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Sleep, mental health, and access to health care of women truck drivers

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ABSTRACT

Background: The numbers of women in trucking are growing steadily, yet because they represent a minority group, little is known about their health issues. Most studies of truck drivers have focused on the mental and physical health, sleep, and health care access of male truck drivers.

Purpose: The purpose of this study was to characterize chronic stress, sleep, and mental health service and overall access to care among women truck drivers.

Methodology: Twenty-five female truck drivers were a subsample of participants from a larger parent study of truck drivers. After approval from the institutional review board, participants completed a 59-item Qualtrics survey; data were transferred from Qualtrics to SPSS v. 24 for analysis.

Results: No acute sleepiness or excess daytime sleepiness was observed, but participants only slept 6 hr per night, and all experienced poor sleep quality. Although 28% of participants met or exceeded the threshold score for posttraumatic stress disorder (PTSD), only 8% sought care for feelings of upset or distress. Also, 80% of the women had health insurance, yet there were those who did not seek care because of job-related conflicts.

Conclusion/Implications: Participants were sleep deprived and experienced poor-quality sleep. Mental health and other health services utilization was low. Implications for practice include consideration of telehealth services to improve health care access and screening and referral as needed to mental health care providers by Department of Transportation medical examiners. Future research should include younger women truck drivers to determine the potential contribution of perimenopause/menopause to some of the health issues experienced by this group of workers.

Keywords: Health care access; mental health; occupational health; sleep; women.

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Introduction

Long-haul truck drivers are remote and highly mobile workers. Because of the distances of trips required by their jobs, they may be separated from their homes, families, and other support systems for extended periods, most often alone (Shattell et al., 2010). Traditionally, the trucking industry has been male dominated. However, the numbers of women in trucking are growing steadily (Hayes, 2022). In fact, some of the large US trucking companies have developed programs targeting recruitment of women and introducing the industry to girls, such as J.B. Hunt's "Trucks are for Girls" Program (Hunt, 2019). Of the almost two million long-distance truck drivers (Bureau of Labor Statistics [USBLS], 2019), an estimated 10% are women, representing an increase of almost 30% from 2018, the year before (Hayes, 2022). Although a smaller part, women truckers represent a large group of workers, and very little is known about them. Most of the studies of mental health, sleep, and health care access of truck drivers focus on male truck drivers (Heaton & Rayens, 2010; Shattell et al., 2012). Therefore, the purpose of this pilot study was to characterize chronic stress, sleep, and mental health service access, and overall access to care among women drivers enrolled in a parent study of sleep indicators, posttraumatic stress disorder (PTSD),

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and mental health services utilization among truck drivers.

Background and significance

The nature of the work

Truckers drive long distances in all road and weather conditions, possibly during the night, and with unpredictable and irregular schedules that take them away from their families and support systems for extended periods (Bureau of Labor Statistics, 2022). Truck drivers are subject to hours-of-service regulations promulgated by the Federal Motor Carrier Administration and work up to a maximum of 14 hr per day, 11 of which may be spent driving ("Part 395—Hours of Service of Drivers," n.d.). Along with driving the vehicle, other nondriving duties involved in their work are securing loads, inspecting the vehicle, logging their duty time, and communicating with their dispatcher—also known as the "driver manager." The role of the dispatcher is to plan and schedule the deliveries of the loads hauled by truck drivers. Another important aspect of the nature of long-haul truck driving is the amount of time spent waiting for delivery appointments, waiting at loading docks for warehousemen to unload freight, and waiting to hear from dispatchers about next assignments (Bureau of Labor Statistics, 2022). Given this description of the nature of work of truck drivers, it is evident that much of their work is not within their control.

