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Mixed-method analysis of truck driver health knowledge using an online forum

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ABSTRACT

Truck driving in North America is a high-risk occupation, with some of the highest rates of illness and injuries in comparison to other occupations (Sieber et al., 2014). This study aims to understand the knowledge that truck drivers have of health. Posts from The Truckers Report's Health Forum, an online forum for truck drivers, were coded into 1 of 11 determined codes to represent different aspects of health (The Truckers Report, 2016). Proxy measures such as *Total Posts*, *views:post*, *replies:post*, and *views:reply* were created to assess forum posts discussions. A total of 1760 forum posts were analyzed through qualitative coding and quantitative measures including rankings. Lastly, to determine how drivers' knowledge of the complex system affecting their health, 150 randomized forum posts were coded for Rasmussen's (1997) systems levels related to health risk.

Overall, use of the Health Forum has decreased over time while other forums on the Truckers Report did not. This may represent a decrease in value or engagement towards health from truckers. Analysis suggested that truck drivers had awareness of many of the codes, with the exception of safety, but very little knowledge within the themes. Furthermore, truck drivers indicated very little knowledge on how societal systems affect the health of the individual, and instead placed all the responsibility and outcomes related to health on the individual.

When working to improve health in truck drivers, companies and health care professionals should be aware of a knowledge gap within drivers regarding their understanding of health and disease prevention.

1. Introduction

Trucking is a high-risk occupation with one of the highest rates of injuries and illnesses of all occupations in the United States (Bureau of Labor Statistics, 2015; Sieber et al., 2014). The National Institute for Occupational Safety and Health (NIOSH) determined the most common health risk factors experienced by truck drivers were hypertension, high cholesterol, obesity, smoking, physical inactivity, and sleep deprivation (Sieber et al., 2014). Furthermore, obesity has been associated with heart disease, diabetes, hypertension, high cholesterol and sleep apnea, and smoking has been associated with lung cancer, heart disease and other chronic diseases, complicating the risk factors (Christian et al., 2005; Thompson et al., 1999). Also, according to NIOSH, 88% of Long Haul Truck Drivers (LHTDs) have at least have one of the three risk factors of hypertension, obesity or smoking while 9% have all three risk

factors (Sieber et al., 2014). Other documented illnesses and injuries found to be elevated in LHTDs were musculoskeletal disorders and anxiety (Apostolopoulos et al., 2010). While many of these risk factors cited above are American, similar studies have been conducted in other countries including Canada (Angeles et al., 2014; Bigelow et al., 2012; Wawzonek, 2016), Japan (Koda et al., 2000), Australia (Williamson et al., 2009) and various European countries for example Denmark (Jensen and Dahl, 2009), suggesting similar health risks in truck drivers working in many developed nations.

These studies show that truck drivers are at risk for many injuries and diseases. What makes this finding more alarming is the large population of truck drivers affected. Currently, there are approximately 1.8 million truck drivers employed in the United States (Bureau of Labor Statistics, 2017) and an additional 300,000 truck drivers in Canada (Gill and Macdonald, 2013). The most extensive survey of LHTD

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occurred in 2011 and if that study is indicative of demographic characteristics it suggests that the truck driving industry is mainly made up of white males in their later working years. Additionally, over 50% of respondents had high school education or less (Sieber et al., 2014).

While the research mentioned above can be used to further understand the occupational risks of truck driving, little research has been done to understand truck drivers' knowledge of their health. The purpose of this study is to highlight what level of knowledge truck drivers have of health and of the barriers and facilators to improving their health. This study was completed through content analysis to determine themes of the posts, and indicate the truck drivers' knowledge of the complex systems that affect their health. This system modelling approach is based on Newman and Goode's (2015) modification of Rasmussen's systems risk framework (Rasmussen, 1997). With these goals in mind, mixed method qualitative-quantitative analysis was performed using the nearly 1800 posts on the Trucker's Report Driver Health Forum.

