A QUANTITATIVE SURVEY EXPLORING THE TYPES OF INTERNET ACCESSIBLE MENTAL HEALTH RESOURCES RECOGNIZED BY U.S. LONG-HAUL TRUCK DRIVERS

by

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Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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ABSTRACT

Long-haul truck drivers (LHTDs) are an important part of the supply chain in the United States. Their work schedules include holidays, weekends, night shifts, and can last anywhere from 60–70 hours for a single 6- to 8-day run to meet the demands of society. Poor work–life balance, high job demands, and poor sleep quality that can be experienced on the job as an LHTD can negatively affect not only their physical health but also their mental health. Depression, anxiety, and stress are three psychological effects that can develop from an unhealthy lifestyle and inability to maintain any healthcare appointments, despite federal regulations that mandate LHTDs to pass a medical exam to work. LHTDs would benefit from mental health care that is easily accessible at any time on any day because of their irregular work schedules. In this study, seven participants answered the DASS-21 to measure levels of depression, anxiety, and stress in U.S. single-team LHTDs. A short survey was also used to examine the internet accessible mental health resources with which LHTDs are familiar with and whether there was a positive relationship between stressors (poor work–life balance, poor sleep quality, and high job demands) and internet accessible mental health resource familiarity. Out of the 16 participants, only seven sets of responses were appropriate for analysis. The DASS-21 results demonstrated the seven participants reported relatively low levels of depression, anxiety, and stress. Due to a design flaw in the survey, it was impossible to assess the relationship of stressors and internet accessible mental health resource familiarity. Instead, a post hoc analysis showed a relationship between anxiety and resource familiarity. The results indicated anxiety was unrelated to familiarity.

Keywords: long-haul, truck driver, mental health, social media, virtual

Dedication

I would like to dedicate this to my mother. Without your support I would not have been able to begin this journey.

To my father, for always believing that I could make big things happen. I wish you were here to see this big thing.

Most importantly, for my daughter to know that all this time mommy spent not being able to play or go to certain events was not lost time. Now, we both can do things we never dreamed of together, every day.

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Table of Contents

ABSTRACT....3

Dedication.... i

Acknowledgments.... ii

Table of Contents.... iii

List of Tables.... vii

List of Figures.... viii

List of Abbreviations.... ix

CHAPTER ONE: INTRODUCTION....10

- Overview.... 10
- Background.... 11
  - Historical Context.... 14
  - Social Context.... 17
  - Theoretical Context.... 23
- Problem Statement.... 24
- Purpose Statement.... 25
- Significance of the Study.... 25
- Research Questions.... 26
- Definitions.... 26
- Summary.... 27

CHAPTER TWO: LITERATURE REVIEW....28

- Overview.... 28
- Theoretical Framework.... 30

Related Literature 32

Laws Governing Industry Safety 33

LHTDs and the Driving Environment 34

Compensation Practices and Stress 43

Physical Effects Linked to Long-Haul Drivers 45

Psychological Effects 48

Substance Use/Abuse 51

Work–Life Balance 52

Mental Health Supports 53

Summary 61

CHAPTER THREE: METHODS 65

Overview 65

Design 65

Research Questions 66

Hypothesis 66

Participants and Setting 67

Instrumentation 68

Survey 68

DASS-21 69

Procedures 70

Data Analysis 70

Summary 72

CHAPTER FOUR: RESULTS 73

Overview 73

Descriptive Statistics 73

Results 79

Data Screening 79

Research Question 1 79

Research Question 2 81

Research Question 3 83

Additional Exploratory Analyses 87

Summary 88

CHAPTER FIVE: CONCLUSIONS 90

Overview 90

Discussion 90

Research Question 1 90

Research Question 2 91

Research Question 3 93

Implications 94

Limitations 94

Recommendations for Future Research 95

Summary 97

REFERENCES 98

APPENDIX A: SURVEY QUESTIONS 117

APPENDIX B: DEPRESSION, ANXIETY AND STRESS SCALE-21 ITEM (DASS-21) 119

APPENDIX C: SOCIAL MEDIA RECRUITMENT 123

APPENDIX D: HR DEPARTMENT RECRUITMENT EMAIL 124

APPENDIX E: SURVEY CONSENT FORM 126

List of Tables

Table 1 Descriptive Statistics..... 74

Table 2 Mahalanobis Distances 79

Table 3 Correlations, Means, Standard Deviations, and Reliability..... 80

Table 4 Regression Results Predicting Familiarity From DASS-21 Subscales..... 85

Table 5 Regression Results From Predicting Familiarity From DASS-21 Anxiety and Depression..... 86

Table 6 Regression Results Predicting Familiarity From Anxiety 86

Table 7 Regression Results Predicting Familiarity From DASS-21 Overall 87

Table 8 Independent Samples t-Tests 88

List of Figures

Figure 1 Model of Relationships Among Stressors (Depression, Anxiety, Stress) and Familiarity With Internet Accessible Mental Health Resources 66

Figure 2 Graph of G* Power Calculations 67

Figure 3 Biological Sex 76

Figure 4 Time Working Long Haul 76

Figure 5 Days Working Away From Home 77

Figure 6 Belong to a Union 77

Figure 7 Work Status 78

Figure 8 Sources of Stress and Support 78

Figure 9 Histogram of Depression Scores 80

Figure 10 Histogram of Anxiety Scores 81

Figure 11 Histogram of Stress Scores 81

Figure 12 Familiarity With Online Mental Health Resources 82

Figure 13 Familiarity With Mental Health Apps 82

Figure 14 Familiarity With Mental Health Social Media 83

Figure 15 Predicted vs. Residual Graph 84

List of Abbreviations

CBT- cognitive behavioral therapy

CDL- commercial driver's license

FMCSA- Federal Motor Carrier Safety Administration

ELD- electronic logging device

DOT- United States Department of Transportation

LHTD- long-haul truck drivers

MEP- medical expert panel

PTSD- posttraumatic stress disorder

EAP- Employee Assistance Programs

JD-R- job demands-resources

DASS-21- Depression, Anxiety and Stress Scale-21

PHQ-9- Patient Health Questionnaire -9

SHIFT- Structured Health Intervention for Truckers

RGV- Rio Grande Valley

QR code- quick response code

HR- Human Resources

CHAPTER ONE: INTRODUCTION

Overview

According to the U.S. Bureau of Labor Statistics (2023), long-haul truck drivers (LHTDs) transport goods that can exceed 26,000 pounds (including vehicle, passengers, and cargo) from one location to another that can span over several states, making them an important part of the supply chain. Some drivers have routes that can take them into Canada or Mexico. LHTDs work round the clock on weekends, days, nights, and even holidays to make their important deliveries on time for consumers in every part of the country. These deliveries can require a 7- or 8-day run, meaning one job can take them a week or more to complete and add up to 60–70 hours of work (U.S. Bureau of Labor Statistics, 2023). In the United States, LHTDs face unhealthy working conditions, poor work–life balance, and health and safety risks that are causing many of them to leave the profession (Hege, Lemke, Apostolopoulos, & Sönmez, 2019). In addition, the working conditions for this population make attending regular healthcare appointments challenging (Batson et al., 2022). Their ability to work depends on their ability to obtain a commercial driver license (CDL) based on a completed medical examination by a licensed examiner (Thiese et al., 2021), though the results of this examination are affected by the honesty of the driver regarding their medical history (Guzik, 2013). The purpose of this study was to identify the types of internet accessible mental health resources used by LHTDs and whether LHTDs with high stressors are more familiar with these resources. This chapter provides insight into the background of LHTDs along with their historical context, social context, and theoretical context, as well as the problem statement, purpose statement, significance of the study, research questions, and definitions referenced throughout the study.

Background

The description of LHTDs are freight truck drivers who either work for a company or are lease operators or independent owner-operators who leave their homes for days or weeks at a time and travel long distances to complete their job demands (Crizzle, Toxopeus, & Malkin, 2020). Their perception of their work–life balance is influenced by their work stress, poor sleep, long work hours, irregular schedules that require travel away from home for long periods of time, and high delivery demands (Hege, Lemke, Apostolopoulos, et al., 2019), all of which can affect their mental health (Crizzle, McLean, & Malkin, 2020; Makuto et al., 2023; van Vreden et al., 2022; Xia et al., 2021) and their ability to seek and maintain consistent medical treatment (Batson et al., 2022). In 2019, it was reported that over 700,000 people worked as LHTDs and 88% were classified as self-employed (Cheeseman Day & Hait, 2019) Any trucker, whether working for an employer or self-employed, who works full time year-round can earn about $48,920 yearly (Cheeseman Day & Hait, 2019). Trucking business owners are 75% White owned with women representing about 10% of owners (Cheeseman Day & Hait, 2019). A high turnover rate of 94% from 1995 through 2018 was reported for this industry (Miller et al., 2021).

LHTDs have been reported to have higher odds of experiencing severe psychological distress due to their irregular work schedules and high job demands (van Vreden et al., 2022). Work stress is indirectly influenced by the current laws and regulations that dictate how long truck drivers may drive in a day and how long they must take to rest (Washburn et al., 2021). Work and rest hours have been enforced by the implementation of electronic logging devices (ELDs) that record these time periods (Washburn et al., 2021). Poor sleep quality and fatigue are contributors to the large number of truck crashes and fatalities experienced on the job (Mabry et al., 2022). In one study, truck drivers reported being on the road on average for fewer than 20

days (about 3 weeks) at a time and working no more than 11 hours a day (Hege, Lemke, Apostolopoulos, et al., 2019), in order to keep up with the high delivery demands that are part of this occupation. High delivery demands have contributed to the use of large amounts of caffeine, tobacco, or psychostimulants by LHTDs to assist them in making their deliveries on time (Hege, Lemke, Apostolopoulos, & Sönmez, 2019).

Long work hours may also be influenced by the fact that the compensation given to LHTDs is contracted by the number of miles driven or the number of deliveries made (Kudo & Belzer, 2019). The decision to have truck drivers work as a team (usually two drivers) or by themselves is calculated by the company based on which is more financially beneficial for the company and not the driver (Girotto et al., 2019). After the implementation of ELDs by the government to record a driver's rest and work hours to promote road safety, some LHTDs expressed a decrease in their ability to control their own schedules, leading some to engage in unsafe driving behaviors to meet time demands (Washburn et al., 2021). Some LHTDs appreciate driving as a part of a team as they can return home sooner and reduce feelings of loneliness (Aryal et al., 2023).

The irregular work schedules LHTDs encounter are influenced by the driving environment, such as disruptions in the transport system (Caspersen et al., 2023), weather conditions (Sun & Dong, 2022), driver personality (Sârbescu & Maricuţoiu, 2019), and shift work schedules that allow for the continuous supply of goods and services (Ganesan et al., 2022). These irregular work schedules can cause a truck driver to be away from their home, family, and friends for long periods of time, which can increase negative thought patterns (Pritchard et al., 2023). Another study cited irregular work schedules as being associated with

depression among male and female LHTDs from the United States and Canada (Makuto et al., 2023).

Many lifestyle and environmental factors affect the health of truck drivers and their ability to access health care (Batson et al., 2022). The three most common health conditions for LHTDs are obesity, hypertension, and diabetes due to the sedentary lifestyle caused by long hours on the road that limits their ability to make healthy choices in food or exercise (Thiese et al., 2021). Those with mental health problems are often not prescribed medications due to their chaotic work schedules, not having health insurance, and employers not offering medical leave (Crizzle, McLean, & Malkin, 2020). These issues have led to the industry experiencing a high turnover rate (LeMay & Keller, 2019). In the past, medical examiners who provided driver medical certification examinations were not required to be trained in the Federal Motor Carrier Safety Administration's (FMCSA) physical qualification standards and their application (Guzik, 2013). Medical examiners were not required to receive training regarding the physical and cognitive demands of truck driving, but the proposed changes are aiming to address this deficit (Guzik, 2013). Currently, the FMCSA (2024) website contains an informational webinar that provides information on the *Medical Examiner's Handbook 2024 Edition*. Information about medical history, physical measurements, and a physical exam are needed for the CDL certification, which can be marked as unrestricted certification (active for up to 2 years), shortened certification (active for anywhere from 3 to 12 months), or does not meet the medical requirements (LHTD is not approved for certification) depending on the information provided (Thiese et al., 2021). There are three conditions that may result in the LHTD's certification being identified as a temporary disqualification or a failed qualification: "diabetes mellitus controlled with insulin, experiencing a seizure or epilepsy, and taking habit forming/narcotic drugs" or

"having a condition of neurological abnormalities and vascular abnormalities" (Thiese et al., 2021, p. 144). There are five disqualifying conditions identified by the FMCSA; however, it has been found that LHTDs with any of these conditions can occasionally still be qualified by an examiner (Thiese et al., 2021). Drivers are required to have this certificate with them to work (Guzik, 2013).

Historical Context

Truck drivers are a part of the U.S. logistics system through providing goods and services to the nation though they have been marginalized and underserved, leading to high turnover rates (LeMay & Keller, 2019). In the 1930s, the government first created a bill to regulate operations in areas such as rates, routes, hours of service, and other aspects (LeMay & Keller, 2019). That bill was based on one created for railroad operations and led to the development of two classes within the trucking industry: urban drivers who were unionized and worked for industrial and commercial agencies and independent agricultural drivers from rural areas who worked for small carriers (LeMay & Keller, 2019). Those who were unionized benefited from laws that allowed them to collaborate and champion for better pay and working conditions while ignoring the needs of the other class (LeMay & Keller, 2019). Unionization benefits include access to employee benefits such as health insurance as some companies do not offer medical leave (Crizzle, McLean, & Malkin, 2020).

Compensation is inconsistent as most LHTDs are typically paid for how many miles they have driven or for how many deliveries and pickups they have completed; less than half of truck drivers are offered a flat rate for their non-driving duties such as loading and unloading goods (Kudo & Belzer, 2019). This type of piecework pay, which is common for LHTDs and has been used even longer in the road transport industry, creates an environment in which the most

productive workers have a higher earning ability (Belzer & Sedo, 2018). In one study, Brazilian truck drivers stated they would experience higher rates of sleepiness when driving if their level of productivity affected their pay rate (Girotto et al., 2019). Because truck drivers can be paid weekly, biweekly, or monthly, stress regarding the need to make enough money can be felt at each pay frequency (Conroy et al., 2022).

One study cited a survey that showed three out of 10 adults in 2019 experienced difficulty meeting their financial needs and another survey from 2021 showed 11% of adults living in the United States experienced food insecurity (Ryu & Fan, 2023). This same study reported people who experience high financial worries also experience higher psychological distress (Ryu & Fan, 2023). Makuto et al. (2023) noted 60% of the U.S. and Canadian LHTDs who participated in their study exhibited a link between higher frequency of financial strain with high stress levels and symptoms of depression. Financial strain was a more significant factor for developing depression among the male LHTDs compared to the female LHTDs possibly due to the fact that female LHTDs may have a spouse to assist with household income (Makuto et al., 2023).

Work Schedule

In the United States, laws and regulations have been enacted to develop safety and industry growth for LHTDs that require the following: 10 hours of off duty, 3 to 4-hour breaks before resuming driving duties, and all driving duties must be completed in a 14-hour window per day (Washburn et al., 2021). To record that these requirements are being met, ELDs were federally mandated to be installed to track on and off duty times (Washburn et al., 2021). This caused some truck drivers to report experiencing increased pressure to follow the ELD clock as it took away their autonomy to determine when to take their breaks, which would cause them to

increase their engagement in unsafe behaviors, such as not eating or resting, driving while sick, or driving faster than the speed limit to abide by the ELD clock (Washburn et al., 2021). Compared to the year 2020, in 2021 there were increases in the reported rates of fatalities involving large truck vehicles in urban areas at nighttime and on weekends, as well as an increase in distraction-affected crashes and drowsy drivers (Stewart, 2023).

High Turnover

The trucking industry has been reported to have a high turnover rate of truck drivers, as one study showed the rate was 94% from 1995 through 2018 (Miller et al., 2021). According to the U.S. Bureau of Labor Statistics (2023), the average growth rate for this type of occupation, heavy and tractor-trailer truck driver, is projected to be 4% from 2022 to 2032, which is 1% higher than the average growth rate for all occupations. There will be an estimated 241,200 yearly openings for this position over the next decade from 2022–2032 (U.S. Bureau of Labor Statistics, 2023). A number of these openings will be needed to replenish the losses from turnover in the industry (U.S. Bureau of Labor Statistics, 2023). The typical entry-level education requirement is a high school diploma and attending a professional truck driving school to earn an average of $24 per hour (U.S. Bureau of Labor Statistics, 2023). The various job stressors (Shin & Jeong, 2021) and unhealthy lifestyles affecting drivers' physical health (van Vreden et al., 2022) can also affect their mental health by increasing their risk of developing depression (Crizzle, McLean, & Malkin, 2020; Makuto et al., 2023) and can cause any preexisting issues to worsen (Aryal et al., 2023). The average LHTD is over 40 years old and typically has transitioned into the industry mid-career or later in life (Aryal et al., 2023). These factors may add to the high turnover rate as drivers may be entering the industry with preexisting conditions in search of a physically less demanding job (Aryal et al., 2023).

The shortage of truck drivers in the transportation industry is not new and has been an issue for almost half a century due to economic conditions, the political landscape, work culture, and current industry developments (LeMay & Keller, 2019). There has been consideration of lowering the age limit to 18 years old to meet the demand for truck drivers by recruiting as soon as people have graduated high school (LeMay & Keller, 2019). In response to the shortage of truck drivers during the COVID-19 pandemic, the government approved a program to recruit military veterans into the trucking industry (Dunn et al., 2023). However, the health risks associated with the unhealthy lifestyle of being a truck driver can shorten a veteran's life expectancy by almost 10 years (Dunn et al., 2023). The life expectancy for a unionized male truck driver in the year 2000 was 61.3 years compared to 73.2 years for the general U.S. male population at the time (Dunn et al., 2023). There have also been efforts to increase the number of female truck drivers as, according to a recent article, women only made up 10% of the total truck driver population in 2020 (Ricks, 2020).

Social Context

The relationship between society and LHTDs appears to be more safety-centered, even though high-quality meaningful connections have been shown to positively influence health and well-being (Block et al., 2022). LHTDs can be on the road 7 days a week, 24 hours a day and travel over large distances to provide a necessary service. Truck drivers value their relationships with family and friends, and even consider their customers to be an important part of the meaningful connections they need to complete their demanding job (Pritchard et al., 2023). Having a positive outlook on their ability to complete their job and interact with their employers, customers, and government regulations helps with preventing burnout and decreasing turnover rates within this population (Thomas et al., 2020).

