of future studies. Phenomenological studies are often situated in constructivist epistemological perspectives that focus on the “lived experiences” of individuals in relation to a particular phenomenon (Connelly, 2010, p. 127). Rather than generalizing results to others, these studies are meant to dig deep into the experiences of individuals, allow them to describe their experiences from their own unique standpoints, so as to allow others to gain a rich understanding of what it’s like to live through a particular experience. The purpose of this study was twofold: 1) explore barriers Canadian long-haul truck drivers have to receiving and using physical activity information and 2) understand how

physical activity information should be structured and delivered to these drivers to overcome these barriers.

Methods

Participants, Ethics, and Recruitment

Individuals who were 18 years or older, employed as long-haul truck drivers in Canada at the time of the study, and able to speak and understand English, were eligible to take part in the study. A “long-haul truck driver” was defined as a person who was employed to drive a motor vehicle that is larger than a van for a distance that exceeds a 160km radius from their home terminal (British Columbia Employment Standards Act and Regulations, Employment Standards Regulations Part 1, 1995). Ethical approval was obtained from the **X X Ethics Committee at the University of X**. All drivers provided verbal informed consent prior to their semi-structured interviews. Verbal informed consent was audio recorded. Drivers were recruited through various English-speaking sources, including: online message posts on various provincial trucking associations; online advertisements in the trucknews.com and truckandtrailer.ca; as well as personal emails sent to trucking companies and driver recruiters. Individuals interested in the study contacted the principal researcher either by telephone (through a Toronto, Canada area code telephone number established for this study) or email. For their participation in the study, individuals who completed the interview received a \$25 Canadian gift certificate.

In total, 12 individuals participated in semi-structured interviews. The sample consisted of nine men and three women, who collectively had a mean age of 48.8 years \pm 10.1 years. Eight of the drivers were either married or in a relationship with a partner. Seven of the individuals had no children or dependents. With respect to professional long-haul truck driving experience, the mean number of years was 14.3 \pm 12.1. Drivers drove on average 4,468km \pm 978km per week. Drivers reported an average distance per load of 1,493km \pm

663km, equating to a mean of 4 ± 3 loads per week. The average amount of time spent driving on most working days was 12 hours \pm 2 hours. All drivers perceived and described themselves as “active”, where they mostly walked to attain some level of physical activity. Seven drivers self-described themselves as “healthy”, where they could move without pain and operate a motor vehicle safely. Five drivers described several health issues, including torn shoulder tendons (n=1), sleep apnea (n=2), musculoskeletal pains (n=1), leg infections (n=1), and bone cancer (n=1).

Semi-structured Interviews

A total of 12 semi-structured interviews were conducted over the telephone between 2015 and 2017. All interviews were conducted by one interviewer (XX), were audio recorded, and lasted on average 47 minutes and 38 seconds \pm 10 minutes 43 seconds in length. The interviewer followed an interview guide which included specific questions and prompts (Appendix A).

The interview guide was developed for the present study and was based on previous research that examined physical activity messaging in individuals living with spinal cord injuries (Letts, Martin Ginis, Faulkner, Colquhoun, Levac, & Gorczynski, 2011). The interview guide focused on messengers and methods used to deliver physical activity information to drivers as well as specific types of physical activity information drivers would like to receive and when that information should be disseminated. Individuals were also asked a series of demographic questions, including questions on their current physical activity behaviours and health information they had previously received. Current literature and research in the trucking industry helped shape specific questions and prompts on health messaging in this occupational population. For this study, drivers were provided with the following definition of physical activity: “...a variety of different activities where you’re moving your body and working up a sweat. This can mean going for a walk, running, working out at a gym, exercising, or playing a sport.” This broad definition of physical activity was

used to ensure that the central focus of the interview was standardized for each driver (Caspersen, Powell, & Christenson, 1985).