1.1. Acknowledgements

1.2. Literature review

1.2.1. Rasmussen's risk Management Framework

Rasmussen's Risk Management Framework (1997) is based on the concept that risk is based on a dynamic and multilevel system and that safety is determined through levels such as government, regulators, companies, management, staff and workers, not merely on the "human error" often blamed for the accident. In the case of trucker health, this suggests that the many health effects of trucking, including obesity, musculoskeletal disorders and sleep disturbances, are not merely due to the actions or beliefs of the truck driver, but also due to the risks that are controlled at higher levels, as mentioned earlier such as regulators and management. Rasmussen's Risk Management Framework has been used as a framework for safety risk studies in many areas since its formation in 1997, including food services (Cassano-Piche et al., 2009), road accidents (Newman and Goode, 2015) and bacteria outbreaks (Vincente and Christoffersen, 2006). Newman and Goode's (2015) systems analysis of heavy vehicle crashes modified Rasmussen's six system levels to reflect the context of the road freight transportation system. Rasmussen's Risk Management Framework is a two-part framework, the first being a hierarchy of the levels of a dynamic system, the second being a dynamic model showing how all of the forces interact with each other. This paper will focus on the first framework, a hierarchy, and identify how the knowledge of truck drivers is indicative of the hierarchy structure of risk in the transportation industry.

2. Methods

2.1. Data source

The data source used was the Driver Health Forum from the Truckers Report website. All content on the website is open to the public. Individuals can sign up and become a member at no cost. It connects professional truck drivers and allows them to share information with each other through forum posts. People can also follow Truckers Report on other social media outlets like Facebook and Twitter. There are job postings, practice tests, and other resources available to both members and guests. The Truckers Report aims to provide prospective drivers with an honest view of the profession, new drivers with advice and support from experienced drivers, and truckers with an independent community to share information and resources (The Truckers Report, 2016). The Truckers Report Forum contains many forum boards, one being the Driver Health Forum. In total, the

Truckers Report Forums have led to over 250,000 posts/discussions and over 5 million messages from 185,000 members (The Truckers Report, 2016). Posts can be made only by members of the Truckers Report. While administrators and staff have the ability to moderate the forums, they have stated that this is done very rarely due to the large number of posts and the lack of staffing. Still, they may remove a post if it is considered advertising or breaks site rules (The Truckers Report, 2017). This analysis reviewed posts in the Driver Health Forum, which can be found under the headings 'General…Anything & Everything' then 'Miscellaneous Trucking Topics'. The Truckers Report Health Forum contained 1760 posts termed 'Discussions" by the Truckers Report, as of October 2016. This count only included posts, a total of approximately twenty thousand additional messages are in the forum in the form of replies to the initial posts. The Driver Health Forum was used for this research in order to meet the needs of the research as its focus is related to drivers' perceptions of health.

2.2. Data analysis

In this study, two phases of data analysis occurred.

Phase 1: We applied content analysis to the content of 1760 forum posts on the Driver Health Forum of the Truckers Report website. Content analysis has often been used to examine online health information (McCaw et al., 2014) and is a reliable method of organizing and categorizing text to develop an understanding of particular phenomena (Krippendorff, 2012), in this case truckers' knowledge about their health. Forum posts on the Truckers Report Health Forum were used from the forum's inception in 2006 until the time of data collection in 2016. All forum posts were categorized using qualitative coding by four researchers. The category of "Other" was used to remove posts that lacked relevance, such as spam, or posts unrelated to health. As a group, researchers briefly reviewed the posts on the Truckers Report in order to determine common themes among the forum posts. These themes were then labelled as the ten codes (see Table 1) in order to organize the forum posts during the research process. This follows previous research strategies when using online forums where categories of forum posts determined through thematic analysis allowed researchers to summarize the thematic content of the posts (Bondy and Bercovitz, 2011; Burri et al., 2006; Vaughan Sarrazin et al., 2014). As the researchers were responsible to correctly code each forum post, measures were taken to ensure inter-researcher reliability. Researchers first independently coded one page of posts, approximately 50 posts. Then, the researchers compared coding results. Forum posts with discordant codes were discussed until the researchers were in agreement. This increased inter-researcher reliability as code description was determined in more detail as discussions continued, leading to more coding equivalency among the researchers. Each researcher was then responsible to independently code 20 pages of posts (approximately 450 posts). Microsoft Excel was used to record the title, date the post was added, number of replies, number of views, and the code for each forum post. Additionally, any additional notes and quotes were

Table 1
Code definitions.

Code	Qualifiers
Acute	Virus, Injury (not work related)
Chronic	Diabetes, cancer
DOT	Insurance, medical certificate
Exercise	Exercise, types of exercise and travel
Food	Nutrition, weight loss, cooking
Mental	Depression, stress, etc
MSK	Back pain, strain injury
OHS	Fumes, vibration, etc
Sleeping	Sleeping on truck, shift work
Smoking	Smoking, e-cigarettes
Other	Spam, unrelated postings