Long-Haul Truckers and Mental Health

The United States Department of Transportation's (DOT) FMCSA formulated a report using a medical expert panel (MEP) to review and update the standards and guidelines medical examiners use to deem drivers as "fit for duty" (Metzner et al., 2009, p. 1). A 2009 MEP report presented to the FMCSA indicated there was no conclusive evidence to demonstrate an increased crash risk for an individual who drives a commercial motor vehicle with a psychotic, mood, anxiety, or personality disorder; however, the panel could not rule out the possibility (Metzner et al., 2009, p. 21). The MEP did present evidence to support claims that drivers who use benzodiazepines are more likely to experience an increased crash risk (Metzner et al., 2009, p. 21). Drivers who have been diagnosed with anxiety and have been prescribed benzodiazepine anxiolytics have an increased risk of crashes that could most likely occur during their first week of use (Metzner et al., 2009, p. 21). The MEP also noted evidence to support an association of increased crash risk for those drivers with certain personality disorder traits, including aggression, hostility, and impulsivity (Metzner et al., 2009, p. 21).

Female Truckers

Industry advocacy groups such as Women in Trucking and REAL Women in Trucking were developed to assist in raising the number of female truck drivers (Scott & Davis-Sramek, 2023). Federal legislation has also been enacted as a means of increasing the presence of women in the industry, such as two bills that required the establishment of the Women of Trucking Advisory Board to track and discuss various programs designed to target aspects of retaining and enrolling women into the industry to maintain global trade and address the driver shortage the industry has been facing (Scott & Davis-Sramek, 2023). Truck driving offers better pay for women with household and family responsibilities compared to other male-dominated careers

(Scott & Davis-Sramek, 2023). Female truck drivers in the United States often select this type of job based on the pay it provides, but they also prioritize work–life balance and personal time, which can be a challenge to maintain in this industry (Scott & Davis-Sramek, 2023).

Though there are different types of carriers, or truck driving opportunities, those that pay more, such as private and less-than-truckload carriers, offer a more structured schedule and a safer, more friendly environment yet are harder to enter into as they attract a larger applicant pool and require more years of experience in the field (Scott & Davis-Sramek, 2023). According to Bernard et al. (2000), 60% of female truck drivers drove with a male partner to increase the safety measures whereas 30% were solo drivers. An LHTD's experience and track record for driving are looked at for higher paying private employment opportunities (Scott & Davis-Sramek, 2023) and a female who is driving as a team may possibly have their logged driving time affected. Out of the 77 female truck drivers who participated, most said they reached out to family and friends for social support, with only 3% at the time reporting having used a national hotline provided by their company to assist in emergency situations (Bernard et al., 2000). Bernard et al. also noted the majority of female LHTDs cited trucking as being an occupation in which the pay is equal between men and women.

General Health Resources for the Trucking Industry

Due to the chaotic nature of the trucking industry as a result of the irregular work schedules (Caspersen et al., 2023), prolonged sedentary periods of work, and high rates of travel, maintaining consistent health appointments can be difficult for LHTDs (Batson et al., 2022). The ability of LHTDs to access health resources can be influenced by their union status (LeMay & Keller, 2019), financial stability (Conroy et al., 2022), the presence of employee benefits (Crizzle, McLean, & Malkin, 2020), and their demanding work schedule (Talebi et al., 2022),

which can add to the high turnover rate for this industry (Miller et al., 2021). Providing multiple points of access to personalized and direct information about improving general well-being would be beneficial for LHTDs (Gorczynski et al., 2020). This could include online or virtual mental health resources such as Better Help, Espyr, or teledoc. About 70% of LHTDs use more than one type of device to access the internet for their personal gain, such as checking the weather or accessing news and information, checking social media, and keeping in contact with family and friends via email (Heaton et al., 2017). LHTDs also use these devices for work needs, such as accessing maps or finding directions, communicating with a dispatcher, turning in logs or documentation, and viewing fuel prices (Heaton et al., 2017). However, it has been found that LHTDs use the internet less frequently, fewer than 2 days a week and once a day, for their health and wellness (Heaton et al., 2017, p. 243). Younger drivers and those with college degrees are more likely to use internet capable devices; however, on average, LHTDs access the internet on fewer than 3 days a week (Heaton et al., 2017, p. 244). Despite mental health resources being the least-accessed treatment type by LHTDs, once LHTDs are engaged, they have been found to use these resources for longer periods of time (Xia et al., 2021), which may positively affect their mental health recovery.

Online counseling services became the preferred method to deliver treatment to the public during the COVID-19 pandemic due to social distancing protocols that were implemented to prevent the spread of the disease (Rehman et al., 2023). Online services have continued to be used since. Better Help, Headway, and Employee Assistance Programs (EAPs) are a few examples of online counseling platforms that offer access to professional and licensed therapists from the convenience of a device that is internet capable, making it more accessible during the irregular work schedules LHTDs experience.

Social media is an easy way for LHTDs to keep in touch with others and can help promote and control mobilization of their colleagues regarding mutual industry interests (Nowak & Santana, 2022). In a narrative review of 91 studies, mostly from the United States but that also included Europe and India, Farsi et al. (2022) discussed how social media has affected health care. They investigated different social media platforms, such as Twitter, WhatsApp, WeChat, Facebook, YouTube, Instagram, and blogs, in their study. Farsi et al. discussed the dual sides to using social media to disseminate information to the public, noting it can be just as positive as it can be negative. However, for social media interventions to be successful, truck drivers must be educated on how to access them as some may believe the programs are not designed for them or their skill level, or they may not be able to afford a smartphone that is compatible with the application (Sendall et al., 2018). In addition, they may only want to use their phone recreationally and not for work as some places of employment have a "No Facebook" policy (Sendall et al., 2018).

Phone applications that provide various mental health tips/techniques, such as the Calm mobile app, offer the type of flexibility LHTDs need (Huberty et al., 2019). The Calm app integrates cognitive behavioral therapy (CBT) techniques into exercises that can be used as a daily practice and offers individually guided and unguided meditations (Huberty et al., 2019). The results of eight studies examining the effectiveness of using a CBT-related mobile health (mHealth) app for multiple mental health issues showed support for their implementation (Rathbone et al., 2017). Three studies used the mHealth app against a control group and five studies used the app against other types of treatments (Rathbone et al., 2017). Four studies aimed to treat symptoms of depression in the general public. One study used the Calm app to treat insomnia, another focused on posttraumatic stress disorder (PTSD), one studied the app's effect

on chronic pain, and the last study used the app to view its effect on stress (Rathbone et al., 2017). According to Rathbone et al. (2017), all of the studies demonstrated positive results and indicated the Calm app provided easier access than usual healthcare settings for the participants involved.

National hotlines are also available and do not require any internet use. A number of adults and veterans have reported they prefer to use the telephone for text and chats from hotlines, and those experiencing suicidal thoughts have been found to be more likely to access assistance via the telephone (Matthews et al., 2023). The national emergency hotline number 9-1-1 is widely recognized. Recently, the 9-8-8 Suicide & Crisis Lifeline was created by the Substance Abuse and Mental Health Services Administration and has fielded millions of calls throughout the United States (Matthews et al., 2023). Several studies on LHTDs have indicated the work-related stress and poor sleep caused by their unhealthy working conditions are linked to an increased risk of depression (Crizzle, McLean, & Malkin, 2020), transport workers in male-dominated careers with high stress have a significantly higher suicide risk (Mathieu et al., 2022); and their work schedule can promote feelings of isolation and otherness (Johnson et al., 2021).

Another type of flexible resource is the use of pets or emotional support animals (ESAs). ESAs are any animal species or breed that provide emotional comfort to individuals with emotional or mental disabilities, such as depression, anxiety, or PTSD (Ferrell & Crowley, 2021). They are not provided with the same status as service animals, which are able to access aircraft travel and public spaces that general pets cannot (Ferrell & Crowley, 2021). Service animals are trained specifically to perform tasks related to their owner’s disability, whereas an ESA is any animal that provides comfort or companionship (Ferrell & Crowley, 2021). ESA status is provided by a letter from a mental health professional that can cost anywhere from $49

to $99 (Ferrell & Crowley, 2021). A *New York Times* article noted 40% of truckers take their pets on the road with them to challenge the feelings of isolation from family and friends for long periods of time (Motavalli, 2021). Currently, the FMCSA does not have any regulations regarding pets; however, trucking employers may have their own guidelines regarding breeds and weight limits or require a deposit if the trucker uses a company vehicle (Motavalli, 2021).

Theoretical Context

The job demands-resources (JD-R) theory indicates burnout can result from high job demands—physically and emotionally—and from work–home conflict but can be improved through available employer resources and support that empower employees to make more healthy choices (Bakker & Demerouti, 2017). The syndrome of burnout can be expressed as "chronic exhaustion, a cynical, negative attitude regarding work, and reduced professional efficacy" (Bakker & Demerouti, 2017, p. 273). The JD-R theory has been implemented by many government agencies around the world to improve employee well-being and decrease burnout (Bakker & Demerouti, 2017). The theory classifies job characteristics as job demands and job resources to investigate health impairment and motivation with job resources buffering the impact of job demands on employees and decreasing burnout (Bakker & Demerouti, 2017). The JD-R theory uses a bottom-up approach that promotes job crafting, whereby employees are proactive and not reactive in the adjustments they make in their job demands and resources (Bakker & Demerouti, 2017). There are three types of job crafting: task crafting, relationship crafting, and cognitive crafting. Task crafting is described as making proactive changes to work tasks. Relationship crafting relates to the frequency and length of social interactions with people in the working environment. Cognitive crafting refers to the meaning an employee gives to their work. Job crafting can be used by employees to promote healthy self-regulation strategies and

prevent burnout as job stress, major life events, and personal changes may, with time, affect one's ability to manage daily work activities (Bakker & de Vries, 2021). Examples of using job crafting as a self-regulation strategy for LHTDs would include creating ways to reduce or optimize the workload, engaging their support system, or challenging negative thought patterns using a more positive approach (Bakker & de Vries, 2021).

Problem Statement

Past studies have reported on the link between the physical health issues (Ravi et al., 2020) LHTDs can encounter in their profession due to sleep disturbances (Hege, Lemke, Apostolopoulos, et al., 2019), heavily regulated work and rest hours (Washburn et al., 2021), a limited ability to exercise, and limited access to healthier food choices (Lincoln et al., 2018) and their increased odds of experiencing severe psychological distress (van Vreden et al., 2022). Other studies have noted the various psychological stressors that are present within the transportation industry in the driving environment due to road issues (Guest et al., 2021), weather conditions (Sun & Dong, 2022), and high job demands (Talebi et al., 2022). LHTDs would benefit from healthcare services that can cater to their hectic lifestyle. Due to stress, irregular work hours, long drive times, and lack of employer support in educating drivers about healthy activities, providing multiple points of access to personalized and direct information would be beneficial (Gorczynski et al., 2020). The problem lies in identifying the rates of depression, anxiety, and stress among LHTDs and the types of internet accessible mental health resources used by this population. Thus, this study was designed to examine whether one of three stressors (i.e., poor work–life balance, poor sleep quality, high job demands) affect LHTDs' familiarity with internet accessible mental health resources.

Purpose Statement

The purpose of this study was to identify which types of internet accessible mental health resources U.S. LHTDs are familiar with and whether one of three stressors (poor work–life balance, poor sleep quality, high job demands) influences this familiarity. Participants' rates of depression, anxiety, and stress were investigated using a survey and the Depression, Anxiety and Stress Scale-21 (DASS-21). Examining the rates of depression, anxiety, and stress that this "hard to reach" population experience in their profession was intended to expose the need to provide more individualized assessment and treatment of their mental health through the use of internet accessible mental health resources. The high job demands (Talebi et al., 2022) LHTDs experience can affect their ability to maintain and participate in their health during their work schedule (Gorczynski et al., 2020). This factor explains why providing multiple points of access to personalized and direct information would be beneficial (Gorczynski et al., 2020).

Significance of the Study

The need for this investigation into which internet accessible mental health resources LHTDs are familiar with and the rates of depression, anxiety, and stress they experience on the job is supported by one study that showed LHTDs can experience an increase in their risk of developing a number of psychiatric disorders over a 7-year period (Crizzle et al., 2017). LHTDs are vital to the day-to-day functioning of society as they provide necessary goods and services around the clock daily and are typically isolated from friends and family while working long hours and travelling long distances (Wise et al., 2020). LHTDs work in demanding conditions that can cause long-term physical and mental health damage that can affect road safety for all (Johnson et al., 2021). Their work schedule promotes feelings of isolation and otherness that can impair their ability to form therapeutic relationships with main medical providers (Johnson et al.,

2021). Limited knowledge about the world of truck drivers among medical professionals influences how drivers are treated as their medical reports may affect a driver's ability to continue working (Johnson et al., 2022). This study was designed to increase treatment providers' knowledge regarding the rates of depression, anxiety, and stress among LHTDs as well as the flexible mental health resources LHTDs may be more open to accessing. This may offer a way to maintain consistent treatment for this travelling population by providing a more enhanced and individualized treatment plan to target poor work–life balance, poor sleep quality, or high job demands that may influence experienced rates of depression, anxiety, and stress.

Research Questions

RQ1: What are the levels of depression, anxiety, and stress in U.S. single-team LHTDs?

RQ2: What internet accessible mental health resources are LHTDs familiar with?

RQ3: Is there a positive relationship between stressors (poor work–life balance, poor sleep quality, and high job demands) and internet accessible mental health resource familiarity?

Definitions

Depression, Anxiety and Stress Scale (DASS-21) – a brief 21-item three-dimension scale that can be used with the general population or in clinical settings to measure rates of depression, anxiety, and stress (Bibi et al., 2020).

Internet accessible resources – phones, tablets, or laptops are examples of resources that offer multiple points of access to personalized and direct information about improving health, which is better suited for dissemination to LHTDs (Gorczynski et al., 2020)

Long-haul truck drivers (LHTDs) – freight truck drivers who either work for a company or are lease operators or independent owner-operators who leave home for days or weeks and travel long distances to complete their job demands (Crizzle, Toxopeus, & Malkin, 2020).

Summary

LHTDs have a very demanding job that affects both their physical and mental health. Their industry has one of the highest turnover rates due to the work stressors, sedentary lifestyle, and feelings of loneliness that can accompany this occupation. The mental health issues (Metzner et al., 2009) an LHTD may experience can affect their ability to continue working if they are unable to get clearance from a medical provider (Thiese et al., 2021). Due to the many hours and miles they may travel for a single delivery, maintaining health appointments (Gorczynski et al., 2020) can be difficult at best and nonexistent at worst. This investigation of which types of internet accessible mental health resources LHTDs are familiar with was necessary for providers to be able to offer more individualized treatment that can move with and be made available to LHTDs at their convenience.

CHAPTER TWO: LITERATURE REVIEW

Overview

The stress and pressures LHTDs face in their jobs have been examined in the context of physical ailments and issues due to the sedentary lifestyle (Pritchard et al., 2022) and how stressors in the driving environment can also affect their physical health (Batson et al., 2022; Caspersen et al., 2023; Wei et al., 2023). The stressors that affect their physical health combined with the different ways in which truck drivers attempt to meet the demands placed on their productivity, such as driving longer hours (Ganesan et al., 2022) or using stimulants or illegal substances to stay awake longer (Hege, Lemke, Apostolopoulos, & Sönmez, 2019), can negatively affect their well-being (Talebi et al., 2022). The physical effects of working as an LHTD have been researched and reported on (Lincoln et al., 2018), yet there has been little to no research concerning the types of internet accessible mental health resources with which LHTDs are familiar. One study reported an increase in the number of psychiatric disorders over a 7-year period for LHTDs, a finding that would indicate a need for access to appropriate mental health resources that fit their lifestyle (Crizzle et al., 2017). People who work in high stress occupations should be able to regularly attend healthcare appointments, but that is not the case in the transportation industry (Reynolds, 2022).

LHTDs are an important part of the transportation industry as they ensure the steady 24-hour distribution of goods, supplies, and materials for people all over the nation, which classifies them as essential workers (Reynolds, 2022). They are on the road for long hours and for many days at a time away from family and friends, during which they are typically confined to their trailer (Wise et al., 2020). Truck stops are the main environments in which truck drivers interact and socialize within their community (Lincoln et al., 2018). According to Lincoln et al. (2018),

the majority of truck stops in the United States do not provide exercise facilities, health care, fresh fruits or vegetables, or a walking trail, but do provide facilities to take care of personal hygiene.

LHTDs are often unable to attend medical appointments or seek treatment due to stagnation, stigma, and poor working conditions (Reynolds, 2022). This problem can influence their ability to be medically certified for driving without restrictions (Thiese et al., 2021). LHTDs may need training on how to seek the assistance they need (Camden et al., 2022) in a way that fits their lifestyle. The studies that have been completed have covered the rates of depression (Crizzle, McLean, & Malkin, 2020), anxiety (Guest et al., 2021), and stress (Delhomme & Gheorghiu, 2021) that can be experienced in this line of work; however, there has been little discussion regarding the barriers LHTDs face related to the use of internet accessible resources that pertain to virtual or online mental health resources, such as 24-hour hotlines like the 9-8-8 suicide hotline, social media platforms, the Calm application, or Better Help. Due to the high stress environment in which LHTDs operate and the long working hours away from home, they often experience increased feelings of loneliness (Johnson et al., 2021), which can affect their mental health (Hege, Lemke, Apostolopoulos, et al., 2019). The research gap identified is the need to understand which internet accessible mental health resources LHTDs are familiar with and their reported rates of depression, anxiety, and stress. This gap also relates to which stressor will influence familiarity with any one type of internet accessible mental health resource. This chapter covers the conceptual or theoretical framework behind this study, a review of the literature, the connection to the need for the present study, and a summary.

Theoretical Framework

The JD-R theory indicates burnout can result from high job demands—physically and emotionally—and from work–home conflict but can be improved when employer resources and support are available that empower employees to make more healthy choices (Bakker & Demerouti, 2017). The JD-R has been implemented by many government agencies around the world to improve employee well-being and decrease burnout (Bakker & Demerouti, 2017). This theory classifies job characteristics as two different types of processes: job demands (health impairment) and job resources (motivation), which can help to buffer the impact of job demands on employees and decreasing burnout (Bakker & Demerouti, 2017). Job demands encompass the elements of the work that require energy and can affect a worker's health, such as work stress (Bakker & Wang, 2020). Job resources refer to the elements of work that encourage and support an employee's ability to reach their goals, such as work autonomy and capabilities (Bakker & Wang, 2020). This theory uses a bottom-up approach that promotes job crafting, whereby employees are proactive and not reactive in making adjustments to their job demands and resources (Bakker & Demerouti, 2017). There are two perspectives regarding job crafting, one that perceives job crafting as take-charge changes an employee can make concerning the physical, cognitive, and relational characteristics of their job, and the other as a series of behaviors that an employee engages in to seek support, identify challenges, and reduce job demands (Oprea et al., 2019).

The JD-R theory indicates an employee who engages in job crafting will increase their job resources, thereby exhibiting a higher level of work engagement (Oprea et al., 2019). One study indicated employees in unfavorable work environments who participated in weekly job crafting behaviors had more positive outcomes in their creative performance (Tian et al., 2021).