Health phenomena among women truckers

Workplace violence. Women in trucking are at a higher risk of sexual assault and harassment, compared with their male counterparts (Anderson, 2004). There are a number of reasons why this may be so. First, these women are working in a blue-collar, male-dominated occupation. Evidence suggests that blue-collar workers experience higher levels of stress (Elser et al., 2018) and greater risks of experiencing workplace violence compared with white-collar workers (Finstad et al., 2019). Because the women work in a male-dominated occupation, there may be resentment among the men that manifests as acts of violence targeting the women, ranging from discrimination and harassment to assault and rape (Burgess et al., 2013; Doucette et al., 2023; Raj et al., 2020; Riddle & Heaton, 2023).

Not only do women truck drivers experience harassment, they experience it often. In a 2003 study focused on women truck drivers, one third of the sample (n = 308) reported being harassed weekly (Reed & Cronin, 2003). A practical reason this may occur frequently is that although male truck drivers can urinate in containers inside their trucks to keep from stopping, this is not an easy approach for women. The women truck drivers have to find a truck or rest stop, pull off the roadway, and leave the safety of the truck to use the restroom, thus increasing the likelihood of being targeted (Gray & Lindsay, 2019). Women drivers often feel unsafe going into truck stops and will avoid getting a meal or exercise to eliminate the need for walking from their trucks into the truck stops—particularly at night. Although workplace violence is not a direct focus of this study, these findings are important because they contextualize the work environment for women truckers, which may contribute to problems with sleep, chronic stress, and mental health issues.

Sleep. Because of irregular schedules, excessive nighttime driving, and demands of shippers and consignees, chronic sleep deprivation or fragmentation is very common among truck drivers and makes it difficult for them to achieve the optimum sleep time required for safe driving (8–9 h per night; Hirshkowitz et al., 2015). In perimenopausal and postmenopausal women, including women truck drivers, decreases in estrogen and increasing follicle stimulating hormone are related to increased episodes of wakening after sleep onset, poor sleep quality, and hot flashes, all resulting in sleep fragmentation and dissatisfaction with sleep (Brown & Gervais, 2020). The chronic sleep deprivation or fragmentation experienced by many truck drivers negatively affect critical cognitive operations essential for safe driving, such as vigilance, reaction time, short-term memory, visual processing speed, and time estimation (Jongen et al., 2015; Kilgore, 2010). The resulting effect is an increased risk for motor vehicle crash among truck drivers. In addition to motor vehicle crash risk, chronic sleep loss predisposes truck drivers to depression, which may also be influenced by stress.

Stress. Truck drivers experience many stressors while they work. Along with irregular schedules, sleep deprivation, and varying driving conditions, truck drivers have minimal control over their jobs, experience time pressures and high job strain, and are socially isolated (Apostolopoulos et al., 2013). They report loneliness, which seems to increase as the distance between the truck drivers and their support systems increases (Shattell et al., 2010, 2012). Although sustained vigilance is required for routine safe driving, the truckers also describe the stress associated with vigilance required to maintain personal safety as they travel through dangerous areas of cities or experience near misses caused by other drivers on the roadways (Garbarino et al., 2018; Hege et al., 2019).

Posttraumatic stress disorder. Truck drivers are at risk for and experience PTSD (Bryant, 2022; Wise et al., 2020) due to involvement in work-related motor vehicle crashes (MVA) or near misses (Beaudry, 2022; Yager & Kay, 2020). "Suicide by truck," another trigger for PTSD development in truck drivers, occurs when people intentionally crash their vehicles into commercial trucks or otherwise place themselves into the paths of commercial trucks (Radun et al., 2020). Finnish truck drivers (n = 15) involved in this type of incident experienced higher scores on a measure

of posttraumatic stress symptoms at 30 days postincident, compared with 365 days postincident. Of these drivers, four experienced extreme symptoms at 30 days; three fell below the threshold for extreme symptoms at 365 days. Two of the original 15 had an increase in the measures of posttraumatic stress symptoms at 30 versus 365 days (Radun et al., 2020).