Data Analysis and Trustworthiness

Each interview was transcribed verbatim. Throughout the transcription process, pseudonyms were used in place of drivers' real names to protect their identities. A thematic analysis as outlined by Braun and Clarke (2006) was conducted to deductively analyze the transcripts. The main research questions on barriers to information needs and preferred construction/delivery options guided the deductive process and acted as main themes. Quotations were identified and used as initial codes that answered the research questions. Similar initial codes were combined to form subthemes where appropriate. A reflexive and constant comparative approach was used throughout the coding process as codes and their interconnectedness was checked continuously in relation to one another and the entire dataset. Once the coding process was complete and themes and sub-themes were established, a final thematic map was made to illustrate each of the named themes and subthemes and their interconnectedness.

Several strategies were taken to ensure the study was conducted in a rigorous and trustworthy manner (Lincoln & Guba, 1985). To ensure credibility, drivers were read back answers to questions that had been posed. This modified version of member checking was used throughout each of the semi-structured interviews to ensure that each drivers' views were captured accurately (Gorczyński, Faulkner, & Cohn, 2013). To ensure confirmability, the principal researcher relied on the insight of two critical friends (XX and XX). De-briefing sessions were held with these researchers to ensure major themes and subthemes were identified and not overlooked. To establish dependability, a research protocol was written prior to data collection and followed throughout the study. This method helped ensure data was collected ethically and systematically and analysed consistently. Finally, quotations

along with thick descriptions of drivers, settings, as well as their individual experiences are presented below to allow readers to transfer methods, methodologies, and results to their own settings and use them in their respective health promoting pursuits.

Results

Barriers to Receiving and Using Physical Activity Information

All drivers' responses indicated that both external and internal barriers prevented them from receiving physical activity information. External barriers revolved around the working conditions drivers found themselves in and included their companies' wilful neglect of poor health amongst drivers. Additionally, long hours and busy work schedules prevented drivers from being able to think about searching out such information. Internal barriers included the drivers' own neglect of their health needs, such as a lack of awareness of physical activity and its impact on health.

With respect to external barriers, three drivers specifically mentioned that to companies, only performance on the job mattered, nothing else. Jessy laughed at the suggestion of physical activity promotion in the workplace:

No. Hahahaha. No. No way! No...only talking about the job. Only! Only what you must to do, and log books must be ok. That's all they want to know. That's...nobody cares about you or if you're physically active...or your health. There's no time for that. Nobody cares for things like that.

Eight drivers said they did not directly receive physical activity information from their employers, while four drivers mentioned they received information from other sources, including bulletin boards and pamphlets at truck stops, trucking magazines and newsletters, self-discovered websites, and healthcare practitioners. Three of these drivers mentioned that private fitness companies had started to target them as well through email. Of the four drivers who received information from other sources, all of these drivers said that the information

received was general and pertained to the physical activity guidelines. As such, these four drivers said that the information was not helpful in changing their physical activity behaviours.

Other external based barriers to physical activity information three drivers mentioned was a lack of time. With the focus on driving and delivering loads as well as earning a living, there was no time to stop and consume health information, let alone implement it. Simply put: drivers were too busy to become informed about their own health.

I remember, a long time ago, somebody was handing out, like, little pieces of paper that said, you know, something about physical activity. But nobody even read those, you know? You're running into a truck stop, you're grabbing a hot dog to get you down the road because you're hungry, and somebody is handing you a piece of paper about physical activity. I don't have time for that. (Stephen).

One driver mentioned that hearing health information made drivers believe they needed to add another activity to their already full schedules. Wayne said that merely hearing such information was stress inducing.

One more thing they got to do in their day and they don't have enough time to do what they got to do. One more thing. Yeah. I mean, they're busy as it is already, so it's...just listening about it...just listening to it is a stressful...there's so many stressors in the job and then to have another thing like that.... (Wayne).

With respect to internal barriers, eight drivers mentioned that drivers were limited by their own ignorance toward their own health and by their own perceived busyness. Eight drivers mentioned that drivers simply did not care to worry about their own health. Kasper mentioned few drivers were interested in exercise. He said: "They just want to, you know, drive and work and go home and veg out or do whatever...But, I would, I would say that, like a lot people, they don't really care about exercise to be honest."

Two drivers also saw health information as a threat to their own competence and autonomy and that any offered information about physical activity was unwelcome. Ric said:

I guess some people would, uh, have the outlaw mentality. 'Oh don't tell me what to do! I'll live my life. My health, my problem.' Things like that. I mean, a lot of people take offense when they are trying to be given good tips.