Employees are encouraged to reflect on their work behaviors and their effect on their well-being and performance (Oprea et al., 2019). Reflecting will help them set goals and develop healthier behaviors that will increase their resources, work engagement, and performance; however, without leadership support, the positive outcomes will be short term (Oprea et al., 2019). One study showed employees in high stress jobs tend to use unhealthy coping strategies instead of job crafting or job stress recovery strategies if they do not have access to the proper resources through leadership (Bakker & de Vries, 2021).

Burnout is a "work-related stress syndrome" (Bakker & Wang, 2020, p. 241) that can lead to persistent feelings of fatigue and other physical health complaints, trouble with concentration, and negative work attitudes that can decrease daily functioning and job performance due to low performance motivation. Burnout can lead to an increase in mistakes and energy put into correcting those mistakes that can increase job demands (Bakker & Wang, 2020, p. 241). This is referred to as self-undermining behaviors, such as using ineffective communication skills that can increase the amount of perceived work obstacles (Bakker & Wang, 2020, p. 241).

An article in the *New York Post* noted LHTDs are a big part of the working class containing their own types of stagnation, stigma, and poor working conditions (Reynolds, 2022). Stagnation in compensation rates can cause financial stress and high turnover rates in the industry (Conroy et al., 2022; Kudo & Belzer, 2019). The "macho culture" stigma can prevent LHTDs from accessing much needed mental healthcare (Radun et al., 2020). The poor working conditions include irregular work schedules such as shift work that can require drivers to work overnight (Ganesan et al., 2022) or on weekends or holidays (U.S. Bureau of Labor Statistics, 2023) to maintain the continuous supply and demand of goods. During the COVID pandemic,

truck drivers were seen as “essential workers” or heroes; however, this sentiment did not last long (Reynolds, 2022) as the industry is trending toward the adoption of technology that may replace LHTDs in the future (Mabry et al., 2022). This examination of the rates of depression, anxiety, and stress among LHTDs was intended to elevate the need to provide more individualized treatment for their mental health needs through internet accessible mental health resources.

Related Literature

Because LHTDs travel across state lines and have irregular work schedules (Gorczynski et al., 2020), it can be difficult for them to attend consistent therapy sessions within their home state or city, even via telehealth, thus conflicting with health insurance protocols, as current insurance billing procedures prohibit clinicians from providing treatment to clients who are not currently in the state in which they are licensed to provide services, making it difficult to attend appointments on a consistent basis (Johnson et al., 2021). Mental health is important for LHTDs as their job requires interactions with people both on the road and at the warehouses and businesses with which they work (Pritchard et al., 2023). The current study involved examining which internet accessible mental health resources are familiar to LHTDs and their rates of depression, anxiety, and stress. By examining this information, future researchers may be able to continue studying and identifying the areas where more appropriate mental health supports can be easily implemented and accessible for LHTDs and gain more insight into the rates of depression, anxiety, and stress experienced by this population. The following types of issues experienced by LHTDs are discussed: laws governing industry safety, the different types of issues they can encounter in the driving environment, compensation, physical health and

psychological effects linked to being an LHTD, work–life balance issues, and the mental health supports that are available.

Laws Governing Industry Safety

Most LHTDs work full-time, which can include nights, weekends, and holidays (U.S. Bureau of Labor Statistics, 2023). Laws and regulations have been designed and implemented for LHTDs to promote safety and industry growth, such as requiring drivers to take 10 hours off duty, requiring 3- to 4-hour breaks before driving again, and requiring a 14-hour window in which to get driving done in a day (Washburn et al., 2021). LHTDs cannot drive more than 60 hours within 7 days or if they are working 8 days, they cannot exceed 70 hours (U.S. Bureau of Labor Statistics, 2023). LHTDs must take 34 hours to rest before beginning another 7- or 8-day run and it must be recorded in their logbook (U.S. Bureau of Labor Statistics, 2023). To ensure these regulations were being followed, ELDs are federally mandated to track drivers' on and off duty times (Washburn et al., 2021). This led to some drivers reporting negative outcomes from this implementation, such as increased pressure to follow the ELD clock by driving sick or hungry instead of choosing when to stop and start on their own, or limiting their top speed, thus resulting in an increase in crashes (Washburn et al., 2021). Leaders of some fleet operations are implementing fatigue detection technologies that use sensors to monitor and log multiple types of measures that could indicate a driver is beginning to experience fatigue (Mabry et al., 2022). These technologies are a step toward completely removing drivers in the future, which does not address the root cause of fatigue, such as an unhealthy work culture or systemic industry practices, but instead may cause more stress for drivers (Mabry et al., 2022). The debate between LHTDs (Washburn et al., 2021) and trucking companies (Mabry et al., 2022) on how helpful or harmful ELDs and other types of tracking technologies are for drivers and companies is

continuing as leaders in the industry look for different methods to assist truck drivers in being safe in their driving environment, not just for themselves but for all drivers.

The FMCSA was created to promote driver safety by requiring them to disclose their medical history and physical measurements and submit to a physical exam to be certified to work and to carry the certificate while on the job (Guzik, 2013; Thiese et al., 2021). LHTDs can log over 304,800,000,000 miles, which can increase the risk of driving injuries or fatalities and affect the economical and societal functioning in the United States (Thiese et al., 2021). The certification can be marked as unrestricted certification (active for up to 2 years), shortened certification (active for anywhere from 3 to 12 months), or does not meet the medical requirements (LHTD is not approved for certification) depending on information provided (Thiese et al., 2021). Currently, the FMCSA (2024) website contains an informational webinar that provides information on the *Medical Examiner's Handbook 2024 Edition* that clinicians can access to ensure appropriate evaluation and use of the guidelines. The unique issues LHTDs can experience in the field, such as poor access to healthy foods or exercise and irregular work schedules, can negatively affect their physical health and increase their risk for potential driving injuries or fatalities (Thiese et al., 2021).

LHTDs and the Driving Environment

Although truck stops are the main environments in which LHTDs interact and socialize within their community (Lincoln et al., 2018), their driving environment encompasses much more space. As an occupation, the 3.5 million truck drivers in the United States can log over 304,800,000,000 miles every year in the driving environment (Thiese et al., 2021). The demanding work conditions for LHTDs can cause long-term physical and mental health damage that affects road safety for all (Johnson et al., 2021). Shift work can increase unsafe driving

behaviors due to disruptions in LHTDs' sleep patterns to maintain a continuous supply of necessary goods (Ganesan et al., 2022). Compensation rates can increase or decrease LHTDs' motivation to engage in longer driving hours (Kudo & Belzer, 2019). Low back pain is one of the most common musculoskeletal disorders LHTDs can experience due to stress and improper seating posture (Yosef et al., 2019). Stress and poor sleep have been linked to an increased risk of developing depression for LHTDs (Crizzle, McLean, & Malkin, 2020). Studies about the stressors truck drivers encounter in the driving environment have been completed in China (Wei et al., 2023), Australia (Batson et al., 2022) and Europe (Caspersen et al., 2023), and results tend to echo one another. The driving environment includes fatalities and crash rates, the roads and routes, weather conditions, driver personality, suicide, shift work, psychological stressors, and training programs.

Fatality/Crash Rates

In the United States, 78% of fatalities involving large trucks (defined as commercial and non-commercial trucks) in the year 2021 occurred in urban areas and on urban roadways (Stewart, 2023). Compared to other occupations, heavy and tractor-trailer truck drivers have one of the highest rates of occupational fatalities and rates of injuries and illness (U.S. Bureau of Labor Statistics, 2023). In 2021, there was an 11% increase in nighttime and weekend fatalities involving large trucks from the previous year (Stewart, 2023). There was a reported 8.2% increase for both distraction-affected crashes and drowsy drivers (Stewart, 2023). Crashes that occurred 20 miles or more from the nearest truck stop, rest area, or weigh station with a rest area were noted to be the result of sleepiness/fatigue by commercial vehicle drivers who were at fault, making increased locations for trucks to park and rest optimal (Bunn et al., 2019). The high rates of accidents involving large truck vehicles are not just representative of American truck drivers;

industry leaders in Australia recognize the occupation of truck driving as experiencing a high number of fatalities, injuries, and illnesses, making it a high-risk occupation for work-related issues as compared to other driving workers, such as bus drivers or delivery drivers (Batson et al., 2022). Tighter delivery schedules have been shown to result in truck drivers increasing their maximum speed by 10 miles even if the weather is bad, or when they are fatigued or in heavy traffic, though drivers are not adequately rewarded in their work efforts (Chen et al., 2021).

Roads and Routes

Changes or disruptions in the transport system caused by construction or maintenance work can cause truck drivers to experience an increase in their stress levels as a result of route changes, trip time, travel distance, missed or delayed deliveries, and increased traffic on local roads (Caspersen et al., 2023), which can also affect how they are compensated (another stressor; Kudo & Belzer, 2019). Some U.S. LHTDs have routes that can take them into Canada or Mexico and can be planned by a dispatcher or by the driver (U.S. Bureau of Labor Statistics, 2023). In China, the results of one study showed truck drivers' route choice is influenced by their perception of the road environment, road safety, the amount of gas stations, service areas, emergency assistance available, their familiarity with the road, and costs associated with that road (e.g., fuel costs, road tolls, weight stations; Wei et al., 2023). The results also showed drivers were more likely to use roads to which they had an emotional attachment, meaning one with which they were already familiar (Wei et al., 2023). This implies that a truck driver's faithfulness to a particular route will create an impression of routine, which can be comforting; therefore, any interference or violation to that routine can be perceived as unfavorable and stressful (Wei et al., 2023). However, one Australian study examining everyday drivers, not specifically LHTDs, reported drivers to be more aroused and vigilant in high-stress traffic

environments, as opposed to mundane environments in which their awareness of situational factors would decrease (Love et al., 2022). The more experience a driver has, the better they are at self-regulation, as they use past experiences to help them plan better and react to different traffic environments (Love et al., 2022). Another study examining mindfulness in LHTDs from the United States noted their awareness of the driving environment may be increased due to their practice of systemic environmental scanning, which is a professional industry technique (Wise et al., 2020).

Weather Conditions

Truck drivers often must traverse through various weather conditions to meet their deadlines. In China, high temperatures have been shown to adversely affect a bus driver's ability to be alert and not distracted as their thermal stress index (i.e., the body's internal reaction to heat) increases (Sun & Dong, 2022). As the temperature increases with drive time, it can have a negative effect on a driver's reaction time, stress response, and ability to make safer choices, which can increase the likelihood of a collision and experiencing physiological disturbances (Sun & Dong, 2022). A driver can take several measures to reduce the stress response, though they may not be practical for their work schedule. Drinking water to hydrate if they are sweating is necessary but can be inconvenient if the driver needs to use the restroom periodically. Rearranging the work/drive schedule to allow for rest during the hottest part of the day may not be feasible (Sun & Dong, 2022). Researchers in Finland examined the effects of using a daylight-supplementing in-truck lighting system to reduce drowsiness during nighttime, dawn, and twilight driving times in a wintry Arctic environment and reported alertness was increased without adversely affecting driving ability (Popp et al., 2024). Rezapour et al. (2021) conducted a study in Wyoming to identify factors associated with high truck crash rates and cited weather

and road conditions as factors along with age and gender. Their study on truck-related crashes showed 50% occurred due to environmental characteristics, such as not clear weather and not dry road conditions. They also stated the odds for truck-involved crashes increased if the driver was male and older (Rezapour et al., 2021).

Driver Personality and the Safety Climate

Personality describes a consistent pattern of behaviors displayed over time that typically falls into one of the Big Five personality dimensions: openness, conscientiousness, extraversion, agreeableness, and neuroticism (Qu et al., 2022). A truck driver's personality can affect both their positive and negative driving behaviors; however, the safety climate also has a significant influence on their driving behaviors (Qu et al., 2022). The safety climate has two dimensions, organization-level safety climate and group-level safety climate, the former referring to the employee's perception of how a company emphasizes safety and the latter referring to the employee's perception of how well direct supervision and working group safety practices meet safety needs. In their study concerning the relationship between the personality of truck drivers and safety climate, Qu et al. (2022) noted agreeableness correlated to a better safety climate than did neuroticism. Drivers higher in agreeableness leaned toward being more attentive to safety practices and interactions with supervisors, whereas truck drivers who scored high in neuroticism tended to be more anxious and not engage with supervisors (Qu et al., 2022). Providing information about the safety climate at the organizational and group levels would mediate any negative driving behaviors related to the different personality dimensions (Qu et al., 2022).

Suicide and LHTDs

Transport workers in male-dominated careers with high stress have a significantly higher suicide risk than the general population (Mathieu et al., 2022). Transport workers consistently

report issues with poor mental health and well-being and use workers' compensation for psychological injuries (Mathieu et al., 2022). Truck drivers are exposed to many types of trauma as a result of working long and irregular hours driving hundreds of miles. In Finland, for example, truck drivers have experienced people who have decided to die by suicide by driving head-on into their large vehicles (Radun, Parkkari, et al., 2019b). The lack of information related to LHTDs and suicide crashes in the United States could be due to the difficulty with differentiating between accidents/fatalities and suicidal intent, which could lead to these instances being labeled as under-reported (Imants et al., 2022). The difficulty in the identification of suicide crashes can be based on how the data are gathered, and interpretation could be based on legal, cultural, or religious biases (Imants et al., 2022). Without direct communication of suicidal intent, either verbally or via letter, suicide crashes could be attributed to other reasons like fatigue and alcohol use (Imants et al., 2022).

In most cases, the person dying by suicide leaves little to no time for the truck driver to react and avoid the crash (Radun, Parkkari, et al., 2019a). Though most truck drivers suffer minor physical injuries as a result of such crashes, some react by returning immediately to work whereas others take sick leave that varies from 2 to 161 days after the incident (Radun, Parkkari, et al., 2019b). Truck drivers are aware of the possibility of road suicides occurring (or have personally experienced such an event) and a large majority know another driver who has experienced a road suicide, which can raise their stress levels regarding their safety on the road (Radun, Radun, et al., 2019). In a recent study, results showed truck drivers were reportedly more willing to swerve their vehicles and endanger their own lives to prevent a collision with a passenger vehicle driver who fell asleep at the wheel as opposed to doing so for someone who was deliberately trying to cause a head-on collision with them (Radun, Parkkari, et al., 2019a).

Most truck companies in Finland do not have any policies in place to assist a truck driver who has experienced a driver of a passenger vehicle dying by suicide by running into their large vehicle as those train companies provide for their conductors (Radun et al., 2020). In one study, results showed the minority of truck drivers who were offered and accepted mental health treatment for symptoms of PTSD as evidenced by their high Impact of Events Scale-Revised (IES-R) scores stated it was beneficial (Radun et al., 2020). LHTDs are at a higher risk for developing PTSD compared to the general population due to their exposure to accidents or almost accidents and their challenging work environment (Wise et al., 2020). Wise et al. (2020) stated there is a lack of PTSD rates reported for LHTDs, but the incidences of depression, anxiety, and stress associated with poor sleep quality and insomnia have been noted.

Wise et al. (2020) reported LHTDs who scored an average of 4.9 on the Mindfulness Attention Scale, used to measure attention to the present, displayed fewer symptoms of PTSD. The authors also noted those LHTDs had higher incidences of seeking mental health care in the past 12 months compared to others. Wise et al. stated mindfulness is not a predictor of mental health care usage among those who have more severe PTSD symptomology. They reported that LHTDs who endorse greater sleepiness are less likely to seek mental health care (Wise et al., 2020). This may be due to their lack of knowledge concerning sleep issues and mental health care (Wise et al., 2020). Wise et al. noted two limitations of their study: one limitation stated more research is needed into interventions that can best fill the mental health care gap for this traveling population, and the second limitation stated the participants were a majority female, is not representative of a the LHTD population. One review included few studies that provided information regarding suicide rates for female workers in the transport industry from their

research pool that included Australia, Switzerland, England, and Wales (Mathieu et al., 2022). It can be inferred that the same would be true in the United States.

Shift Work

Shift work is necessary for the continuous supply of goods and services; however, the individuals who work night shifts can experience sleep disturbances that negatively affect their driving through increased driving violations, slower reaction times, and sleep-related accidents (Ganesan et al., 2022). The federal implementation of ELDs regulates how many hours an LHTD can drive and rest between shifts to promote safety in the industry (Wise et al., 2020). One study noted working two or more nights was associated with greater depressive symptoms, increased daytime sleepiness, and worse sleep quality (Wadley et al., 2020). Insufficient sleep can impair driving abilities, especially in LHTDs who have irregular works schedules that require long driving times that can affect sleep quality (Onninen et al., 2021). One study in Finland noted drivers who work morning shifts tended to lose more sleep than those who work night shifts, though LHTDs working either shift can make up the sleep loss on off days (Onninen et al., 2021). Fatigue can develop from shift work and can increase the amount of caffeine intake or stimulant use among LHTDs (Hege, Lemke, Apostolopoulos, & Sönmez, 2019). Changes in the truck driving workforce have caused driver shortages, low recruitment, and increased levels of poor health issues (van Vreden et al., 2022), which may cause those LHTDs who are available to work to stay on the road for more days to keep up with the demand of goods needing to be delivered.

Psychological Stressors

Psychological stress can affect sleep patterns, which, in turn, can influence the experience of negative feelings like work dissatisfaction (Mutifasari & Ramdhan, 2019). Stress has been

shown to be affected by the amount of training an agency provides its drivers (Delhomme & Gheorghiu, 2021). In France, Delhomme and Gheorghiu (2021) noted that with more training, the drivers felt less stressed and more prepared and safer; the lower the drivers perceived their driving skills, the higher the levels of stress they experienced. Delhomme and Gheorghiu reported drivers who reported experiencing discontent in their job satisfaction related it to high levels of pressure from their supervisor, burnout, and mind-wandering. Worker stress and high job demand can cause fatigue, which can lead to various psychological and physiological issues and decrease safety for the worker and others on the job (Talebi et al., 2022).

Training Programs

There is no one strategy to help make the driving environment safer for truck drivers. Company leaders must review their existing policies and operations and make the necessary changes by implementing a comprehensive safety approach (Camden et al., 2022). Truck drivers with tenure have a higher perception of the safety climate, which may not be accurate and can lead to accidents and near misses (Murphy et al., 2019). Companies that focus on providing driver training for new and veteran drivers, use safety-focused hiring criteria, and execute improved safety culture programs and policies along with identifying and meeting their own individual needs see a decrease in accidents and an increase in safety (Camden et al., 2022). A management culture that supports safety and support for drivers and the use of vehicle safety technology can also have a big impact on driver safety (Camden et al., 2022). It is important for leaders of truck companies to focus on safety training and trust building with those who have been driving longer to ensure they are following all safety procedures and are teaching younger drivers better habits (Murphy et al., 2019). Another consideration is providing health insurance in combination with shorter work hours, which results in truck drivers driving more safely (Li et

al., 2021). Some trucking companies contribute to drivers' health insurance premiums, making health care more economical and motivating drivers to operate more safely (Kudo & Belzer, 2019).