Another reason that truck drivers may experience PTSD is that many of them are military veterans. Trucking companies target recruitment to military veterans because they have skills such as operating heavy equipment and experience in logistics that make them a natural fit into trucking (Federal Motor Carrier Safety Administration [FMCSA], 2023). In fact, 1 in 10 transportation workers, including truck drivers, in the United States are military veterans (Bureau of Transportation Statistics, 2023) and may have PTSD because of their military experiences.

Mental health. Truck driver mental health is a global health issue. Studies of truck drivers from the United Stated (Shattell et al., 2012), Italy (Garbarino et al., 2018), Brazil (da Silva-Junior et al., 2009), and Australia (Chalmers & Lal, 2022) have noted minor psychiatric disorders, anxiety, and depression. Prevalence rates of minor psychiatric disorders, depression, and anxiety were 6.1%, 13.6%, and 7.9%, respectively. To put this in context, prevalence rates for any mental illness (which includes minor psychiatric disorders), major depression, and any anxiety disorders among US adults in 2017 were 18.9%, 7.1%, and 19.1%, respectively. It is important to note that prevalence rates of these conditions reported for truckers were lower than those reported in 2017, except for depression; truck drivers have a prevalence rate of depression almost twice that of the US average depression rate.

Access to health care. Truck driver access to health care is difficult for several reasons. First, they may not have access to health insurance, or if uninsured, the money to pay for health care (Apostolopoulos et al., 2013). Second, even those truck drivers with health insurance have a difficult time making and keeping appointments with health care providers because of their erratic and unpredictable schedules. Third, and practical concern, is if the truck driver chooses to seek care while "on the road," it is difficult to find adequate and safe parking that will accommodate the oversized vehicle. Finally, because of the way that truck drivers are paid, there is a natural disincentive to take time for routine preventive care or minor conditions. In general, if the truck is parked, the driver does not make any money.

Summary. Truck drivers have several health and health care access issues, and women make up a growing number of this workforce. There is very little found in the research literature about their unique health and access needs, except for specific workplace violence research. The purpose of this pilot study is to address this important gap in truck driver occupational health research.

Methods

Human subjects protection and recruitment

The current sample of 25 female truck drivers are a subsample of participants from a larger parent study of sleep indicators, PTSD, and mental health services utilization among truck drivers (Wise et al., 2020). The University of Alabama at Birmingham Institutional Review Board approval (IRB) was obtained before any of the parent study procedures were implemented. Recruitment techniques in the parent study included online social media site postings, direct emailing of drivers by an industry marketing agency, posting of flyers, and word of mouth (snowball). Potential participants were given a brief description of the study and a web link to the study website. Because data were collected online, documentation of informed consent was waived. However, once participants clicked on the study web link, they were taken to an information page that described the purpose and procedures of the study, risks and benefits of participating in the study, their rights as research participants, and contact information for the IRB and principal investigator (K.H.). Participants were instructed to click to the next page to begin the study if they wished to continue after reading the information page.

Data collection

Participants completed a 59-item survey that was posted online using the Qualtrics survey platform. Demographic characteristics were collected and also measures of acute sleepiness, sleep propensity, sleep quality and quantity, posttraumatic stress disorder, health care access, and utilization of health services for mental health issues (**Table 1**). Data were exported from Qualtrics to SPSS v. 24 for analysis.

Data analysis

For this study, data were filtered by gender to obtain the sample of women truck drivers (n = 25). The data set was cleaned and examined for missing data. Frequencies and descriptive statistics were used to characterize the sample. Pearson correlations were used to explore the associations between continuous variables.

Results

Demographics

The women in the study were mostly experienced, middle-aged truck drivers. Just more than half of them were employed by trucking companies (52%). Mean trip length per freight load was 4 days, and the drivers spent an average of 27 days in a row on the road before returning home (**Table 2**).