Despite a need to preserve their autonomy regarding their own health mentioned by two drivers, nine drivers felt that companies should play a vital role in dissemination of healthful information, especially to maintain worker productivity. Wayne highlighted such a contradiction:

There should be something within the company itself. Because really, if the company wants you to...it wants you to be productive. So there should be access to information through a company website. Through, like I said, a monthly newsletters...a bulletin board in the driver's room...general health and information. There's all kinds of ways the company can do this.

Methods of Message Delivery

All drivers mentioned that information about physical activity could be transmitted through various forms of media and nine drivers mentioned specifically through workplace health and safety departments. Media included traditional print media, like trucking newspapers and newsletters that were offered at truck stops ubiquitously, and online resources, like health-related blogs or news websites. Five drivers also suggested pamphlets left at truck stops could act as prompts to stimulate behaviour change. Although, despite this suggestion, drivers uniformly and quickly pointed out that pamphlets had very limited potential to actually create sustained physical activity behaviour change. One driver also suggested that pamphlets should not be handed out, but rather left on a table and be available should drivers wish to pick them up. This suggestion only strengthened the need to consider

perceived driver competence and autonomy with respect to physical activity and health at the heart of any method used to disseminate information.

Maybe have some sort of, if there's a pamphlet, or some sort of information where they can put out in the drivers' areas... They don't have to hand them out, they can just leave them on the table. You don't mess it up. Keep it nice and organized. But, you know, pamphlets are some sort of information left there and if the driver wants it, they can take it. (Fred).

Eight drivers suggested mobile applications. Mobile applications, especially those combined with movement tracking devices, like Fitbits, were also highly recommended by a number of drivers. A stated advantage to mobile applications was that information was personalized to the user. Not only did it allow drivers to set goals, but it monitored progress, and provided information that was helpful to stimulate drivers to produce incremental behavioural changes.

iFit, or something, I don't remember exactly. And that connects to your, um, phone in some way, and keeps a track of how much physical activity you're doing, I guess. I don't really know. I mean, I didn't really look into it. But I have seen three or four different types of, like, wrist watches that the driver would, you know, or a person would wear to just keep track of what they are doing. So that's another, that's, I would say that's going to be one of the better tools out there, um, because the information is there. You can see what you have been doing or not been doing. (Kasper).

Nine drivers said that information about physical activity could also be distributed by health and safety departments within companies. Specifically, drivers mentioned that companies could take greater responsibility for promoting worker health and create websites, health blogs, and bulletin boards that emphasized being active. These drivers added

companies could send drivers regular emails, text messages, and podcasts about physical activity. Two drivers also recommended that companies hold raffles and other incentive programs to reward self-monitored physical activity. Although two drivers mentioned pamphlets attached to paystubs, this idea was not really endorsed whole heartedly.

You know, if it's [the pamphlet] attached to the pays stub, whether it would actually get pulled off and thrown straight into the dumpster...that's another question. So I have no answer. (Maria).

Although some drivers recommended company involvement, two drivers reinforced driver autonomy with respect to physical activity information: "It's not something that's sent to every driver or, you know, put into the main pick up area where they pick up the documents that they need." (Kasper).

Overall, although drivers mentioned many different options to transmit physical activity information, two drivers emphasized that there was no single way to do it and that multiple methods should be used to maximize reach of information.

Messengers

All drivers identified a number of important and credible messengers, or individuals, who could help disseminate physical activity information. Three drivers emphasized that any credible messenger would need to fully understand the trucking industry and also the working conditions that drivers endured. Failure to understand the working lives of drivers would erode the credibility of the messenger.

They kind of, probably, someone who has experience driving. Um, you know, knows what we go through on the road. Know what our time constraints are. Know, um, how we, pretty much how we feel...Someone's who's been out there or done it. And kind of knows 'cause they've might have done something different. Perhaps set up a mini exercise thing in their trucks or they might know some tricks... (Maria).