Compensation Practices and Stress

In addition to the driving environment, LHTDs can also experience stress related to fluctuations in their earnings and how their pay is calculated (Conroy et al., 2022). Truck drivers who are well compensated for their work have been found to implement safer driving behaviors (Kudo & Belzer, 2019). LHTDs are usually paid per mile driven or by the number of stops, and some (less than half) are offered a flat rate for non-driving work, such as loading and unloading or waiting for dispatcher directions (Kudo & Belzer, 2019). Companies are the only parties that benefit from this type of payment arrangement as they only pay for the miles driven for each assignment (Conroy et al., 2022). Driving assignments can vary in mileage and affect an LHTD's pay, which can cause them to experience weekly, biweekly, or monthly distress from the paycheck fluctuation (Conroy et al., 2022). This type of pay volatility may also influence the turnover rate for this occupation, as it can cause truck drivers to work longer hours without being compensated, increasing their feelings of fatigue (Conroy et al., 2022; Kudo & Belzer, 2019). The stress surrounding financial insecurity can cause a truck driver to make unsafe decisions regarding rest time and driving time in order to make more money (Kudo & Belzer, 2019).

In one study, Brazilian drivers reported higher rates of feeling sleepy while driving when they had to travel a greater distance from one stop to the next and if their pay was based on productivity (Girotto et al., 2019). One study showed tighter delivery schedules resulted in truck drivers increasing their maximum speed by 10 miles in bad weather, when they were fatigued or in heavy traffic, and were not adequately rewarded, such as being paid by miles versus hours or

receiving compensation for loading, unloading, and waiting time, in their work efforts (Chen et al., 2021). According to the Wage and Hour Division's (2009) Fair Labor Standards Act, truck drivers are exempt from receiving overtime pay. Driver work–rest patterns and alertness while driving are influenced by a willingness to earn extra payments if offered and the incentives available in the current driving experience (Mahajan et al., 2019). It has been noted that drivers are safer when the pressure of incentives-based driving is reduced (Mahajan et al., 2019).

Besides pay rate concerns, in some instances the decision to work as a single driver versus a team is determined by the company and is typically based on which is more financially beneficial for the company and not the driver or can be influenced by safety issues (Goel et al., 2021). Two team drivers help to increase productivity by spending less time in a parking lot and more on the road as compared to single drivers who must abide by regulations that dictate breaks and driving times (Goel et al., 2021). Two team drivers can cover longer distances; however, driver productivity is reduced as only one can drive at a time (Goel et al., 2021). Companies consider various aspects of a trip to determine whether it is profitable to use single or two team drivers (Goel et al., 2021). Though it may be more profitable for the company to use team drivers, some truckers are open to this as it provides a partner for the trip, which can increase their sense of safety and security despite affecting their pay rate (Goel et al., 2021). Team drivers can come home sooner as they are able to work in shifts, increase camaraderie, and reduce the time spent alone (Aryal et al., 2023).

Changes to the legislature and the systematization of truck driver company compensation are needed (Škerlič & Erčulj, 2021). Section 6, Driver Compensation, of U.S. Senate Bill S.1739 (2015), also known as the Truck Safety Act, proposes that drivers be compensated for on-duty time, not driving time, for employees whose compensation is not based on an hourly wage and

must maintain a record of duty status. One study showed better pay for truck drivers resulted in them being more safety oriented (Škerlič & Erčulj, 2021). They were less likely to violate working hours rules, such as driving extra miles and hours (Škerlič & Erčulj, 2021). Drivers who were presented with better non-financial incentives were less likely to shorten their weekly rest, which was noted as reducing the likelihood of being in an accident (Škerlič & Erčulj, 2021).

Physical Effects Linked to Long-Haul Drivers

Numerous studies have cited the multiple physical effects truck driving can cause. Low back pain is one of the most common musculoskeletal disorders that can be caused by truck driving due to stress and improper seating posture (Yosef et al., 2019). A recent study in India showed that out of 3,200 truck drivers, a majority suffered from some health issues, such as elevated stress levels, obesity, and a lack of sleep, which are significant risk factors for kidney disease (Ravi et al., 2020). A large majority of these same participants were unaware of kidney disease and its risk factors (Ravi et al., 2020). Working overnight two or more times a week combined with low leisure-time physical activity can be associated with chronic pain, which can be linked to sleep disturbances and increased symptoms of depression (Wadley et al., 2020). LHTDs can be denied their medical certification to drive for any length of time for conditions that include, but are not limited to, unstable mental conditions and psychoses, current alcoholism, or Schedule 1 drug use (Thiese et al., 2021).

Obesity is a common condition that affects many truck drivers due to the sedentary nature of the job (Pritchard et al., 2022). Poor access to healthy food choices at truck stops adds to the risk of developing obesity as this is where many LHTDs meet and rest (Lemke et al., 2023). Most of the truck stops in the United States do provide facilities to take care of personal hygiene; however, they fall short in providing healthy options for physical well-being (Lincoln et al.,

2018), which can influence mental health and wellness (van Vreden et al., 2022). Results of a study conducted in Europe showed 37% of the participants reported often or always eating their meals at truck stops, eating more sausages, and consuming energy drinks and soft drinks and canned foods due to the easy access as opposed to eating at home where they chose to eat vegetables, legumes, and fish (Bschaden et al., 2019). In one study that examined 88,246 medical certification examinations completed for U.S. commercial driver licenses from 2005 to 2012, results showed obesity, hypertension, and diabetes mellitus requiring medication were the most common conditions presented (Thiese et al., 2021).

Limited knowledge about the world of truck drivers among those in the medical profession influences how drivers are treated (Johnson et al., 2022). Maintaining consistent appointments and follow-ups is difficult for LHTDs as reported by the medical professionals who treat them (Johnson et al., 2022). The work schedule for LHTDs promotes feelings of isolation and otherness, which impairs their ability to form therapeutic relationships with their main medical providers (Johnson et al., 2021). Medical professionals also reported feeling conflicted about their reports as they could affect a person's ability to continue working (Johnson et al., 2022).

Results of one study showed drivers aged 45 to 54 years and those who worked for companies that made less than $1 million in a year were more likely to make a workers' compensation claim (Batson et al., 2022). Truck drivers have a higher likelihood of having a hospital record of diabetes, hypertension, alcohol misuse/abuse, and tobacco use prior to making a workers' compensation claim (Batson et al., 2022). Another study showed the physical effects of being an LHTD in Australia included sleep disturbances, heavily regulated work and rest hours, a limited ability to exercise, and limited access to healthier food choices, which led to a

higher risk of various health conditions (van Vreden et al., 2022). Fatigue and sleepiness account for a large number of truck crashes and fatalities and the risk can be increased by long-distance driving (Mabry et al., 2022). A lack of truck stops and rest areas along highway routes can contribute to the number of crashes (Crizzle, Toxopeus, & Malkin, 2020). One study indicated crashes that occurred 20 miles or more from the nearest truck stop, rest area, or weigh station with a rest area were the result of sleepiness/fatigue by commercial vehicle drivers who were found to be at fault for the crash (Bunn et al., 2019). Another factor in traffic and workplace accidents is a lack of sleep time and quality of sleep (Mutifasari & Ramdhan, 2019). A truck driver's sleep can be interrupted by heat, noise in the area, or receiving calls about deliveries (Mutifasari & Ramdhan, 2019).

LHTDs are especially susceptible to acquiring and transmitting infectious diseases due to the miles and miles of travel required for their job and their interactions with the countless number of workers from the multitude of businesses and warehouses to which they deliver (Lemke et al., 2020). LHTDs with an average age of 49 years were found to be at a higher risk of developing COVID-19 morbidity and mortality (Lemke et al., 2020) due to the type of health issues they may already experience due to their lifestyle (Batson et al., 2022; Pritchard et al., 2022; Thiese et al., 2021). This is important due to the role LHTDs play in the supply chain for services and goods in the United States (Thiese et al., 2021). Truck drivers are also susceptible to contracting sexually transmitted and bloodborne infections (Patterson et al., 2021). The locations truck drivers frequent while on the road include truck stops and low budget motels that can attract sex workers and other types of people who may distribute drugs (Patterson et al., 2021). One study examined the role these types of social networks may play in the risk for disease in LHTDs in the United States and found it to increase their likelihood of infection exposure

(Patterson et al., 2021). LHTDs who may only engage in drug use can have the increased potential of engaging in risky behavior, such as having unprotected sex or inconsistent use of prophylactics, due to the negative affect drugs have on judgment and decision making (Patterson et al., 2021).

Psychological Effects

For the purposes of this study, the three psychological effects discussed from working as an LHTD are depression, anxiety, and stress. Laws governing industry safety; the different types of issues LHTDs can encounter in the driving environment; compensation; physical health and psychological effects linked to being an LHTD; and work–life balance issues are all possible contributors to the rates of depression, anxiety, and stress LHTDs may experience.

Depression

Loneliness, work–life conflict, road accidents, and poor work engagement may be factors in professional drivers developing depression and leaving the profession early, thereby causing a shortage of drivers (Shin & Jeong, 2021). Work-related stress and poor sleep caused by the working conditions of LHTDs have been linked to an increased risk of depression (Crizzle. McLean, & Malkin, 2020). In one study, 85% of the truck drivers stated they had not received any type of psychiatric medication for their symptoms of depression (Crizzle, McLean, & Malkin, 2020). LHTDs have been reported to have higher odds of experiencing severe psychological distress compared to short-haul drivers (i.e., those who drive shorter daily distances in high-density traffic), who work more or less 40 hours a week (van Vreden et al., 2022). One study showed LHTDs who experienced high job stress and poor-quality sleep had an increased odds of receiving a mental health diagnosis (Hege, Lemke, Apostolopoulos, & Sönmez, 2019).

A recent article cited suicide as one of the leading causes of young transport worker deaths (van Vreden et al., 2022). In another study, researchers used the Life Events Checklist for DSM-5 and the adapted version of the 52 items of the Global Post Trauma Symptom Scale-Item Bank to measure post trauma symptoms and used the Patient Health Questionnaire-9 (PHQ-9) to measure depression in male truck drivers (Michalopoulos et al., 2022). These scales helped to show the high rates of exposure to traumatic events among truck drivers (Michalopoulos et al., 2022). The results showed 15% of the truck drivers who participated in the study endorsed recent suicidal ideation (Michalopoulos et al., 2022). In one study in which the participants were LHTDs, 44% reported experiencing symptoms of depression in the last 12 months (Crizzle, McLean, & Malkin, 2020). This caused the researchers to suggest that mental health interventions that promote improved sleep quality, decreased work-related demands and pressures, and increased psychiatric medication use may reduce the rates of depression symptoms (Crizzle, McLean, & Malkin, 2020).

Anxiety

Truck drivers are exposed to daily psychological stressors as a result of driving for long hours, dealing with traffic, encountering dangerous road users, and navigating narrow roadways to meet time deadlines (Caspersen et al., 2023; Guest et al., 2021). This can place them at an increased risk for cardiovascular reactivity, which can increase the likelihood of persistent fatigue or anxiety symptoms (Guest et al., 2021). Drivers with neuroticism, sensation seeking, and driving anger personalities have been shown to be more likely to engage in risky driving behaviors (Akbari et al., 2019). Risky driving behaviors can lead to increased crashes or fatalities that can make this a high-risk occupation (Batson et al., 2022) and can be surmised to add to the anxiety of an LHTD. LHTDs are more likely to develop PTSD compared to the general

population due to their higher risk of being in an accident (Wise et al., 2020). In addition to the challenges LHTDs can experience in the driving environment (Wei et al., 2023), they can also experience emotional distress related to their earnings (Conroy et al., 2022). LHTDs do not get paid for the hours they work, which can be long due to the loading and unloading of their delivery and are typically paid based on the number of miles driven (Conroy et al., 2022). This can cause fluctuations in the amount of money earned and when they will receive payment (Conroy et al., 2022).

Stress

One study conducted in France showed stress to be affected by the amount of training an agency provided its drivers, in that the more training the drivers received, the less stressed and more prepared and safer they felt (Delhomme & Gheorghiu, 2021). The lower the drivers perceived their driving skills, the higher the levels of stress they experienced (Delhomme & Gheorghiu, 2021). One study showed Canadian LHTDs work in demanding conditions that can cause long-term physical and mental health damage that affects road safety for all (Johnson et al., 2021). Their work schedule promotes feelings of isolation and otherness, which impairs their ability to form therapeutic relationships with their main medical providers (Johnson et al., 2021). Australian truck drivers with the following coping methods were found to be better able to manage the feelings of isolation that come from the job: appreciating the moment, practicing gratitude, developing an optimistic mindset and mental toughness, and endorsing an internal versus external locus of control (Pritchard et al., 2023). Sleep duration was cited in one study as being associated with U.S. LHTDs' perceptions of their stress levels (Hege, Lemke, Apostolopoulos, et al., 2019). In the Hege, Lemke, Apostolopoulos, et al. (2019) study, 62.6% of U.S. LHTDs identified their stress levels as moderate or high and 38.2% stated they never or

rarely got adequate sleep on their workdays. Additionally, 71.1% of the U.S. LHTDs believed their poor sleep quality to have affected their work.

Substance Use/Abuse

Truck drivers are more likely to use alcohol and prescribed or illicit drugs to gain relief from “depression, anxiety, job strain, fatigue, and social isolation” (Garbarino et al., 2018, p. 9). The amount of stress and high work demands truck drivers experience can cause them to consume caffeine, tobacco, or psychostimulants to stay alert during their workdays and alcohol during their non-workdays (Hege, Lemke, Apostolopoulos, & Sönmez, 2019). The presence of substance use or abuse concerns the safety of all who are driving on the roadways. One study showed U.S. LHTDs who work more than 11 hours daily had an increased odds of high caffeine consumption, up to 40 or more ounces in a day (Hege, Lemke, Apostolopoulos, & Sönmez, 2019). The pressure to make many stops in a limited time frame can cause a truck driver to consider getting an edge on their driving competition by using legal or illegal substances. The pressure of poor compensation for any given load can cause a truck driver to decide to make more stops or drive longer distances, requiring the ability to stay awake and focused for the travel (Girotto et al., 2019).

This type of self-medicating is not just an issue for LHTDs in the United States (Garbarino et al., 2018; Hege, Lemke, Apostolopoulos, & Sönmez, 2019). LHTDs in Brazil also experience a stressful work environment that is marked by long driving hours, lack of sleep, and fatigue (Leyton et al., 2019). Brazilian LHTDs may engage in stimulant use, such as amphetamines and cocaine, to make their deliveries on tight schedules (Leyton et al., 2019). Past research showed that due to the sedentary lifestyle of truck drivers, they are prone to many physical issues (Batson et al., 2022; Pritchard et al., 2022; Thiese et al., 2021). Truck drivers in

several countries use amphetamines to assist them in completing their work schedules despite having physiological issues such as cardiovascular disease (Araújo Silva et al., 2019). Researchers in one study examined workers' compensation claims data and found 23.8% of all injured truck drivers had records of opioid use and 15% were prescribed strong opioids (Xia et al., 2019). Truckers who used opioids had greater time loss than those who did not (Xia et al., 2019). A history of illegal substance use or abuse can have negative impacts on family connection, finances, and the ability to keep and maintain meaningful relationships, which are necessary for the mental well-being of truck drivers (Pritchard et al., 2023).

Work–Life Balance

Truck driving is a common job for men in the United States, Europe, and Australia (Pritchard et al., 2022) to enter into as it only requires minimal education and training to begin working (U.S. Bureau of Labor Statistics, 2023). Truck driving is an occupation that can be passed down from generation to generation, typically from father to son (Jeflea, 2022). However, the unhealthy working conditions, poor work–life balance, and health and safety risks are causing many LHTDs in the United States to leave the profession (Hege, Lemke, Apostolopoulos, et al., 2019). Work stress, poor sleep, long work hours, irregular schedules that require travel away from home for long periods of time, and high delivery demands influence a truck driver's perception of their work–life balance (i.e., the time they allot for work versus personal life; Hege, Lemke, Apostolopoulos, et al., 2019). In a recent study of LHTDs, few reported being on the road for fewer than 20 days at a time or working fewer than 11 hours a day (Hege, Lemke, Apostolopoulos, et al., 2019). Australian truck drivers cited family as having a positive impact on their mental well-being, however that can result in them prioritizing time with their family by scheduling calls or getting little sleep when they return home (Pritchard et al.,

2023). In some cases, LHTDs would try to catch up on sleep for 24 hours before reconnecting with their loved ones (Pritchard et al., 2023). Some truck drivers, as noted by Pritchard et al. (2023), experienced guilt related to missing family events such as birthdays, holidays, and games due to prolonged separation, which could escalate negative thoughts. One study showed major life events such as divorce, death, or the health issues of loved ones can interfere with an employee's self-efficacy at work unless they are able to psychologically detach from the incident and place work in the center of their identity, which can provide a sense of meaning and purpose (Bakker et al., 2019). Often, truck drivers will emotionally unload onto their partners instead of seeking professional help, which can cause fragile relationships to break down (Pritchard et al., 2023). Younger drivers are less likely to enter into the transportation field due to the lack of a healthy work–life balance, occupational safety, and health management (Shin & Jeong, 2021). This type of lifestyle does not promote or strengthen connections within the family unit or between partners.

Mental Health Supports

Research has shown LHTDs have reported experiencing various physical and mental health issues such as anxiety and depression, but very little research has included information about any use of mental health resources online or through an application to help manage these symptoms (Wise et al., 2020). Most truck drivers do not access mental health services right after an incident and peak times for any use have been shown to occur 14 weeks or more from the time a workers' compensation claim was recorded (Xia et al., 2021). In an exploration of the timing of health services used by truck drivers with work-related injuries, results showed only 6.3% of mental health services were used by truckers (Xia et al., 2021). This may be in part due to longer claim processing times for neurological and psychological issues or the fact that some

truck drivers develop mental health issues after initially reporting only physical injuries (Xia et al., 2021). Some drivers with musculoskeletal claims also reported accessing mental health services (Xia et al., 2021). Providing multiple points of access to personalized and direct information about improving health would be beneficial for LHTDs (Gorczynski et al., 2020).

Internet/Online Services

About 70% of LHTDs use more than one type of device that can access the internet for their personal gain, such as checking the weather or accessing news, checking social media, and keeping in contact with family and friends via email (Heaton et al., 2017). LHTDs also use these devices for work needs, such as maps and directions, dispatch work, turning in logs or documentation, or viewing fuel prices (Heaton et al., 2017). Online counseling services became the preferred method to deliver treatment to the public during the COVID-19 pandemic due to social distancing protocols that were implemented to prevent the spread of the disease (Rehman et al., 2023) and have continued to be used since. Better Help (www.betterhelp.com) and Headway (https://headway.co/) are examples of online counseling platforms that offer access to professional and licensed therapists from the convenience of a device that is internet capable.