Table 1. Variables of interest and measurements

Variable	Variable Type	Measurement
Demographics: personal	Independent categorical and continuous	Gender, age, marital status, education, income
Demographics: occupational	Independent categorical and continuous	Experience, employment status, miles and days per trip, driving partner
Sleep	Independent continuous	Sleep quantity (self-reported hours), quality (Pittsburgh Sleep Quality Index), propensity (Epworth Sleepiness Scale), Sleepiness (Karolinska Sleepiness Scale), and OSA screen (STOP-Bang)
Physical health	Dependent categorical and continuous	Medical diagnoses, number of medical diagnoses, medication, and substance use
PTSD	Dependent continuous	PTSD (PCL-C)
Health care access	Independent categorical and continuous	Health insurance status, number of visits to primary health care provider, preferred health provider, number of visits for mental health services, rationale for nonuse of primary or episodic care services, preferred health information sources
Loneliness	Independent continuous	UCLA loneliness scale, deJong Gierveld short scale for social and Emotional loneliness

Note: PCL-C = Civilian PTSD scale; PTSD = posttraumatic stress disorder.

Sleep

Although participants spent an average of 8 hr in bed (*SD* = 1.43), they reported sleeping only a mean of 6 hr per night (*SD* = 2.32). Overall, the mean number of times the women truckers woke up after sleep onset was just over one time. However, 92% of them (*n* = 23) woke up at least twice a night, and almost one third of them reported waking up three times per night (32%, *n* = 8). The mean score on the Karolinska sleepiness scale (KSS), measuring sleepiness at the time of data collection, was 3.7 (*SD* = 1.9); this score falls between the descriptors, "alert and rather alert". On the measure of sleep propensity, or excessive daytime sleepiness (Epworth sleepiness scale [ESS]), the mean score was 4.52 (SD = 2.67). This score indicates no abnormal sleep propensity, or excessive daytime sleepiness. By contrast, Pittsburgh Sleep Quality Index (PSQI) mean score was 12.4 (SD = 1.95), indicating that the women truck drivers were "poor sleepers." In fact, the range of PSQI scores among these participants was 9–15, indicating that all participants exceeded the threshold of five for "poor sleeper" (**Table 3**).

Chronic stress and mental health services utilization

The women truck drivers' mean score on the Civilian PTSD scale (PCL-C) was 27 (SD = 10.57). Seven of the participants (28%) reached or exceeded the cut point score (established for a primary care or community setting) of 30 for a positive PTSD screen.

Two of the women truck drivers (8%) reported receiving professional treatment for feelings of upset or distress within the previous year. Participants who sought professional help saw health care providers (16%, *n* = 4), religious advisors (8%, *n* = 2), and counselors (4%, *n* = 1). When participants were asked how many times they spoke with a health professional about feelings of upset or distress at any time in the past, responses ranged from 0 to 20 times, with a mean of two times, overall (**Table 3**).

Access to health care

In this group of participants, 80% (*n* = 20) reported having some type of health insurance. For most of those with health insurance, the employer provided the coverage (60%; *n* = 16). Conversely, 80% (*n* = 20) stated that they did not have paid sick leave.

Table 2. Sample characteristics

Characteristics	*n* (%)	M/SD
Employment status[b]		
Company driver	13 (52)	
Independent owner/operator	2 (8)	
Operator leased/owner	7 (28)	
Employment status not listed	1 (4)	
Age		48.92/10.91
Numbers of years with CDL		14.2/13.94
Trip length		1,825.76/2,516.19
Length of a typical trip (miles)		
Length of a typical trip (days)		3.98/5.71
Numbers of days in a row on the road[a]		27.14/47.23

Note: CDL= commercial driver's license.
[a]N = *25.*
[b]n = *23.*

Although most of the participants had health insurance, there were those who did not receive necessary care in the 12 months before the study (**Table 4**). The top three reasons mentioned for not receiving care within the past 12 months were as follows: (1) "Difficulty making appointment due to schedule" (*n* = 10; 40%); (2) "Was on the road and didn't want to stop" (*n* = 6; 24%); and (3) "Hours not convenient" (*n* = 5; 20%).