Messengers included company employers; company health and safety staff; healthcare practitioners, such as physicians, physiotherapists, fitness professionals, and dieticians; other drivers; and family members.

Two drivers mentioned that government also played an important role in the overall promotion of physical activity in the trucking industry by having the ability to alter legislation that regulates driving hours and working conditions. Disseminating physical activity information to drivers was considered one component of that overall strategy. Wayne suggested that in order for legislators to craft helpful legislation, that they should better acquaint themselves with trucks, the industry overall, and the specific and constraining working conditions of driving long-haul. He said:

...put them in a truck. It seems like a daunting task, but the only way they're going to figure out how to help these guys is to spend some time in a truck and understand what we go through. Like,...enacting legislation that makes my job safer, but they have no idea what I do in a day.

The Message

All drivers reinforced the need that any physical activity information should be soundly based in a full understanding of the working conditions of long-haul truck drivers. Without this understanding, there would be no point in promoting any physical activity engagement. Eleven drivers mentioned that they wanted individualized routine-based information that was simple to follow, including specific goals with respect to aerobic and anaerobic activity and stretching. Jessy said:

Like a routine, that you should try and stick to, or, that would help you in the long run. So essentially like a set of exercises to do that's kind of like a minimum of what it means to kind of achieve your daily kind of, physical activity goals.

Two drivers also stressed that information should take into consideration the age of drivers, their current levels of fitness, and anything they should keep in mind in order to be active safely. One driver, Ronda, mentioned that information should also be available specifically for women. She suggested:

Because our bodies are a lot different from men...like different exercise regimes that we can do. Because I can't pull no pulley. And there is something I absolutely can't do...So if they have, like, things geared to us, then it would be a little bit different but, I also know I am in the minority.

Although all drivers expressed a desire to receive information about how being active could help them improve their mental health, destress, and get better sleep, as well as improve aspects of their physical health, eleven drivers stated that they didn't want basic physical activity information. Simply put: drivers understood that physical activity was good for them and that they should do it. These drivers stressed that any information must move beyond a simple regurgitation of already well known broad benefits (e.g., physical activity is good for you). These drivers said they wanted personalized solutions, not more of the same repetitive health messaging.

Timing

Although nine drivers said that physical activity information should be promoted at any time, seven agreed that the earlier information is introduced to drivers, the better. Rob said: "...telling people to do it early, it may form into a habit or a, or just become part of what they normally do." Specifically, seven drivers said that physical activity should be introduced and discussed in driver training courses. In a sense, the earlier you introduce it, the earlier it may potentially become a habit.

From the beginning. From day one...Because, you, if you don't receive the information about what can happen to your body over time, like, I never received any

information. Hard line. You know? I was told everything was going to be fine. It wasn't only until a few years ago where people started saying, 'Well you know, being cramped up for 8 hours, is, is, it's really not good for you.' Before there was nothing about it. Um, drivers need to know from day one, right from training. They should be told as to what is going to happen to their bodies if they are not physically active. (Stephen).

In order to be effective, and to have an overall impact on not only individual behaviour change, but to have a systemic cultural change, physical activity information should be provided regularly. Two drivers suggested it be provided daily.

Discussion and Conclusion

This study examined how Canadian long-haul truck drivers identified barriers to receiving and using physical activity information, and understand how physical activity information should be structured and delivered to these drivers to overcome these barriers. Overall, the study found that most drivers did not receive physical activity information from their employers and most were too busy and too tired to search out such information. Those who received information from other sources, found the information to be too general and not helpful in changing physical activity behaviours. Drivers expressed a desire for personalized physical activity information delivered through a number of methods through their employer. Specifically, most drivers mentioned they wanted individualized routine-based information that was simple to follow, including goals with respect to aerobic and anaerobic activity and stretching. Ultimately, drivers mentioned that any physical activity information program should be delivered in a manner that fully takes into consideration their working lives and their financial and time constraints.