Emotional Support Animals

Another type of flexible resource is the use of pets or ESAs, which are companion animals identified by a licensed mental health provider to be necessary for therapy treatment (Hoy-Gerlach et al., 2019). ESAs do not require any special training and are noted to be helpful to people with chronic mental health symptoms such as depression and anxiety, which are conditions that meet the legal definition of a disability (Hoy-Gerlach et al., 2019). ESAs can assist with empathy, help bridge someone’s ability to re-engage in social needs, be like family to those with or without loved ones in their lives, and can foster feelings of empowerment and self-

efficacy (Hoy-Gerlach et al., 2019). A *New York Times* article noted it is common for truckers to take their pets on the road with them to mitigate feelings of isolation from family and friends for long periods of time (Motavalli, 2021). Currently, the FMCSA does not have any regulations regarding pets; however, trucking employers may have their own guidelines regarding breeds and weight limits or requiring a deposit if the trucker uses a company vehicle (Motavalli, 2021). There are also no mental health practice guidelines for ESAs and they are not afforded the same rights as are service animals that are specially trained to perform specific tasks (Hoy-Gerlach et al., 2019). ESAs do not have public access rights and facilities and agencies are not legally required to be ESA friendly (Hoy-Gerlach et al., 2019).

Social Relationships

The long distances traveled for work and the erratic work schedules of LHTDs mean more time spent away from family, friends, and romantic partners and can increase feelings of loneliness (Makuto et al., 2023). This type of social isolation, which includes having poor relationships and no support system, can increase the risk for suicide (Calati et al., 2019) and depression (Makuto et al., 2023). Being single, separated, divorced, or widowed is also associated with suicidal outcomes (Calati et al., 2019). In one study, 58.6% of U.S. LHTDs stated their work affected their social and leisure activities on some level, 59.1% reported it to have affected their ability to maintain family and home responsibilities, and 48.1% reported their job to have affected their intimate and sexual relationships (Hege, Lemke, Apostolopoulos, et al., 2019). One study showed relationship breakdown can stem from drivers unloading their stress on partners instead of mental health professionals due to stigma or the irregularity of their schedules causing an inability to maintain appointments (Pritchard et al., 2023). Australian trucker drivers reported struggling to maintain their friendships due to irregular work schedules and their fatigue

level upon returning home, but those who were able to keep friendships stated they were important for their mental well-being (Pritchard et al., 2023). Other truck drivers reported making friends with other truckers and keeping in contact through the radio while driving, particularly at night (Pritchard et al., 2023). Some truck drivers viewed their relationships with the public and customers during pick ups and deliveries as important for necessary human interactions (Pritchard et al., 2023) that can be lost while driving long hours over many miles.

Phone Applications

Phone applications can be used to access various mental health tips and techniques. One such app is the Calm mobile app, which integrates CBT techniques into exercises that can be used as daily practice (Huberty et al., 2019). The Calm app offers access to individually guided and unguided meditations at any time (Huberty et al., 2019) and offers the type of flexibility LHTDs could benefit from due to their irregular work schedule. In a study of college students who reported experiencing feelings of stress, those who were assigned to use this application for 8 weeks reported a decrease in their perceived stress levels (Huberty et al., 2019). Phone applications can help people with mental health issues increase their knowledge and self-care habits, boost their self-confidence and treatment compliance, and reduce stigma surrounding their mental health issues (Guracho et al., 2023). A study examining the potential of the 25 most common phone applications available from the Apple store and Google Play App to over-diagnose depression in users reported this to be a possibility (MacLean et al., 2022). The results showed eight out of the 25 applications inappropriately used the PHQ-9, a questionnaire for depressive symptoms, to diagnose major depressive disorder in people whom trained clinicians would ordinarily not diagnose as such due to the transient nature or mildness of their symptoms (MacLean et al., 2022). Though phone applications are useful and provide easy access to mental

health information, one systematic review and meta-analysis of studies from the United States, Saudi Arabia, and Australia reported one in four people with mental health issues access them, possibly due to cognitive impairments, self-reported memory issues, negative views about treatment, or low awareness of mental health apps (Guracho et al., 2023). However, those who did use the apps had developed more knowledge about their condition, engaged in healthy self-care habits, and felt more empowered in their care (Guracho et al., 2023).

Social Media

Social media is an easy way for LHTDs to keep in touch with other truck drivers (Nowak & Santana, 2022). It can also help promote and control mobilization of their colleagues regarding mutual industry interests, such as protesting for better pay or working conditions (Nowak & Santana, 2022). Results of a 2016 survey by a U.S. trucking company showed 73% of truck drivers checked their Facebook, Twitter, or Instagram daily (Sendall et al., 2018). In Romania, male and female truck drivers were found to use Facebook as a means to communicate with one another regarding traffic regulations and harsh socioeconomic circumstances, entertainment, and as an escape from daily pressures during the COVID-19 pandemic (Jeflea, 2022). In China, truck drivers have been accessing online communities to increase empowerment through social media (Liu & Wang, 2022). The internet has caused issues for self-employed truck drivers such as having to lower their prices in order to compete with other drivers for loads that are posted on internet logistics platforms (Liu & Wang, 2022). The internet has enabled Chinese truck drivers to increase communication, mutual assistance, protection of rights, and solidarity within their community and led to the formation of networking self-organization (Liu & Wang, 2022).

WeChat and short video platforms such as Douyin have been reported to be the most popular types of social media used by the truck driving community in China (Liu & Wang,

2022). In Taiwan, Chang et al. (2022) examined the effectiveness of social media versus conventional teaching groups designed to decrease perceived barriers to health and improve healthy eating habits. The researchers also examined the ability to follow cues of action among Taiwanese truck drivers and reported the social media outlet to be more effective (Chang et al., 2022). This particular program incorporated online access to information and resources, an accompanying food log with pictures, an audio e-book, and a loyalty e-card where points could be accumulated for participating in the program that could be used to receive prizes of varying value (Chang et al., 2022). However, for social media interventions to be successful, truck drivers must be educated on how to access them (Sendall et al., 2018). Some truck drivers may believe the programs are not designed for them or their skill level. They may not be able to afford a smartphone that is compatible with the application or they may only want to use their phone recreationally and not for work (Sendall et al., 2018).

National Hotlines

National hotlines are also available and do not require any internet use or devices. One study showed a number of adults and veterans experiencing suicidal thoughts were more likely to access assistance via telephone (Matthews et al., 2023). The national emergency hotline number 9-1-1 is widely recognized. Recently, the 9-8-8 Suicide & Crisis Lifeline was created by the Substance Abuse and Mental Health Services Administration and has fielded millions of calls throughout the United States (Matthews et al., 2023). There are two professional drivers' associations in Finland that support a telephone helpline for truck drivers (Radun et al., 2020).

Other Supports

Truck drivers can engage in multiple exercises while on the road to manage their mental health. Mindfulness assists individuals in becoming attuned to the present using non-judgmental

awareness and can help to reduce symptoms of PTSD, depression, anxiety, fatigue, and poor sleep quality (Wise et al., 2020). There are many materials available online that can be easily accessed at any time to assist someone in practicing different types of mindfulness exercises. TikTok, Facebook, Instagram, and other forms of social media do not require individuals to currently be in treatment to access general information about therapeutic exercises. However, this also creates the risk of receiving inaccurate or inappropriate information that would not be beneficial to the mental health of a particular truck driver.

Public and self-stigma prevent those in an already "macho culture" profession from accessing much needed mental health services (Radun et al., 2020). Researchers in one study discussed how the traditional male ideology can be a barrier to accessing much needed health care by feeding into the stigma surrounding men with mental health issues (Keum & Ogrodniczuk, 2023). Men are less likely than are women to access treatment for depression and are more likely than are women to complete suicide (Keum & Ogrodniczuk, 2023). Using male-sensitive materials that are marketed solely to men, like videos showcasing men speaking about their mental health struggles, can assist in challenging the stigma surrounding seeking mental health treatment (Keum & Ogrodniczuk, 2023).

Educational Programs

Some trucking companies offer educational programs to target some of the issues truck drivers face, such as sleepiness, that can impair their ability to concentrate, remain alert on the road, and react to external events (Alvaro et al., 2018). The Structured Health Intervention for Truckers (SHIFT) in the United Kingdom is a multi-component intervention for truckers targeting physical activity and positive lifestyle behaviors, and includes providing truckers with education sessions, cab workout equipment, Fitbits, step challenges, and text message feedback

(Guest et al., 2022). One study showed SHIFT led to an increase in positive healthy changes for those participating in the cohort and those who were not part of the intervention were reported to show an increased motivation to make change (Guest et al., 2022). Another study indicated SHIFT demonstrated a clinically meaningful difference in engaging in physical activity 6 months after implementation (Clemes et al., 2022).

Other companies are beginning to implement health promotion programs that target increasing physical activity and healthier food choices (Hege, Lemke, Apostolopoulos, & Sönmez, 2019). Young drivers in Australia who were exposed to an education program aimed to increase knowledge about sleeping and driving were found to have a reduced likelihood of driving while being severely sleepy and an enhanced ability to perceive feeling sleepy during nighttime driving in a simulated environment (Alvaro et al., 2018). However, this is not a support that all companies offer nor one to which many truck drivers have access. One study revealed the importance of company leadership's perceptions of the health climate within their agency as an indicator of whether they promote healthy behaviors that can improve employees' well-being (Kaluza et al., 2020). This can be affected by that same leader's perception of their own connection to the company itself (Kaluza et al., 2020). Barriers to physical health information truck drivers cited were not having the time to receive and engage in health information during their workday, having to expend energy listening to information was perceived as stressful, not being provided information from their employers, their own lack of knowledge about health education, and feeling their autonomy was threatened by health information (Gorczynski et al., 2020).

Medication Treatment

A large majority of truck drivers with mental health problems are not prescribed necessary medications due to irregular work schedules, having no employee benefits such as health insurance, and transport company employers not offering medical leave (Crizzle, McLean, & Malkin, 2020). Driver medical certification examinations are required by the FMCSA for a truck driver to be able to operate a large vehicle and must be completed on a specified time schedule and must be in the possession of the LHTD when working (Guzik, 2013). A medical history, physical measurements, and a physical exam are needed for the certification, which can be marked as unrestricted certification (active for up to 2 years), shortened certification (active for anywhere from 3 to 12 months), or does not meet the medical requirements (LHTD is not approved for certification) depending on the information provided (Thiese et al., 2021). The use of certain types of medications may affect an LHTD's ability to obtain the required medical certification (Metzner et al., 2009).

Summary

There are many lifestyle and environmental factors that affect the health of truck drivers and their ability to access health care (Batson et al., 2022). Due to the high stress environment in which LHTDs operate and the long working hours away from home, they can be alone in their mental health care. The physical effects related to working as an LHTD have been researched and reported on (Lincoln et al., 2018), yet there has been little to no research concerning the types of mental health resources LHTDs access. As with a lack of education regarding physical health issues, truck drivers may not correlate sleep issues with mental health care, which can be targeted through screening instruments via mobile devices with consideration of the time burden to drivers (Wise et al., 2020). Among the many factors influencing their rates of depression,

anxiety, and stress are the laws and regulations created with the intention to promote safety (Washburn et al., 2021). Ironically, these have been cited to increase LHTDs' sense of pressure with the introduction of LEDs (Washburn et al., 2021) and the lack of security in seeking medical treatment for certain diagnoses that may cause them to be ineligible for the medical certification they are required to carry in order to work (Thiese et al., 2021).

The driving environment has been noted to be another avenue of stress for LHTDs due to the number of fatalities and high crash rates (Stewart, 2023); disruptions to the roads and routes LHTDs prefer to use (Caspersen et al., 2023; Wei et al., 2023); the weather conditions (Sun & Dong, 2022); driver personalities (Qu et al., 2022); suicidal behaviors from other drivers (Radun, Parkkari, et al., 2019b; Radun, Radun, et al., 2019); shift work (Ganesan et al., 2022); and psychological stressors, such as stress and dissatisfaction with work (Mutifasari & Ramdhan, 2019). Studies have shown training programs (Camden et al., 2022) and adequate health insurance (Li et al., 2021) can have a positive impact on driver safety, though not all companies offer these options.

Among the other factors that may contribute to the high rates of depression, anxiety, and stress among LHTDs is how drivers are compensated for their work, which can be calculated by the miles they drive or they number of stops they make (Kudo & Belzer, 2019). The physical effects of the profession have been cited in numerous studies, with low back pain being one of the most common (Yosef et al., 2019). Instances of substance use/abuse, whether legal or illegal, are increased when a driver works more than 11 hours a day (Hege, Lemke, Apostolopoulos, & Sönmez, 2019); when their compensation is not adequate and they decide to take more loads or drive longer distances, which forces the need to stay awake (Girotto et al., 2019); or when they are self-medicating for mental health (Leyton et al., 2019) or physical health issues (Araújo Silva

et al., 2019). The poor work–life balance experienced in this profession has influenced many LHTDs to leave (Hege, Lemke, Apostolopoulos, et al., 2019) due to the high job demands that affect their family time (Pritchard et al., 2023).

Psychological effects from the job such as loneliness (Shin & Jeong, 2021), suicidal ideation (Michalopoulos et al., 2022), stress and poor sleep (Crizzle, Toxopeus, & Malkin, 2020), fatigue or anxiety symptoms (Guest et al., 2021), and depression (Crizzle, McLean, & Malkin, 2020) have been noted to affect LHTDs. Multiple work environment and individual factors can cause fatigue, making it difficult to find one comprehensive program to attend to each possible factor (Talebi et al., 2022). Low use of mental health services in the early phase of a reported injury could be a missed opportunity for early intervention in the initial stages of mental illness (Xia et al., 2021). Providing truck drivers with multiple points of access to personalized and direct information about improving health would be beneficial (Gorczynski et al., 2020). In a recent review examining weight loss interventions, seven studies from three countries showed using different types of weight loss interventions to be more successful than adhering to one type of intervention (Pritchard et al. 2022). Although truck drivers accessed mental healthcare services the least, those who were able to access services used them for a longer period of time (Xia et al., 2021).

Truck drivers appear to be a “hard-to-reach” population (Sendall et al., 2018, p. 1) and may not trust others to understand or approve of their lifestyle due to stigma or socioeconomic status (Sendall et al., 2018), making seeking treatment challenging. Examining the resources that are most familiar to this special population of essential workers would assist mental health clinicians in thinking outside of the box when offering treatment or connecting LHTDs to multiple types of internet accessible mental health resources. Knowing which type of resources

are better suited for truck drivers, especially those who have experienced depression, anxiety, or stress while on the road, could aid in promoting more involvement in the maintenance and care of their mental well-being, which would make the driving environment a safer place for everyone. This may be improved with educational programs, online support, and telehealth services (Garbarino et al., 2018). Drivers have cited the following as being acceptable or helpful ways to gain information or knowledge: using various forms of media such as trucking newspapers, pamphlets, or magazines and newsletters; health-related blogs or news websites; mobile applications; movement-tracking devices like Fitbits; using credible messengers who know and understand a trucker's life experiences; and company dissemination of information (Gorczynski et al., 2020).

CHAPTER THREE: METHODS

Overview

The purpose of this study was to identify which types of internet accessible mental health resources U.S. LHTDs are familiar with and whether one of three stressors (i.e., poor work–life balance, poor sleep quality, high job demands) influences this familiarity. The study involved the use of an online survey to gather information related to the internet accessible mental health resources with which LHTDs are most familiar and their levels of depression, anxiety, and stress. This chapter is divided into the following sections: design, research questions, hypothesis, participants and setting, instrumentation, procedures, and data analysis. The goal was to collect information to answer the research questions, allow the researcher to make recommendations for future studies, and provide information for mental health professionals to use in future treatment planning for this population.

Design

A quantitative descriptive epidemiological research design was the most appropriate approach as it aids in identifying the existence of and establishing the attitude and behavioral characteristics of a particular phenomenon from a population of interest using self-reports (Heppner et al., 2016). Descriptive statistics, in addition to inferential statistics, were used to report whether a relationship existed between the stressors LHTDs experience and their rates of depression, anxiety, and stress via a quantitative survey combined with scores from the DASS-21. A survey was sent out to local trucking companies in the Rio Grande Valley (RGV) and posted on long-haul trucking social media pages targeting data collection from LHTDs who spend 5 or more days a month working on the road. No particular gender was targeted. Questions depression, anxiety, and stress. Additional inquiries addressed familiarity with internet accessible

mental health resources. Identifying the internet accessible mental health resources that LHTDs are most familiar with could help mental health providers provide a more individualized treatment plan for a population in need of flexibility.

Research Questions

RQ1: What are the levels of depression, anxiety, and stress in U.S. single-team LHTDs?

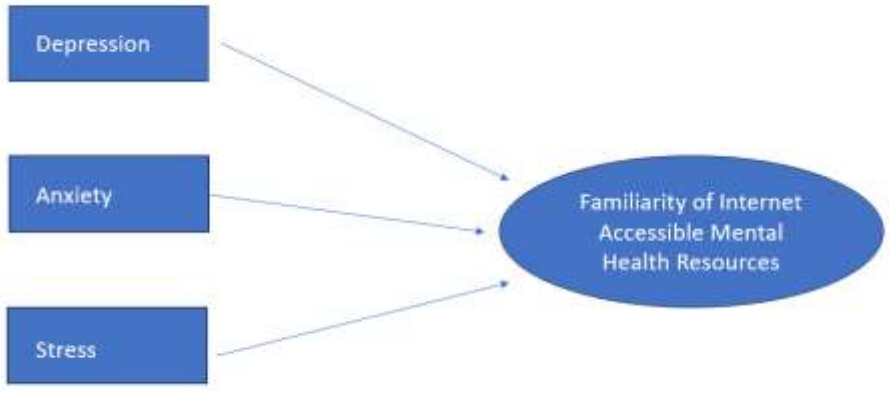
RQ2: What internet accessible mental health resources are LHTDs familiar with?

RQ3: Is there a positive relationship between stressors (poor work–life balance, poor sleep quality, and high job demands) and internet accessible mental health resource familiarity?

Figure 1 demonstrates the effects of the three stressors (i.e., poor work–life balance, poor sleep quality, and high job demands) on familiarity with internet accessible mental health resources.