Discussion

This article makes a unique contribution to the understanding of the health of women truck drivers. Most previous studies of truck drivers focused exclusively on male truck drivers or had very small numbers of participants who were women. In this pilot study, we focused exclusively on women truck drivers to get a better sense of their specific mental health issues, health care access, and sleep. Consistent with previous findings among truck drivers (Maki et al., 2022), these women obtained less sleep than that required for safe driving (Chen et al., 2016). Although the women did not express excessive sleepiness as measured by the ESS and as seen in studies by Baiardi et al. (2018) and Sunwoo et al. (2019), their mean PSQI score was 12, indicating poor quality of sleep, which has been reported in other samples of commercial drivers in both the United States and in other areas of the world (Lemke et al., 2016; Rocha et al., 2022; Yosef et al., 2020). Because this sample consisted of middle-aged women, it is possible that perimenopause/menopause may have negatively affected their sleep; although we did not collect any data that would validate this possibility. It is more likely that the demands of the job itself had the most impact on sleep quantity and quality among this group of women truck drivers.

Overall, the women truck drivers scored just under the threshold of 30 for a positive PTSD screen on the PCL-C (*M* = 27; SD = 10.57; **Table 2**). Despite this finding, only two of them (8%) sought professional treatment for feelings of upset or distress in the previous year (**Table 3**). This is consistent with previous findings from Shattell et al. (2012) and Crizzle et al. (2020), indicating that truck drivers typically do not seek out mental health services. Although most of the women truck drivers in this study did not report specific mental health issues, among the ones who did report, loneliness was the most commonly identified issue. This was somewhat surprising given that all these truck drivers had smart phones and the ability to remain connected to friends and family members using this device. Evidently, in this sample, this was insufficient to address their feelings of loneliness. It is also important to note that many of the women truck drivers who had experienced mental health issues never received professional treatment. This is especially interesting because the majority of the participants (*n* = 16; 64%) reported that their preferred source of health information was a health care provider (**Table 2**). However, it may be that the difficulties with scheduling appointments, inconvenient hours available for appointments, and unwillingness to stop when "on the road" as reported by this group of truck drivers are at the heart of their decisions to not seek care versus a lack of concern about their chronic stress and other mental health issues.

Limitations and implications for future research

Because of the small sample size (pilot study) and inherent risks of using self-reported data, findings from this study should be used with caution. Future studies of women truck drivers must have larger sample sizes to be more powerful. Also, supplementing self-reported data with biologic measures such as hormone levels and heart rate variability will give much more comprehensive understanding of chronic stress response of the autonomic nervous system (Muhajir et al., 2022) and the hypothalamic–pituitary–adrenal (HPA) axis in women truck drivers. This is a critically important line of research with this population as dysregulation of either or both of these systems are key contributors to the development of cardiovascular disease risk. Future studies

Table 3. Sleep, stress, and primary source of health information

Characteristics	Means or *N*	SD or %
Sleep		
Sleep time (hr)	6.14	2.32
KSS score[a]	3.72	1.93
ESS score[a]	4.52	2.68
Number of times waking up during the last major sleep period[a]	1.36	0.81
Chronic stress and mental health services utilization		
PCL-C	27.28	10.53
Number of times talking to a health professional about distress[b]	2.67	5.78
Number of times receiving professional treatment for your distress[a]	0.20	0.82
Primary source for health information[c]		
Health care provider/physician	16	64
Other websites	1	4
Public health clinics	1	4
Other	2	8

Note: ESS = Epworth sleepiness scale; KSS = Karolinska sleepiness scale; PCL-C = Civilian PTSD scale.
[a]N = *25.*
[b]n = *24.*
[c]n = *20.*

including treatment-seeking behaviors among truck drivers should include qualitative components or a mixed-methods design to get at the reasons behind why they do not seek nor receive professional treatment for mental health conditions. In this quantitative study, it is not possible to make that determination.