In the current study, drivers described a culture where both employers and drivers lacked awareness of physical activity and the health consequences of physical inactivity and

poor health. Drivers spoke of the multiple internal and external barriers that not only affected physical activity participation, but also physical activity information awareness. High job demands, long work hours, financial pressures, and the overall sedentary nature of the profession raised in this study have been noted in previous research (McDonough et al., 2014). McDonough and colleagues (2014) have pointed out that these workplace conditions have left drivers stressed, fatigued, and unable to pursue healthier lifestyles. Other qualitative work with truck drivers has found similar systemic factors pertaining to poor health (Caddick et al., 2016). Through their critical discourse analysis of long-haul truck drivers and their perspectives toward health, Caddick and colleagues (2016) showed that neoliberalism had ushered in a culture where driving and working long-hours and neglect of health in order to earn a living had become the norm in the trucking industry. Here, neoliberalism can be defined as a set of policies and programs to pursue capital enacted through privatization and deregulation (Ward & Engald, 2007). Ultimately, large scale privatization coupled with weakened trucker unions along with limited government intervention in the economy of trucking had produced the exhausted truck driver. Caddick and colleagues (2016) argue that truck drivers aren't rationally choosing to make decisions that will impact their health negatively, like not being active on purpose, rather truck drivers are merely acting in a manner that is consistent with their economic realities. The economic realities of trucking had caused drivers to prioritize their income above all else. Unfortunately, as discussed in this study, long working hours and limited pay have caused many drivers to feel stressed, pressed for time, and exhausted. Such working conditions were having a tremendous impact on the physical and mental health and overall safety of all the drivers who participated in this study. Stress and fatigue has been covered elsewhere in the trucking literature and has shown to affect drivers' ability to focus on driving and staying awake at the wheel (Lemke, Apostolopoulos, Hege, Wideman, & Sonmez, 2017; Murphy & Leach, 2013).

Stress and fatigue have also affected the manner in which Canadian long-haul truck drivers received and used physical activity information. Drivers in the current study said that both employees and employers were ignorant to physical activity. Drivers described drivers as having no interest in the subject, not seeing physical activity information as a priority, and not having any time to devote to the matter. Drivers also described employers not seeing physical activity information as a priority and offering no programs to disseminate any health information. As described by Caddick and colleagues (2016), the effects of neoliberalism on the trucking industry had also impacted the health perceptions of drivers. The main focus of each driver was earning a living and because of current working conditions, this didn't leave much time to engage in healthful behaviours, let alone learn much about them. In a sense, poor incomes lead to poor health literacy and ultimately poor health. Health literacy can be described as one's capacity to seek, understand, and act on health information (Nutbeam, 2008). There is much written on the connections between poor health literacy, poor understandings of health, poor uptake in either self-care health practices or utilizations of health services, and health outcomes in general (Adams, 2010; Wills, 2009). As noted by McDonough and colleagues (2014), trucking is a complex and competitive working environment and an industry entirely driven by profit. Such factors make any health promotion intervention very challenging to execute. The work of McDonough and colleagues (2014) shows that few drivers are aware of how to improve their health, let alone use health services to improve it. Finding strategies to improve health literacy in truckers may be one focus for future interventions.

Despite the complex working factors that limit physical activity knowledge and behaviours for long-haul truck drivers, drivers were able to point to many different methods and messengers that could be used to disseminate specific physical activity information to this occupational group. Some drivers spoke of the media, both online and print, and

information delivered through health and safety departments, using multiple online and print formats. The methods described by these drivers were mostly passive mediums that do not allow users to tailor the content for personal use (Letts et al., 2011). Researchers have pointed out previously that such passive mediums have limited impact on behaviour change because users have to know the medium exists (Lavis et al., 2003). Additionally, some information may be quite limited, often targeting individuals who are in the pre-contemplation or contemplation stages of behaviour change, and requiring an individual to seek out further information elsewhere, which may be difficult for people who have little time, and confidence and motivation to change their current behaviours (Noar, 2017; Noar & Van Stee, 2012; Prochaska, DiClemente, & Norcross, 1992; Prochaska, Redding, & Evers, 2008). Additionally, such passive mediums do little to address both the individual behavioural factors associated with behaviour change, like low levels of self-efficacy or amotivation, or environmental factors, like busy and stressful work schedules as noted in other research (Gorczynski & Patel, 2014). As a result, the information offered through such mediums would provide a rather simple message, one that would probably already be known to drivers. Although such passive mediums should not be relied on solely to offer information to drivers, they can be used to stimulate some form of behaviour change by at least offering individuals some physical activity consciousness raising. For best results, such passive mediums would ideally be coupled with interactive mediums (Letts et al., 2011), like mobile applications and movement trackers drivers described throughout the interviews. Such mediums have the potential to help individuals set their own goals and routines, keep track of progress, and offer tailored stage specific cognitive and behavioural strategies to boost motivation and self-efficacy. Such devices would also aim to preserve driver autonomy and enhance competence with respect to physical activity as mentioned in several interviews. Although previous research has shown that drivers are willing to use such applications and wear such devices to