Figure 1

Model of Relationships Among Stressors (Depression, Anxiety, Stress) and Familiarity With Internet Accessible Mental Health Resources



Hypothesis

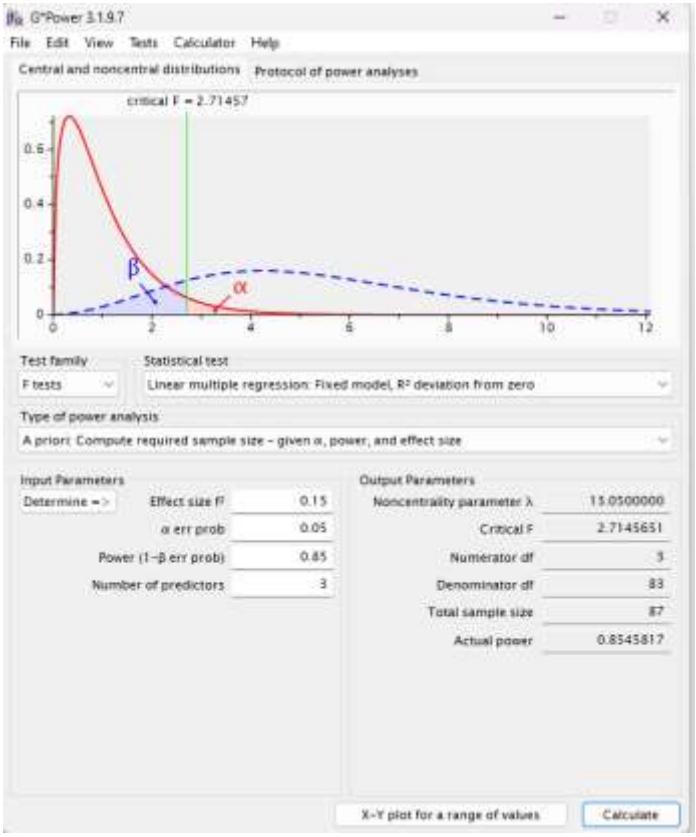
The hypothesis was that LHTDs who experienced the most stressors would have a higher level of familiarity with internet accessible mental health resources.

Participants and Setting

Participants for the study were U.S.-based adult long-haul single-team truck drivers who had at least 1 year of experience and spent 5 days or more per month on the road away from their homes and families. The desired sample size was 87 participants based on G*Power calculations (Heppner et al., 2016). The sample size of 87 participants was calculated by entering the estimated size effect (Cohen's $f = 0.15$), alpha level ($\alpha = .05$), and power (.85 confidence interval [CI]; see Figure 2).

Figure 2

Graph of G* Power Calculations



The researcher targeted trucking companies located in south Texas that employed at least 10 or more LHTDs. Posting on social media pages targeting LHTDs increased participant identification. Participants were those who met the requirements and responded to the email or

social media marketing and were not limited to just the State of Texas as participants were encouraged on the flyers to share the quick response (QR) code with others to account for the anticipated 10% attrition rate for interested individuals who did not qualify. Convenience sampling was used to increase participant numbers as most LHTDs communicate with one another via radio (Pritchard et al., 2023) or social media platforms (Nowak & Santana, 2022). Incorporating social media platforms such as Facebook was intended to widen the publicity of the survey through known trusted creators from the target population; the platforms offer an alternative form of access and bypass any gatekeepers (Dosek, 2021). They also aid in precision for information dissemination, thus increasing efficiency in participant recruitment (Dosek, 2021). No monetary incentive for answering the survey was provided.

Instrumentation

The instrumentation included an online survey comprising 31 questions to gather information regarding which internet accessible mental health resources were recognized by LHTDs. Instrumentation also included the DASS-21 to record LHTDs' experienced rates of depression, anxiety, and stress.

Survey

The survey was designed to take approximately 3 minutes to complete and was created by the researcher online via Qualtrics and pilot tested with a small group of five U.S.-based LHTDs (four males and one female). All five LHTDs had more than 10 years of experience and were familiar with industry jargon. The five LHTDs were asked to provide feedback about adjustments needed to the survey, such as typos or academic wording that was not easily understood. The survey had 10 questions. Questions 1–5 were demographic questions regarding gender, years working as an LHTD, days away from home, union membership, and work status.

Question 6 instructed the participants to identify all the people from whom they elicited emotional support. Question 7 asked the participants to identify which of the three main stressors covered in the literature (i.e., poor work–life balance, poor sleep quality, and high job demands) they found to be most stressful. Questions 8–10 asked the participants to identify their level of familiarity with the different types of internet accessible mental health resources. Participants chose answers based on the following responses: not at all familiar, somewhat familiar (I've heard of them), very familiar (I've looked into or been referred to them), and I am currently using one or more of these services (see Appendix A).

DASS-21

The 21-item Depression, Anxiety and Stress Scale (DASS-21) is a self-report measure of participants' experiences of depression, anxiety, and stress (Chin et al., 2019). The DASS-21 is designed to take about 5 to 10 minutes to complete. This easily administered and scored measure (see Appendix B) has been commonly used in multiple types of settings and with a wide range of populations (Chin et al., 2019). The DASS-21 has been translated into 45 languages and has been validated using both clinical and non-clinical samples (Zanon et al., 2021). It uses a bifactor model that measures depression, anxiety, and stress in an individual with a general distress factor that can be examined by using a total mean score (Zanon et al., 2021). Various studies have shown the DASS-21 to have acceptable reliability and validity (Chin et al., 2019; Zanon et al., 2021). The DASS-21 score is calculated by the total number of points indicated by the participant's responses (Chin et al., 2019). A researcher can be 90% confident that any participant scoring less than 16 points on the DASS-21 will not require any follow-up services for anxiety or depression (Chin et al., 2019). Any participant who scores higher than 16 has a 30% chance of experiencing an anxiety disorder or major depressive disorder (Chin et al., 2019).

Procedures

After receiving approval from the Liberty Institutional Review Board (IRB), the researcher distributed a QR code to the survey through identified social media pages on Facebook and through trucking companies in Hidalgo County, Texas, in the Spring of 2024. The researcher sent the recruitment material containing the QR code to the identified Facebook social media pages (see Appendix C) with a line that encouraged the sharing between LHTDs of the QR code. The Human Resources (HR) departments of trucking companies (see Appendix D) in the RGV received the email recruitment material containing the QR code to disperse to their employees with a line encouraging LHTDs to share the code with their peers. The researcher collected data from LHTDs by inquiring about their experienced rates of depression, anxiety, and stress and their familiarity with internet accessible mental health resources. The QR code was connected to the consent forms (see Appendix E) and the anonymous survey (see Appendix A & B). No formal controls were available to prevent participant collaboration in completing the survey. The researcher sent the social media recruitment posting for Facebook to the administrators of the pages for uploading. The survey was active for 3 weeks.

Data Analysis

This research involved using both descriptive and inferential statistics. Descriptive statistics were used to examine RQ1 (What are the levels of depression, anxiety, and stress in U.S. single-team LHTDs?) and RQ2 (What internet accessible mental health resources are LHTDs familiar with?). Descriptive statistics aid in arranging data for understanding into three categories of measures of distribution, measures of central tendency, and measures of variability, but not for testing hypotheses as RQ1 and RQ2 did not contain any (Sanchez, 2023). Graphs were used in this exploratory study to clarify the results. Residual scatterplots using SPSS helped

with screening the data for any extreme outliers and identifying any biases that had the potential to influence the results (Warner, 2021a). Descriptive statistics are known as the building blocks of inferential statistics (Brown, 2012).

Inferential statistics were used to investigate the relationship between the stressors experienced by LHTDs and their familiarity with internet accessible mental health resources. The researcher used multiple linear regression to answer RQ3: Is there a positive relationship between stressors (poor work–life balance, poor sleep quality, and high job demands) and internet accessible mental health resource familiarity? The hypothesis tested in this study was that LHTDs who experienced the most stressors would have a higher level of familiarity with internet accessible mental health resources. Multiple linear regression assisted in analyzing the data to report on the relationship between the predictor and the criterion (Warner, 2021b). The predictor was the identified stressor (i.e., poor work–life balance, sleep quality, or high job demands) and the criterion were the rates of depression, anxiety, and stress. Mahalanobis *d* was used in data screening to identify any outliers (Warner, 2021b, p. 38). The four assumptions of multiple linear regression were tested. The first three assumptions (i.e., normal distribution, linearity, and homogeneity of variance) were tested by using residual scatterplots to illustrate a straight-line relationship where points are distributed above or below (Warner, 2021b). The fourth assumption of homogeneity of regression was tested using collinearity statistics in a coefficient table (Warner, 2021b). SPSS was used for data analysis (Warner, 2021b) for each of the three stressors (see Figure 1). Convenience sampling was used to invoke the idea of proximal similarity, or to generalize the results for a population (Warner, 2021a).

Summary

This study involved examining the rates of depression, anxiety, and stress experienced by LHTDs as well as the types of flexible mental health resources with which they were familiar. The study was designed to test the hypothesis of whether the number of stressors experienced by LHTDs influenced their familiarity with internet accessible mental health resources. A survey was used to ask participants about their demographics and familiarity with the internet accessible mental health resources available and to identify which stressor may influence their level of familiarity. The DASS-21 contains statements about experiences with depression, anxiety, and stress and has been shown to be reliable and valid in different settings and populations (Chin et al., 2019; Zanon et al., 2021). Local trucking companies distributed the recruitment material to their employees through their HR departments. Popular Facebook social media pages posted the recruitment material. Participants were instructed in the recruitment material to share the QR code with colleagues who met the inclusion criteria to elicit as many participants as possible and to expand recruitment efforts beyond the RGV and the State of Texas.

CHAPTER FOUR: RESULTS

Overview

This chapter presents the survey results pertaining to the purpose of the study, which was to identify which types of internet accessible mental health resources U.S. LHTDs are familiar with and whether one of three stressors (i.e., poor work–life balance, poor sleep quality, high job demands) influences this familiarity. This chapter also contains the descriptive statistics targeted for this study (i.e., biological sex, years working as an LHTD, number of days working away from home, union membership, work status, and sources of support). SPSS was used to analyze the data and the sample demographics. The process used to analyze the responses from the seven participants pertaining to the DASS-21 and their level of familiarity with mental health resources is described in detail in this chapter.

Descriptive Statistics

A survey (see Appendix A) was used to gather information on the participants pertaining to their biological sex, number of years working as an LHTD, number of days working away from home, union membership, work status, and sources of support. The descriptive information assisted in providing background information for the survey participants.

A total of 16 individuals began the survey, after which the submissions were screened for excessive missing data. There were nine cases where participants began the survey but terminated after answering anywhere from zero to four questions, leaving seven participants as the sample for this study. Regarding multivariate outliers, the Mahalanobis value for all analyses did not exceed a cutoff of 24.32 ($p < .001$).

Table 1 presents a description of the participants. Of the seven participants, six identified as biologically male and one identified as biologically female (see Figure 3). Two participants

identified as having worked as an LHTD for 1 to 3 years and five had 10 or more years of experience (see Figure 4). As shown in Figure 5, one of the participants only worked 1 to 3 days away from home in a month, two participants worked on average 4 to 6 days away from home, one participant worked on average 7 to 9 days away from home, and three participants worked an average of 10 or more days away from home in a month. Figure 6 shows none of the participants reported belonging to a union. As shown in Figure 7, six participants worked for a company and only one was self-employed. Figure 8 shows all seven participants identified family as their source of support, six participants also chose their friends as a source of support, two cited friends as another source of support, and one identified as having "no one" for support besides their family. In terms of stressors, five participants identified poor sleep quality as a stressor and only two chose high job demands as their identified stressor.

Table 1

Descriptive Statistics

Characteristic	*N*	%
Biological sex		
Male	6	85.7%
Female	1	14.3%
Time working long haul		
1–3 years	2	28.6%
10+ years	5	71.4%
Days working away from home		
1–3 days	1	14.3%
4–6 days	2	28.6%
7–9 days	1	14.3%
10+ days	3	42.9%
Do you belong to a union?		
Yes	0	0.0%

Characteristic	*N*	%
No	7	100.0%
Work status		
Self-employed	1	14.3%
Employed with company	6	85.7%
Sources of support		
Family	7	100.0%
Supervisor	0	0.0%
Coworkers	2	28.6%
Mental health professional	0	0.0%
Medical doctor	0	0.0%
Friends	6	85.7%
No one	1	14.3%
Stressors		
Poor sleep quality	5	71.4%
High job demands	2	28.6%
Familiarity with online mental health resources		
Not familiar at all	5	71.4%
Somewhat familiar (heard of them)	2	28.6%
Familiarity with mental health apps		
Not familiar at all	5	71.4%
Somewhat familiar (heard of them)	2	28.6%
Familiarity with mental health social media		
Not familiar at all	6	85.7%
Somewhat familiar (heard of them)	1	14.3%

Figure 3

Biological Sex

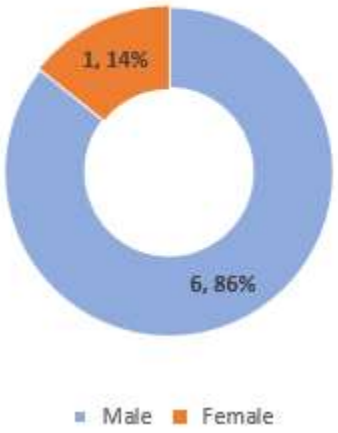


Figure 4

Time Working Long Haul

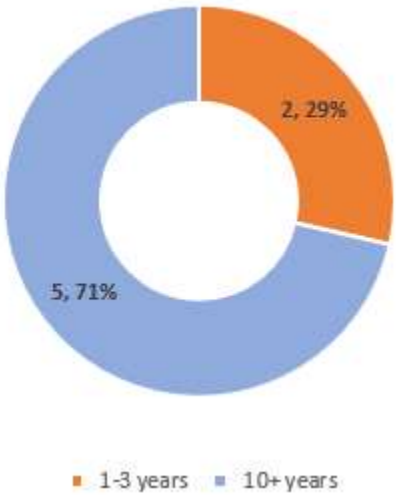


Figure 5

Days Working Away From Home

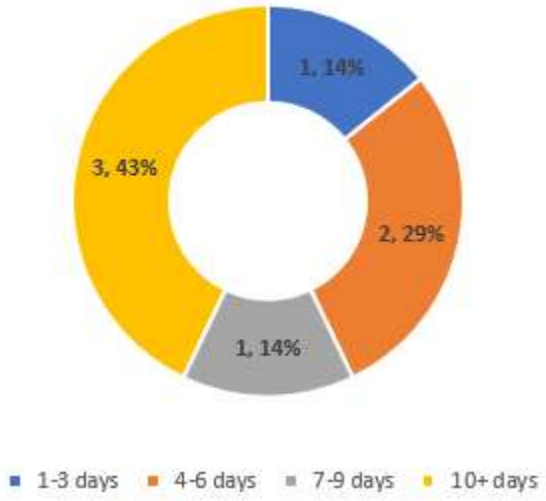


Figure 6

Belong to a Union

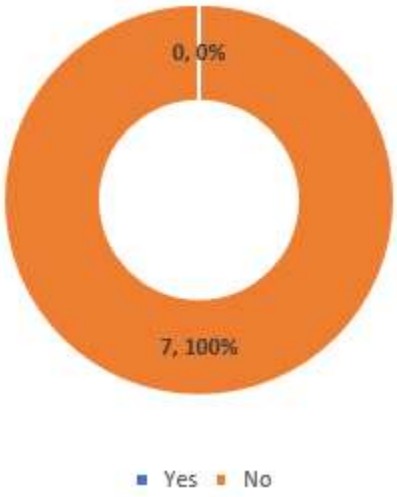


Figure 7

Work Status

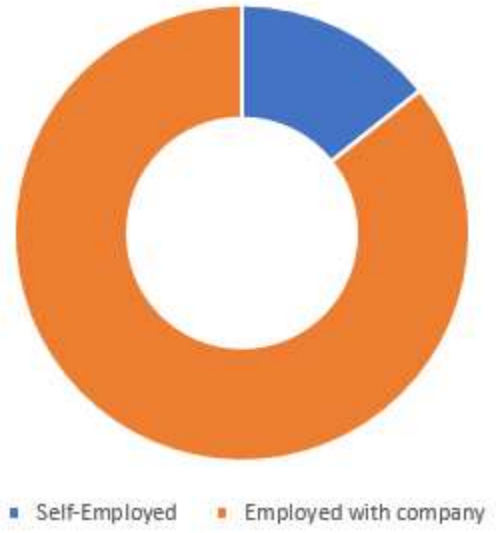
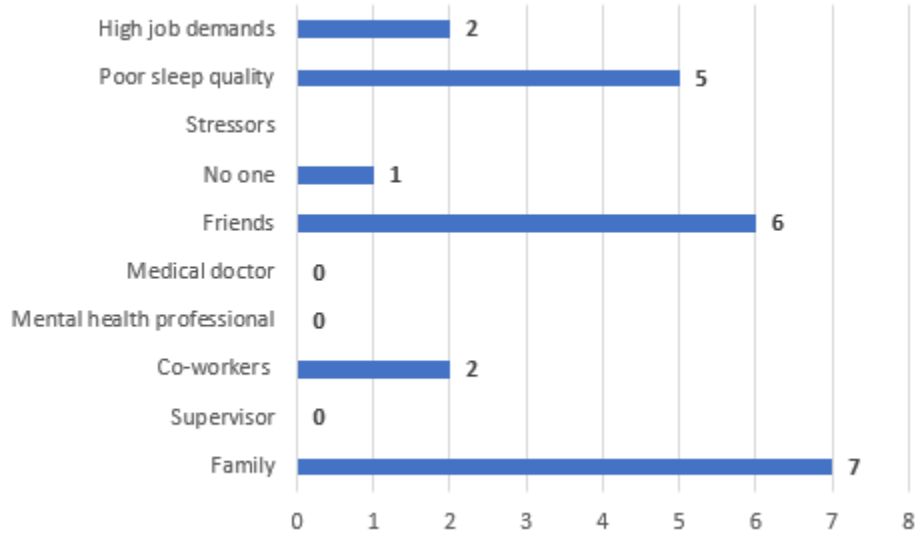


Figure 8

Sources of Stress and Support



Results

Data Screening

Data were screened for excessive missing data and cases with greater than 40% missing data were omitted. This resulted in the removal of nine cases. For these cases, it appeared the participant clicked on the survey link but answered zero to four questions before leaving the survey. This left seven cases for analysis. The data contained no multivariate outliers. The largest Mahalanobis value was 4.63 (see Table 2). With three predictors, a value of 16.26 would be considered a multivariate outlier.

Table 2

Mahalanobis Distances

		N	%	Valid %	Cumulative %
Valid	0.66357	1	6.3	14.3	14.3
	0.88866	2	12.5	28.6	42.9
	3.05551	1	6.3	14.3	57.1
	3.55271	1	6.3	14.3	71.4
	4.31867	1	6.3	14.3	85.7
	4.63222	1	6.3	14.3	100.0
	Total	7	43.8	100.0	
Missing	System	9	56.3		
Total		16	100.0		

Research Question 1

Research Question 1 was: What are the levels of depression, anxiety, and stress in U.S. single-team LHTDs? As shown in Table 3, DASS-21 scores were relatively low for all participants, indicating this sample did not represent LHTDs with significant scores for

depression, anxiety, or stress. The highest depression score was 18, indicating moderate depression; the highest anxiety score was 17, indicating severe anxiety; and the highest stress score was 22, indicating moderate stress given the DASS-21 scoring criteria (Chin et al., 2019). This, combined with average scores in the moderate range, indicates the seven participants, on average, were not experiencing high levels of depression, anxiety, or stress. Figures 9, 10, and 11 demonstrate these relationships.