Table 4. Mental health–related issues and treatment seeking[a]

	N (%)			
Mental Health-Related Issues	No	Yes Never Received Professional Treatment	Yes Previously Received Professional Treatment	Yes Currently Receive Professional Treatment
Depression	18 (72)	3 (12)	3 (12)	1 (4)
Loneliness	18 (72)	6 (24)	1 (4)	0 (0)
Anxiety	19 (66)	2 (8)	3 (12)	1 (4)
Drug abuse	23 (92)	2 (8)	0 (0)	0 (0)
Other emotional problem	20 (80)	3 (12)	2 (8)	0 (0)

[a]N = *25.*

Implications for practice

Findings from this study of women truck drivers are consistent with those of other authors who concluded that although truck drivers experience isolation (Johnson et al., 2021) and mental health issues (Crizzle et al., 2020; Shattell et al., 2010; van Vreden et al., 2022), they may not seek professional help for assistance with these problems. In this particular sample, a majority of participants had health insurance. However, there is evidence to support that the reasons behind not seeking professional treatment are related to inconvenience, inability to schedule appointments, or even find adequate parking while on the road. Because this group of workers is remote and mobile, with unpredictable schedules and "armed" with cell phones, telehealth visits with flexible hours may present a reasonable solution to accessing care. Of particular significance in women truck drivers is their past reports of feeling unsafe at truck stops and how this limits them from getting out of the trucks, especially at night (Hayes, 2022). Perhaps, the most important clinical implication is the need for health care providers to screen truck drivers for mental health conditions, such as anxiety, depression, substance use, and PTSD. This should be incorporated into primary care visits. As evidenced in the literature, many truck drivers only sporadically see a primary care provider. It may be that the provider conducting their fitness-for-duty physical examination (certified Department of Transportation [DOT] medical examiner) would be a more frequent contact who has to routinely determine potential psychiatric conditions that would medically disqualify a driver during that physical examination. Although the medical examiner's role is *only* to determine fitness for duty (not to provide health care), any positive screens could trigger referrals to appropriate primary care or mental health services.

Conclusion

The women truck drivers in this study experienced chronic stress, sleep deprivation, and mental health issues also reported by their male counterparts. Nonetheless, we believe that it is important to extend the study of women truck drivers to include larger samples and a more diverse age range of women to determine whether there are differences in the experiences of premenopausal vs. perimenopausal or postmenopausal women truck drivers. Development, implementation, and evaluation of alternate models of care delivery, such as telehealth, for women (and all) truck drivers are important steps in improving access to care of these underserved workers. Finally, as the number of women truck drivers continue to grow, all of these issues will take on greater significance and will allow valid comparisons of the health needs of these workers, compared with their male counterparts.

Authors' contributions: *K. Heaton: Conceptualized paper and crafted first draft of manuscript. Oversight of student data analysis and final interpretation of statistical results. Conducted edits along with other authors and made revisions. Responsible for the overall development, writing, submission, and revision of the manuscript. P. Kham-Ai: Preliminary statistical analysis of data and interpretation of findings. Prepared tables. M. Shattell: Provided editing of manuscript drafts and managed references and reference list.*

Competing interests: *The authors report no conflicts of interest.*

References

Anderson, D. G. (2004). Workplace violence in long haul trucking: Occupational health nursing update. *AAOHN Journal*, 52(1), 23–27. https://doi.org/10.1177/216507990405200109

Apostolopoulos, Y., Sönmez, S., Shattell, M., Gonzales, C., & Fehrenbacher, C. (2013). Health survey of U.S. Long-haul truck drivers: Work environment, physical health, and healthcare access. *Work (Reading, Mass.)*, 46(1), 113–123. https://doi.org/10.3233/WOR-121553