protect their cardiovascular health (Greenfield et al., 2016), steps need to be taken to protect their privacy from employers, especially data collected about movement and location that may put their jobs at risk. Research by Gilson and colleagues (2017) has shown that such programs have the potential to improve physical activity. In their research, Gilson and colleagues (2017) used activity trackers and mobile applications to monitor the physical activity behaviours of Australian truck drivers. If drivers made “healthy choices” that involved reaching consistent daily step targets for instance, they would accumulate points which could then be traded in for cash vouchers worth up to \$200 Australian at the end of the study. Although drivers showed improvements in physical activity behaviours, such improvements were more the result of behaviour monitoring rather than the financial incentives used. Further research is needed to examine how such an intervention could be used with Canadian long-haul truck drivers for a prolonged period of time on a wide scale.

In addition to such applications and devices, credible messengers could further help drivers achieve success in becoming more active. From various health practitioners, family members, other drivers, and health and safety staff, credible messengers could offer not only further motivation, and strategies to enhance self-efficacy, but also offer behavioural accountability. Such messengers would be able to provide drivers valuable information at any time and any stage of physical activity readiness. To date, limited research of lifestyle counselling in overweight truckers has shown that such interventions may improve overall daily step count, but only for a brief period of time (Puhkala et al., 2016).

Although passive and interactive mediums coupled with accessible credible messengers could provide some personalized behavioural approaches to increase levels of physical activity in long-haul truck drivers, these approaches mainly straddle behaviour change responsibilities to the backs of the individuals and do little to address the underlying environmental workplace factors described to be causing much of the inactivity in the first

place. Drivers in this study mentioned that employers and governments have responsibilities in promoting active cultures. Previous research has shown that the promotion of physical activity guidelines and the overall support shown for physical activity by employers was a significant predictor of employee knowledge of moderate and vigorous physical activity needed to benefit health (Knox, Musson, & Adams, 2015). Such knowledge, Knox and colleagues (2015) assert, is needed to help positively motivate employees to engage in more physical activity. Employer support to create time, space, and accessible opportunities are further needed to realistically assist with actual behaviour change. At no time, should employers punish workers who are not able to become active.

Some drivers also called for legislation changes to address the inactive nature of the industry and to promote policies where drivers have access to information and services that help them stay active and healthy and deal with the stressors of the job. Given the neoliberal policies that govern the industry as described by Caddick and colleagues (2016), financial incentives or penalties could be enacted to help employers help their workers become active. For example, tax incentives for the healthy promotion of physical activity in the workplace or tax penalties for neglecting physical activity altogether, the federal government could devise such strategies to help companies work to improve the physical activity culture of their workplaces and also address certain factors related to load delivery, stress, and hours spent on the road. Alternatively, companies could take advantage of already existing Canada Job Grants offered through the federal government to help cover training costs for new or existing staff (Government of Canada, 2017a). Such training grants could cover the salaries for specific health promotion roles established by a company. Lastly, the Government of Canada, in full consultation with drivers and companies, could re-examine *Daily Driving and On-Duty Time, Mandatory Off-duty Time, Daily Off Time, and Deferral of Daily Off-duty Time* within the Commercial Vehicle Drivers Hours of Service Regulations (SOR/2005-313)

(Government of Canada, 2017b) to see if any changes could realistically be made to working and non-working hours that would be beneficial and healthful to drivers. To date, such policy wide initiatives have not been attempted, researched, or costed in Canada, most likely because they are extremely difficult to enact and monitor. Only a small handful of individual level behavioural interventions have been attempted and shown limited findings as noted above.