Table 3

Correlations, Means, Standard Deviations, and Reliability

Variable	Possible range	*M*	*SD*	1	2	3	4
1. Depression	7–28	10.71	4.35	.82			
2. Anxiety	7–28	10.00	4.00	.87*	.92		
3. Stress	7–28	12.00	5.39	.95**	.79*	.94	
4. DASS-21 total	21–84	32.71	13.15	.99**	.92**	.97**	.96

* $p < .05$. ** $p < .01$.

Figure 9

Histogram of Depression Scores

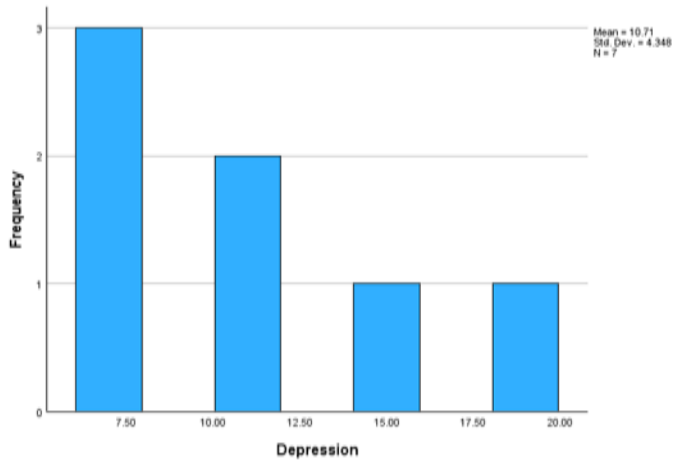


Figure 10

Histogram of Anxiety Scores

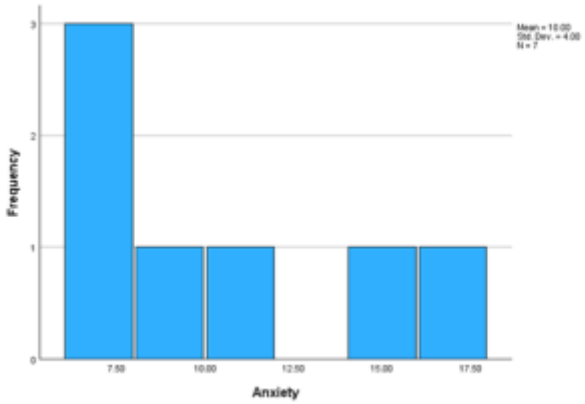
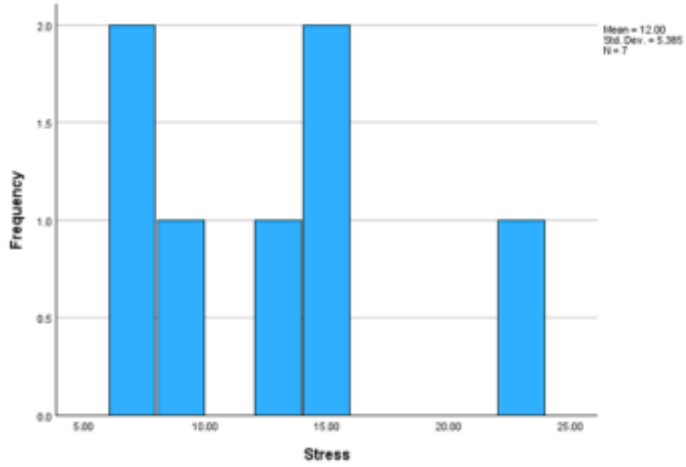


Figure 11

Histogram of Stress Scores



Research Question 2

Research Question 2 was: What internet accessible mental health resources are LHTDs familiar with? Some such resources include Better Help, Talk Space, or an EAP. As shown previously in Table 1, participants' awareness was relatively low. Two of the participants, or 28.6%, indicated having any level of familiarity with internet accessible mental health resources, though they said they had not engaged with them. A majority of the participants chose "not

familiar at all" in response to their level of familiarity with online mental health resources (71.4%; see Figure 12), mental health apps (71.4%; see Figure 13), and mental health social media (85.7%; see Figure 14).

Figure 12

Familiarity With Online Mental Health Resources

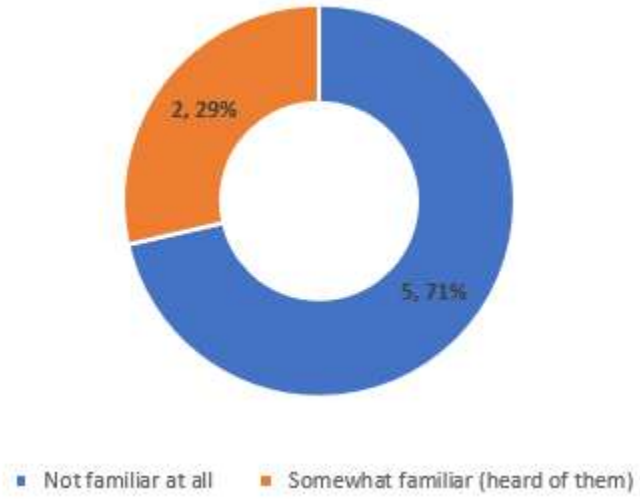


Figure 13

Familiarity With Mental Health Apps

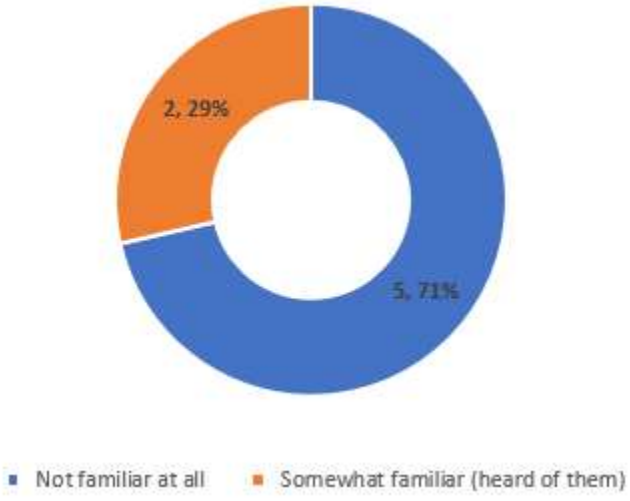
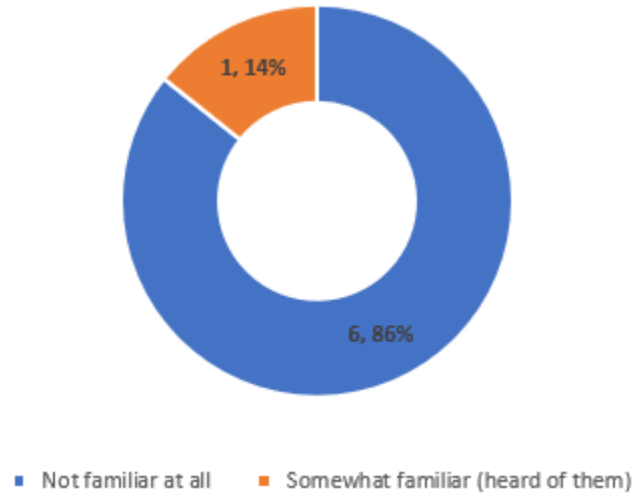


Figure 14

Familiarity With Mental Health Social Media



Research Question 3

Research Question 3 was: Is there a positive relationship between stressors (poor work–life balance, poor sleep quality, and high job demands) and internet accessible mental health resource familiarity? No positive relationship was demonstrated by the data. Multicollinearity between depression and stress was noted and is discussed in the next section. Results from the seven participants did not support the hypothesis that LHTDs who experienced the most stressors would have a higher level of familiarity with internet accessible mental health resources.

Assumption Testing

A visual inspection of the residual scatterplot revealed no issues regarding normality, linearity, or homogeneity of variance. As shown in Figure 15, the distribution of the seven scores was roughly symmetrical above and below the standardized residual value of 0.0, indicating normality. There were no obvious patterns of non-linearity (e.g., curvilinear relationships)

between predicted and residual scores, meeting the assumption of linearity. The absence of a fan-like shape in the residual graph suggests homoscedasticity was met.

Figure 15

Predicted vs. Residual Graph

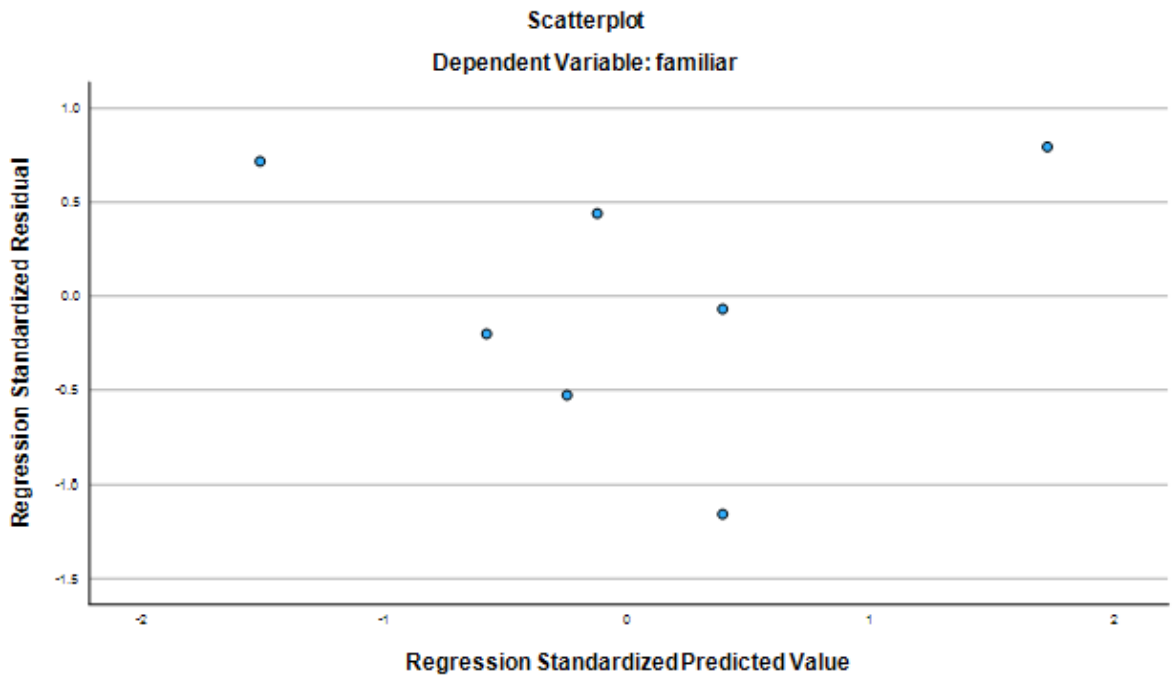


Table 4 shows issues with multicollinearity as both depression (19.1) and stress (12.1) had VIF values well over 10.0, indicating there was considerable overlap between the variables (Tabachnick & Fidell, 2019). This was also reflected in the tolerance (1 divided by the VIF) values for depression of .052 and .083 for stress. If there were no multicollinearity, tolerance for each variable would be 1.0. Table 3 shows the measures were very strongly correlated at .87. Further evidence of issues with the analyses came from the standardized regression coefficients. Standardized coefficients should range from –1 to +1, and there are two standardized coefficients in Table 4 that exceed 1.0 (Tabachnick & Fidell, 2019). Out of range estimates of this nature occur when multicollinearity is excessive (Warner, 2021b). Violation of the multicollinearity

assumption made the planned analysis problematic. However, the researcher completed this analysis and an additional analysis that addressed multicollinearity issues for completeness.

Table 4

Regression Results Predicting Familiarity From DASS-21 Subscales

	Unstandardized coefficients		Standardized coefficients			Collinearity	
	b	*SE*	*b**	*t*	*p*	Tol	VIF
Constant	4.13	1.03		4.03	.028		
Anxiety	0.41	0.20	1.47	2.04	.134	.22	4.56
Depression	-0.40	0.38	-1.57	-1.07	.365	.05	19.05
Stress	-0.02	0.24	-0.08	-0.07	.948	.08	12.10

Note. R^2 *Model* = .66, $F(3,3) = 1.94$, $p = .30$, *b* = unstandardized regression coefficient. *b** = standardized regression coefficient.

Analyses

Research Question 3 addressed whether there was a positive relationship between stressors (depression, anxiety, and stress) and internet accessible mental health resource familiarity. Table 4 presented the results of a multiple regression analysis examining familiarity as a function of depression, anxiety, and stress. Overall familiarity with online accessible resources was unrelated to depression, anxiety, or stress, R^2 *Model* = .66, $F(3,3) = 1.94$, $p = .30$. None of the variables were significantly associated with familiarity. Note that the values for the standardized coefficients were implausible (1.0), a common occurrence under the conditions of extreme multicollinearity.

As anxiety, depression, and stress were highly correlated, additional analyses were used to examine only depression and anxiety while leaving out stress. The full model was not significant, R^2 *Model* = .66, $p = .12$. As shown in Table 5, anxiety was unrelated to familiarity,

but depression was related to familiarity. However, again, as evidenced by the standardized coefficients, multicollinearity remained a serious issue as the values were out of range.

Table 5

Regression Results From Predicting Familiarity From DASS-21 Anxiety and Depression

	Unstandardized coefficients		Standardized coefficients			Collinearity	
	b	*SE*	*b**	*t*	*p*	*Tol*	*VIF*
Constant	4.13	0.89		4.66	.017		
Anxiety	0.41	0.17	1.48	2.48	.068	.24	4.18
Depression	-0.42	0.15	-1.65	2.77	.045	.24	4.18

Note. R^2 *Model* = .66, $F(2,4) = 1.94$, $p = .30$.

Table 6 presents the results of the analyses using the anxiety score as the only predictor. The full model was again not significant, R^2 *Model* = .08, $p = .54$. Anxiety was unrelated to familiarity. Multicollinearity was not an issue as there was only one predictor.

Table 6

Regression Results Predicting Familiarity From Anxiety

	Unstandardized coefficients		Standardized coefficients			Collinearity	
	b	*SE*	*b**	*t*	*p*	*Tol*	*VIF*
Constant	3.61	1.33		2.72	.042		
Anxiety	0.01	0.12	.04	0.08	.936	1.00	1.00

Note. R^2 *Model* = .00, $F(1,5) = 0.01$, $p = .94$.

Table 7 presents the results of the analyses using the overall DASS-21 score as the only predictor. The full model was again not significant, R^2 *Model* = .08, $p = .54$. The DASS-21 was unrelated to familiarity. Multicollinearity was not an issue as there was only one predictor.

Table 7

Regression Results Predicting Familiarity From DASS-21 Overall

	Unstandardized coefficients		Standardized coefficients			Collinearity	
	b	*SE*	*b**	*t*	*p*	*Tol*	*VIF*
Constant	4.49	1.27		3.54	.017		
DASS-21	-0.02	0.04	-.28	0.65	.543	1.00	1.00

Note. R^2 *Model* = .00, $F(1,5) = 0.43$, $p = .54$.

Additional Exploratory Analyses

To further explore the data, the researcher compared those participants who were unfamiliar with online mental health services to those who were not (see Table 8). This analysis also revealed no differences, as poor work–life balance, poor sleep quality, and high job demands did not affect LHTDs' familiarity with internet accessible mental health resources. However, due to oversight with the construction of the study, depression, anxiety, and stress were the variables examined. The data did not highlight any relationship between stressors and familiarity. Out of the 16 responses collected, only seven were usable. The majority of the participants had 10 or more years as an LHTD. None of the participants belonged to a union. A large percentage of the participants chose poor sleep quality as a stressor. A majority of the participants reported not being familiar with any of the internet accessible mental health resources presented.

Table 8

Independent Samples t-Tests

Outcome	Response				
	Not familiar	Heard of			
	M(*SD*)	*M*(*SD*)	*t*	*p*	*d*
Anxiety					
Resources	10.60(4.62)	8.50(2.12)	0.59	.58	0.50
Apps	9.20(4.38)	12.00(2.82)	0.81	.45	0.68
Social media	10.00(4.38)	10.00(0.00)	0.00	1.00	0.00
Depression					
Resources	12.20(4.32)	7.00(0.00)	1.61	.17	1.34
Apps	10.60(4.51)	11.00(5.66)	0.10	.92	0.08
Social media	11.33(4.41)	7.00(0.00)	0.91	.41	0.98
Stress					
Resources	13.80(5.40)	7.50(0.71)	1.56	.18	1.30
Apps	12.40(6.19)	11.00(4.25)	0.29	.79	0.24
Social media	12.67(5.57)	8.00(0.00)	0.78	.47	0.84

Summary

This study was designed to examine whether one of three stressors (i.e., poor work–life balance, poor sleep quality, high job demands) affect LHTDs' familiarity with internet accessible mental health resources. However, due to oversight with construction of the study, depression, anxiety, and stress were the variables examined. Due to the small participant sample size, the data did not highlight any relationship between stressors and familiarity. Of the 16 responses collected, only seven were applicable. The majority of the participants had 10 or more years as an LHTD. None of the participants belonged to a union. A large percentage of the participants chose poor sleep quality as a stressor; however, it did not have any effect on their level of

familiarity with internet accessible mental health resources. A majority of the participants reported not being familiar with any of the internet accessible mental health resources presented.

CHAPTER FIVE: CONCLUSIONS

Overview

The study failed to show any relationship between any of the stressors (i.e., poor work–life balance, poor sleep quality, and high job demands) and participants' levels of familiarity with internet accessible mental health resources. In this chapter, each of the three research questions is discussed, comparing the study's findings with the literature that was presented in Chapter 2. Implications regarding the data are explored to assist mental health professionals who treat LHTDs in using resources that will pair well with the lifestyle. The limitations of this study are highlighted to identify how they may have possibly affected the results. Recommendations for future research are also discussed.

Discussion

The purpose of this study was to identify which types of internet accessible mental health resources U.S. LHTDs are familiar with and whether one of three stressors (poor work–life balance, poor sleep quality, high job demands) influences this familiarity.

Research Question 1

What are the levels of depression, anxiety, and stress in U.S. single-team LHTDs? Contrary to expectations, participants in this study did not report any significant levels of depression, anxiety, or stress. According to past research, LHTDs are at a higher risk of developing depression (Crizzle, McLean, & Malkin, 2020; Wadley et al., 2020), anxiety (Guest et al., 2021), and stress (Hege, Lemke, Apostolopoulos, et al., 2019) due to stressors (Batson et al., 2022; Caspersen et al., 2023; Wei et al., 2023) such as poor work–life balance (Hege, Lemke, Apostolopoulos, et al., 2019; Pritchard et al., 2023), poor sleep quality (Crizzle, McLean, & Malkin, 2020; Ganesan et al., 2022; Hege, Lemke, Apostolopoulos, et al., 2019), and high job

demands (Delhomme & Gheorghiu, 2021; Ganesan et al., 2022). Transport workers in high stress male-dominated occupations have a significantly higher risk for suicide compared to the general population (Mathieu et al., 2022). Anxiety among LHTDs has been discussed in other studies as stemming from their irregular work schedules and the driving environment (Caspersen et al., 2023; Guest et al., 2021). Anxiety can influence an LHTD's engagement in risky driving behaviors that can increase the likelihood of a crash or fatality (Batson et al., 2022). Research has also been conducted on how stress can be influenced by the amount of training an LHTD receives regarding safety and preparedness (Delhomme & Gheorghiu, 2021). Sleep quality has also been linked to the amount of stress reported by LHTDs and was identified as moderate or high by 62.6% of the participants in the Hege, Lemke, Apostolopoulos, et al. (2019) study. Additionally, 71.1% of the U.S. LHTDs in that study believed their poor sleep quality to have affected their work (Hege, Lemke, Apostolopoulos, et al., 2019).