Baiardi, S., La Morgia, C., Sciamanna, L., Gerosa, A., Cirignotta, F., & Mondini, S. (2018). Is the Epworth Sleepiness Scale a useful tool for screening excessive daytime sleepiness in commercial drivers? *Accident; Analysis and Prevention*, 110(1), 187–189. https://doi.org/10.1016/j.aap.2017.10.008

Beaudry, M. A. (2022). *A heavy load: Conceptualizing commercial truck drivers' lived experiences of trauma using photovoice (order no. 29392709)*. ProQuest Dissertations & Theses Global. (2724279079). https://uab.idm.oclc.org/login?url=https://www.proquest.com/dissertations-theses/heavy- load-conceptualizing-commercial-truck/docview/2724279079/se-2

Brown, A., & Gervais, N. (2020). Role of ovarian hormones in the modulation of sleep in females across the adult lifespan. *Endocrinology*, 161(9), bqaa128. https://doi.org/10.1210/endocr/bqaa128

Bryant, R. A. (2022). Early intervention after trauma. In U. Schnyder, & M. Cloitre (Eds.). *Evidence based Treatments for trauma-related psychological disorders*. Springer. https://doi.org/10.1007/978-3-030-97802-0_7

Bureau of Labor Statistics. (2022). https://www.bls.gov/oes/current/oes533032.htm

Bureau of Labor Statistics. (2019). Heavy and tractor—trailer truck drivers. In *Occupational outlook handbook*. https://www.bls.gov/ooh/transportation-and-material-moving/heavy-and-tractor-trailer-truck-drivers.htm

Bureau of Transportation Statistics. (2023). *Transportation puts veterans in the driver's seat and in the wheelhouse, the cockpit, the railyard, the transit garage and the air traffic control tower*. https://www.bts.gov/data-spotlight/veterans-in-transportation

Burgess, A. W., Slattery, D. M., & Herlihy, P. A. (2013). Military sexual trauma: A silent syndrome. *Journal of Psychosocial Nursing and Mental Health Services*, 51(2), 20–26. https://doi.org/10.3928/02793695-20130109-03

Chalmers, T., & Lal, S. (2022). Assessing cardiovascular links to depression and anxiety in Australian professional drivers. *Journal of Integrative Neuroscience*, 21(1), 43. https://doi.org/10.31083/j.jin2101043

Chen, G. X., Fang, Y., Guo, F., & Hanowski, R. J. (2016). The influence of daily sleep patterns of commercial truck drivers on driving performance. *Accident; Analysis and Prevention*, 91(6), 55–63. https://doi.org/10.1016/j.aap.2016.02.027

Crizzle, A. M., McLean, M., & Malkin, J. (2020). Risk factors for depressive symptoms in long haul truck drivers. *International Journal of Environmental Research and Public Health*, 17(11), 3764. https://doi.org/10.3390/ijerph17113764

da Silva-Júnior, F. P., de Pinho, R. S. N., de Mello, M. T., de Bruin, V. M. S., & De Bruin, P. F. C. (2009). Risk factors for depression in truck drivers. *Social Psychiatry and Psychiatric Epidemiology*, 44(2), 125–129. https://doi.org/10.1007/s00127-008-0412-3

Doucette, C. E., Morgan, N. R., Aronson, K. R., Bleser, J. A., McCarthy, K. J., & Perkins, D. F. (2023). The effects of adverse childhood experiences and warfare exposure on military sexual trauma among veterans. *Journal of Interpersonal Violence*, 38(3–4), 3777–3805. https://doi.org/10.1177/08862605221109494

Elser, H., Falconi, A. M., Bass, M., & Cullen, M. R. (2018). Blue-collar work and women's health: A systematic review of the evidence from 1990 to 2015. *SSM—Population Health*, 6(12), 195–244. https://doi.org/10.1016/j.ssmph.2018.08.002

Federal Motor Carrier Safety Administration. (2023). *Military driver programs*. https://www.fmcsa.dot.gov/militarydriverprograms