In conclusion, future physical activity information programs need to be delivered to Canadian long-haul truck drivers in a manner that has support from employers, perhaps rooted in health and safety programming. Personalized physical activity information, that takes into consideration the working conditions and financial constraints of Canadian long-haul drivers, delivered through passive and interactive mediums encouraged through accessible credible messengers could help bring about changes in physical activity. Overall, much work remains to help Canadian long-haul truck drivers become more physically active and healthy, including exploring the perspectives of employers.

Limitations

A number of limitations should be pointed out despite our efforts to conduct the study in a rigorous manner. First, more men participated in the study than women. Although more men than women work long-haul in Canada (Trucking HR Canada, 2017), future research needs to consider if there may be different ways to construct physical activity information programs for different genders. Second, this study recruited individuals who speak English. Although this inclusion criteria was used to help conduct the study as it was done over the telephone with no translation resources available, future research needs to consider drivers from Quebec, where French is the primary language. Third, information on race and ethnicity was not captured. In the future, this information may have implications for different credible methods and messengers used to transmit health information. Lastly, all drivers in this study

drove south of Latitude 60°N. Long-haul truck drivers who operate north of Latitude 60°N have longer daily driving and on-duty schedules (Government of Canada, 2017b), and their health information needs should be considered in any future research.

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Appendix A

Interview guide

When we're talking about physical activity, we mean a variety of different activities where you're moving your body and working up a sweat. This can mean going for a walk, running, working out at a gym, exercising, or playing a sport.

1. I'm going to ask you for some of your demographic information, including your age, gender, marital status, number of dependents, and years of professional driving experience.
2. Tell me a little bit about your working life. How many hours do you drive each week? How many loads do you pick up/drop off? What kind of distances do you drive in a normal week?
3. How would you describe your overall health? How do you define health?
4. What do you do to maintain your health?
5. Is there anything you'd like to do to improve your health? Diet? Sleep? Hours of sleep?
6. How physically active have you been in the last week? Is this a typical week?
7. What gets in the way of being active? Do you encounter any other barriers to being active?
8. Is there anything about your job that you find stressful? What impact does work stress have on your health? On physical activity?
9. Does a lack of physical activity impact your ability to drive?
10. What helps you get active?
11. What physical activity information have you received from your company or healthcare professional?
 - a. What did this information consist of?

(Prompts: FITT: Frequency, intensity, time, type; exercises; sports)

- b. What information did you receive about community resources or places where an individual may be active?

(Prompts: community resources like gyms, community centres. Any contact information?)

- c. How was this information provided?

(Prompts: Pamphlets, DVDs, newsletters, word-of-mouth)

- d. When during your treatment was this information provided?

(Prompts: Initial intake, during treatment, as part of other treatment services)

- e. How useful was this information? Was it not useful?

(Prompts: Was the information perceived to be helpful?)

12. How should information about physical activity be delivered to long-haul truck drivers?

- a. Potential suggestions: Pamphlets, online, books, DVDs, emails, mail, other ways?
- b. What would you say are the best ways to provide information about physical activity?
- c. What would you say are the worst ways to provide information about physical activity?

13. Who should deliver information about physical activity to long-haul truck drivers?

- a. Possible suggestions: Physicians, nurses, recreational therapists, dieticians, friends, family, other drivers, other people?

- b. Who would you say are the best people to provide information about physical activity?
 - c. Who would you say are the worst people to provide information about physical activity?
14. When should drivers receive information about physical activity?
 15. What physical activity information do drivers need to become and stay active?
 16. What barriers do you think prevents drivers from accessing information about physical activity?
 17. Are there reasons why you think drivers might not want to receive information about physical activity?
 18. What supports do you think drivers need in order to access information about physical activity?
 19. Is there anything your employer could do to help you be more active? Be more health overall?
 20. What supports or training do you or any healthcare professional need to be able to provide physical activity information, including information about and community resources that provide physical activity opportunities?
 21. Do you have any questions or any comments to add?