Research Question 2

What internet accessible mental health resources are LHTDs familiar with?

The internet accessible mental health resources examined in this study included online mental health resources such as Better Help, Talk Space, or an EAP; phone applications such as Calm and Headspace; and social media pages on Facebook specific to LHTDs. The results of this study demonstrated a majority of the participants chose "not familiar at all" in response to their level of familiarity with online mental health resources (71.4%), mental health apps (71.4%), and mental health social media (85.7%). Previous research showed 70% of LHTDs who use more than one internet accessible device do so to check the weather or access news, log onto their social media, or keep in contact with family (Heaton et al., 2017). As a result of the COVID-19 pandemic, online counseling services have become the preferred method of obtaining treatment

(Rehman et al., 2023), though other research cited in Chapter 2 noted most LHTDs do not access mental health resources immediately after a work-related incident has occurred (Xia et al., 2021). No research regarding mental health applications and LHTDs was found; however, one study examining the Calm app, which can be accessed at any time from an internet capable device to provide CBT techniques, was reported to lead to decreased stress levels among participants who used it for 8 weeks (Huberty et al., 2019). Mental health phone applications have been cited to increase mental health knowledge and self-care habits, boost self-confidence and treatment compliance, and reduce stigma (Guracho et al., 2023). However, they have also been shown to over diagnose depression (MacLean et al., 2022), which would imply the need to have a mental health professional involved to discuss the results and determine the most appropriate treatment. With regard to social media, it is an easy way for LHTDs to keep in touch with their peers (Nowak & Santana, 2022). In 2016, results of a U.S. trucking company survey showed 73% of their drivers checked their Facebook, Twitter, or Instagram pages daily (Sendall et al., 2018). However, education on how to access social media interventions is important for truck drivers who may not believe they are skilled enough to use them (Sendall et al., 2018).

In the current study, all of the participants identified family as a source of support. This aligns with past research that indicated drivers have a tendency to unload their stress on their partners instead of mental health professionals due to stigma or the irregularity of their schedules causing an inability for them to maintain appointments (Pritchard et al., 2023). In the current study, 85.7% of the participants identified friends as a source of support. In an Australian study, truck drivers reported struggles related to maintaining their friendships due to the high job demands and fatigue, yet those who maintained them did so for their mental well-being (Pritchard et al., 2023). Two participants in the current study cited coworkers and one participant

identified “no one” as a source of support as well. Trucking coworkers will make friends with other truckers and keep in contact through the radio while driving, particularly at night (Pritchard et al., 2023). In the current study, one trucker identified “no one” as a source of support; other studies have indicated LHTDs can experience social isolation due to their long-distance deliveries and erratic work schedules (Calati et al., 2019; Makuto et al., 2023).

Research Question 3

Is there a positive relationship between stressors (poor work–life balance, poor sleep quality, and high job demands) and internet accessible mental health resource familiarity?

In the current study, 71.4% of the participants identified poor sleep quality as a stressor, whereas only 28.6% chose high job demands as their identified stressor. The negative effects of stressors like poor work–life balance (Hege, Lemke, Apostolopoulos, Whitaker, & Sönmez, 2019; Pritchard et al., 2023), poor sleep quality (Crizzle, McLean, & Malkin, 2020; Ganesan et al., 2022; Hege, Lemke, Apostolopoulos, et al., 2019), and high job demands (Delhomme & Gheorghiu, 2021; Ganesan et al., 2022) have been widely studied (Batson et al., 2022; Caspersen et al., 2023; Wei et al., 2023). The majority of the participants (71.4%) in the current study identifying poor sleep quality as a stressor is in line with past research that reported on how poor sleep quality can negatively affect an LHTD’s physical (Mabry et al., 2022; Ravi et al., 2020; van Vreden et al., 2022; Wadley et al., 2020) and mental health (Crizzle, McLean, & Malkin, 2020; Ganesan et al., 2022; Hege, Lemke, Apostolopoulos, et al., 2019). None of the participants in the current study selected poor work–life balance as an identified stressor, despite 42.9% of the participants reporting they spent 10 days or more away from home for work in a month. High job demands were selected by a few participants as their stressor. According to the U.S. Bureau of Labor Statistics (2023), most LHTDs work full time, which can include nights, weekends, and

holidays, to meet the demand for goods and can work anywhere from 60–70 hours in a 7- to 8-day work week. However, the results of the current study did not produce any data to reveal the presence of a relationship between any of the stressors and an LHTD's level of familiarity with internet accessible mental health resources.

Implications

The implications of the study for the field of counseling are to address the lack of knowledge regarding LHTDs and their mental health care and the importance of further exploration. It has been established that LHTDs work erratic and long hours away from home on strict schedules (Delhomme & Gheorghiu, 2021; Ganesan et al., 2022) with routes that cover several states or countries (U.S. Bureau of Labor Statistics, 2023). The ability for mental health professionals to incorporate various internet accessible mental health resources into their practice or treatment plans could promote better engagement from LHTDs. With a majority of the current participants citing poor sleep quality as a stressor, it is imperative to use multiple points of access to psychoeducational materials or exercise building videos to empower LHTDs to take control of their mental health.

Limitations

An identified limitation was the use of only two research sites located in the RGV area of South Texas that could have limited the number of participants reached outside of this area. Participant engagement outside Texas depended on the current participants sharing the QR code with others. The number of LHTDs employed by the research sites could have also affected the participant pool. Many of the research sites contacted did not respond to the request to share the information or the representative from the HR department did not understand the data collection process, and thus did not pass along the request to participate.

Older LHTDs who do not use the internet as much as younger generations may have been prevented from participating. Some feedback on the Facebook pages suggested the use of a link instead of a QR code that requires the use of a QR code scanner phone application, as older generations of LHTDs may not have or know of its existence. The administrators of some Facebook sites also did not respond to requests for posting the recruitment material. Those that did allow for it to be posted had many members posting throughout the day, which could have overshadowed the visibility of the original post.

Recommendations for Future Research

Various psychological assessments have been used in past studies to illustrate the amount of trauma an average truck driver may experience on the job. For example, in one study, the PHQ-9, PCL-5, and the Life Events Checklist (LEC-5) were used to collect mental health data from truck drivers in South Africa and the results showed 43% experienced depressive symptoms that were mild or greater than .5 (PHQ-9), PTSD was evident in 6% of those drivers with chronic pain and 4% of those with none (PCL-5), and 75% reported directly experiencing at least one traumatic life event and 95% reported having witnessed a traumatic life event (LEC-5; Wadley et al., 2020). In another study, 35% of truckers scored greater than 30 on the PTSD Scale-Civilian version and 15% scored 44 or more (Wise et al., 2020). Due to the erratic work schedules of truck drivers, clinicians should consider incorporating different time conscious scales to quickly screen for and assess mental health issues and sleep issues (Wise et al., 2020).

Another area for future study would be to investigate whether there is a gender difference between LHTDs accessing mental health applications. The CDC published statistics reporting mental health treatment from 2019 to 2021 had increased for both men and women aged 18–44 years old (Terlizzi & Schiller, 2022). The CDC statistics (Terlizzi & Schiller, 2022) also

indicated that for the years of 2019, 2020, and 2021, women were more likely to have received mental health care compared to men. Efforts to increase the number of female truck drivers are continuing (Ricks, 2020). Two industry advocacy groups were created to address the shortage of female truck drivers (Scott & Davis-Sramek, 2023). In the United States, women tend to prioritize work–life balance and personal time when it comes to choosing an occupation (Scott & Davis-Sramek, 2023). One study reported men are less likely than are women to access treatment for depression and are more likely to complete suicide (Keum & Ogrodniczuk, 2023).

The "macho culture" imbedded into this profession carries its own stigma surrounding mental health that can prevent LHTDs from accessing treatment (Keum & Ogrodniczuk, 2023; Radun et al., 2020). Studying "macho culture" as a factor affecting familiarity with mental health resources would be beneficial for future studies. Past research has shown LHTDs will use their partners to emotionally unload instead of seeking professional help (Pritchard et al., 2023). The seven participants in this study also cited family as source of support, which should be looked at in future research by possibly integrating their assistance with encouraging LHTDs to engage with or learn more about internet accessible mental health resources.

Future research could be completed on the age of LHTDs and whether it affects their level of familiarity with internet accessible mental health resources. Older generations may struggle to understand or use certain types of technology. Future researchers may consider offering paper surveys that are readily available at truck stops for LHTDs to complete during their down time or regulated rest time. Drop boxes could be made available to collect the paper surveys and be checked at scheduled intervals. Paper flyers with the QR code could be made available in the recruitment materials for HR departments to display for their employees within

the company building. Younger generations may be more amenable to using the QR code and completing the survey than older generations.

Investigating whether company support or union membership influences familiarity with internet accessible mental health resources among LHTDs is another area for future study. Those who are part of a union have access to employee benefits such as health insurance and medical leave (Crizzle, McLean, & Malkin, 2020). In the year 2000, a male truck driver with union membership had a life expectancy of 61.3 years compared to the average U.S. male whose life expectancy was 73.2 years (Dunn et al., 2023). Some trucking companies are providing access to education programs that target sleepiness for their truck drivers (Alvaro et al., 2018). These types of programs have been shown to increase truck drivers' knowledge of healthy habits and general health knowledge (Clemes et al., 2022; Guest et al., 2022; Hege, Lemke, Apostolopoulos, & Sönmez, 2019).

Summary

This study was designed to examine whether one of three stressors (i.e., poor work–life balance, poor sleep quality, high job demands) affected LHTDs' familiarity with internet accessible mental health resources. Though the results did not show a relationship between the any of the variables, the study did confirm that poor sleep quality was a stressor for a large majority of the participants, making it necessary to research different ways to provide treatment to a population that already struggles to maintain their medical appointments. The low sample size affected the data, which resulted in depression, anxiety, and stress being used as variables to predict familiarity. Multicollinearity was an issue during the analysis, especially with depression and stress. When anxiety was used as the only predictor, multicollinearity was not an issue, though it did not affect familiarity.

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APPENDIX A: SURVEY QUESTIONS

Instructions: Please select the answer that best describes you.

1. What is your biological gender? (biologically male/biologically female)

2. How long have you been working as a long-haul truck driver? Less than one year, 1-3 years, 4-6 years, 7-9 years, 10+ years)

3. How many days out of the month do you work away from home? (none, 1-3 days, 4-6 days, 7-9 days, 10+ days)

4. Do you belong to a union? (Yes, No)

5. Please choose the option that best describes your work status: (self-employed, employed with company)

6. When you need emotional support from someone, who do you talk to? Please check all that apply: family, supervisor, co-workers, mental health professional, medical doctor, friends, no one

7. Please choose one of the following that you consider to be stressful for you: poor work–life balance (don't feel I spend a balanced amount of time between work and personal life), poor sleep quality, high job demands (delivery schedules, time schedules, electronic logging devices)

8. How familiar are you with online mental health resources, such as Better Help, Talk Space, Employee Assistance Program (EAP), and other similar online mental health resources? (not at all familiar, somewhat familiar [I've heard of them], very familiar [I've looked into or been referred to them], I am currently using one or more of these services)

9. How familiar are you with phone applications for mental health services, such as Calm, Headspace, or other similar phone applications for mental health services? (not at all

familiar, somewhat familiar [I’ve heard of them], very familiar [I’ve looked into or been referred to them], I have a current subscription)

10. How familiar are you with mental health services available on social media, such as Facebook groups for truckers, etc.? (not at all familiar, somewhat familiar [I’ve heard of them], very familiar [I’ve looked into or been referred to them], I have a current subscription)

APPENDIX B: DEPRESSION, ANXIETY AND STRESS SCALE-21 ITEM (DASS-21)

For the next set of statements please circle the number 0, 1, 2 or 3 that indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

11. I found it hard to wind down. (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me to a considerable degree, or a good part of time, 3 Applied to me very much, or most of the time)

12. I was aware of dryness of my mouth. (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me to a considerable degree, or a good part of time, 3 Applied to me very much, or most of the time)

13. I couldn't seem to experience any positive feeling at all. (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me to a considerable degree, or a good part of time, 3 Applied to me very much, or most of the time)

14. I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion. (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me to a considerable degree, or a good part of time, 3 Applied to me very much, or most of the time)

15. I found it difficult to work up the initiative to do things. (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me to a considerable degree, or a good part of time, 3 Applied to me very much, or most of the time)

16. I tended to over-react to situations. (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me to a considerable degree, or a good part of time, 3 Applied to me very much, or most of the time)

17. I experienced trembling (e.g., in the hands). (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me to a considerable degree, or a good part of time, 3 Applied to me very much, or most of the time)

18. I felt that I was using a lot of nervous energy. (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me to a considerable degree, or a good part of time, 3 Applied to me very much, or most of the time)

19. I was worried about situations in which I might panic and make a fool of myself. (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me to a considerable degree, or a good part of time, 3 Applied to me very much, or most of the time)

20. I felt that I had nothing to look forward to. (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me to a considerable degree, or a good part of time, 3 Applied to me very much, or most of the time)

21. I found myself getting agitated. (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me to a considerable degree, or a good part of time, 3 Applied to me very much, or most of the time)

22. I found it difficult to relax. (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me to a considerable degree, or a good part of time, 3 Applied to me very much, or most of the time)

23. I felt downhearted and blue. (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me to a considerable degree, or a good part of time, 3 Applied to me very much, or most of the time)

24. I was intolerant of anything that kept me from getting on with what I was doing. (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me to a considerable degree, or a good part of time, 3 Applied to me very much, or most of the time)

25. I felt I was close to panic. (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me to a considerable degree, or a good part of time, 3 Applied to me very much, or most of the time)

26. I was unable to become enthusiastic about anything. (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me to a considerable degree, or a good part of time, 3 Applied to me very much, or most of the time)

27. I felt I wasn't worth much as a person. (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me to a considerable degree, or a good part of time, 3 Applied to me very much, or most of the time)

28. I felt that I was rather touchy. (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me to a considerable degree, or a good part of time, 3 Applied to me very much, or most of the time)

29. I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat). (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me to a considerable degree, or a good part of time, 3 Applied to me very much, or most of the time)

30. I felt scared without any good reason. (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me to a considerable degree, or a good part of time, 3 Applied to me very much, or most of the time)

31. I felt that life was meaningless. (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me to a considerable degree, or a good part of time, 3 Applied to me very much, or most of the time)

APPENDIX C: SOCIAL MEDIA RECRUITMENT

I am conducting research as part of the requirements for a Doctor of Education degree at Liberty University. The purpose of my research is to identify which types of flexible mental health resources are accessed by long-haul truck drivers and the rates of depression, anxiety, or stress experienced. To participate, you must be 18 years of age or older, from the United States and a single-team driver, have worked at least one year, and spend five days or more per month on the road away from home. Participants will be asked to scan the QR code which will send you to the survey and answer all 31 questions, which should take about 15 minutes to complete. If you would like to participate and meet the study criteria, please scan the QR code below and follow the link to the survey. A consent document is provided as the first page of the survey. You are encouraged to share this information with your peers who may like to participate and meet the identified criteria.

To take the survey, scan the QR code here:

APPENDIX D: HR DEPARTMENT RECRUITMENT EMAIL

Dear Potential Participant,

As a doctoral candidate in the School of Behavioral Science at Liberty University, I am conducting research on long-haul truck drivers and mental health issues as part of the requirements for a Doctor of Education degree. The purpose of my research is to identify which types of flexible mental health resources are accessed by long-haul truck drivers and the rates of depression, anxiety, or stress experienced, and I am writing to invite you to join my study.

Participants must be 18 years of age or older, from the United States and a single-team driver, have worked at least one year, and spend five days or more per month on the road away from home. Participants will be asked to scan the QR code which will send you to a link to an anonymous and confidential survey and answer all 31 questions. It should take approximately 15 minutes to complete the procedures listed. Participation will be completely anonymous, and no personal, identifying information will be collected.

To participate, please scan the QR code here to complete the study survey.

A consent document is provided as the first page of the survey. The consent document contains additional information about my research.

Because participation is anonymous, you do not need to sign and return the consent document unless you would prefer to do so. After you have read the consent form, please click the link to proceed to the survey. Doing so will indicate that you have read the consent information and would like to take part in the study. You are encouraged to share this information with your peers who may like to participate and meet the identified criteria.

Sincerely,

Cristal Reyna

LPC

[redacted]

APPENDIX E: SURVEY CONSENT FORM

Consent

Title of the Project: A Quantitative Survey Exploring the Types of Mental Health Resources Accessed by U.S. Long-Haul Truck Drivers
Principal Investigator: Cristal A. Reyna, Doctoral Candidate, School of Behavioral Sciences, Liberty University

Invitation to be Part of a Research Study

You are invited to participate in a research study. To participate, you must be a adult long-haul single team truck driver with at least one year experience and spend five days or more per month on the road away from their homes/families and have experienced depression, anxiety, or stress. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research.

What is the study about and why is it being done?

The purpose of the study is to measure responses related to which flexible mental health resources long-haul truck drivers who have experienced depression, anxiety, or stress during working hours will access or are most likely to access through an online survey

What will happen if you take part in this study?

If you agree to be in this study, I will ask you to do the following:

1. First task will be to scan the QR code. This should take you to the survey. Please be sure to answer each question. This should take you anywhere from 13-18 minutes to complete.

How could you or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society include aiding mental health professionals in increasing knowledge in the field regarding the types of flexible mental health resources long-haul truck drivers are more likely to access and the main stressor they experience.

What risks might you experience from being in this study?

The expected risks from participating in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

The records of this study will be kept private. Research records will be stored securely, and only the researcher will have access to the records.

- Participant responses will be anonymous.
- Data will be stored on a password-locked computer. After three years, all electronic records will be deleted.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please exit the survey and close your internet browser. Your responses will not be recorded or included in the study.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Cristal Reyna. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at [redacted]. You may also contact the researcher's faculty sponsor, Dr. Pamela Moore, at [redacted].

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the IRB. Our physical address is Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA, 24515; our phone number is 434-592-5530, and our email address is irb@liberty.edu.

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

Your Consent

Before agreeing to be part of the research, please be sure that you understand what the study is about. You can print a copy of the document for your records. If you have any questions about the study later, you can contact the researcher using the information provided above.

I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.