Finstad, G. L., Ariza-Montes, A., Giorgi, G., Lecca, L. I., Arcangeli, G., & Mucci, N. (2019). The JDCS model and blue-collar bullying: Decent working conditions for a healthy environment. *International Journal of Environmental Research and Public Health*, 16(18), 3411. https://doi.org/10.3390/ijerph16183411

Garbarino, S., Guglielmi, O., Sannita, W. G., Magnavita, N., & Lanteri, P. (2018). Sleep and mental health in truck drivers: Descriptive review of the current evidence and proposal of strategies for primary prevention. *International Journal of Environmental Research and Public Health*, 15(9), 1852. https://doi.org/10.3390/ijerph15091852

Gray, G., & Lindsay, K. (2019). Workplace violence: Examining interpersonal and impersonal violence among truck drivers. *Law & Policy*, 41(3), 271–285. https://doi.org/10.1111/lapo.12134

Hayes, S. (2022). What percentage of truckers are female? *Freightwaves Ratings*. https://ratings.freightwaves.com/women-in-trucking/

Heaton, K. L., & Rayens, M. K. (2010). Feedback actigraphy and sleep among long-haul truck drivers. *AAOHN Journal*, 58(4), 137–145. https://doi.org/10.3928/08910162-20100329-01

Hege, A., Lemke, M. K., Apostolopoulos, Y., & Sönmez, S. (2019). The impact of work organization, job stress, and sleep on the health behaviors and outcomes of U.S. long haul truck drivers. *Health Education & Behavior*, 46(4), 626–636. https://doi.org/10.1177/1090198119826232

Hirshkowitz, M., Whiton, K., Albert, S. M., Alessi, C., Bruni, O., DonCarlos, L., & Ware, J. C. (2015). National Sleep Foundation's updated sleep duration recommendations. *Sleep Health*, 1(4), 233–243. https://doi.org/10.1016/j.sleh.2015.10.004

Hunt, J. B. (2019). *Trucks are for girls event held in Northwest Arkansas*. https://www.jbhunt.com/blog/2019/11/14/trucks-are-for-girls-event-held-in-northwest-Arkansas

Johnson, J. K., Vingilis, E., & Terry, A. L. (2021). Qualitative study of long-haul truck drivers' health and healthcare experiences. *Journal of Occupational and Environmental Medicine*, 63(3), 230–237. https://doi.org/10.1097/JOM.0000000000002107

Jongen, S., Perrier, J., Vuurman, E. F., Ramaekers, J. G., & Vermeeren, A. (2015). Sensitivity and validity of psychometric tests for assessing driving impairment: Effects of sleep deprivation. *PLoS One*, 10(2), e0117045. https://doi.org/10.1371/journal.pone.0117045

Killgore, W. D. (2010). Effects of sleep deprivation on cognition. *Progress in Brain Research*, 185, 105–129. https://doi.org/10.1016/B978-0-444-53702-7.00007-5

Lemke, M. K., Apostolopoulos, Y., Hege, A., Sönmez, S., & Wideman, L. (2016). Understanding the role of sleep quality and sleep duration in commercial driving safety. *Accident; Analysis and Prevention*, 97(12), 79–86. https://doi.org/10.1016/j.aap.2016.08.024

Maki, K. A., Fink, A. M., & Weaver, T. E. (2022). Sleep, time, and space—Fatigue and performance deficits in pilots, commercial truck drivers, and astronauts. *Sleep Advances*, 3(1), zpac033. https://doi.org/10.1093/sleepadvances/zpac033

Muhajir, D., Mahananto, F., & Sani, N. A. (2022). Stress level measurements using heart rate variability analysis on android based application. *Procedia Computer Science*, 197, 189–197. https://doi.org/10.1016/j.procs.2021.12.200

Part 395—Hours of Service of Drivers. (n.d.). *Electronic code of federal regulations*. https://www.ecfr.gov/current/title-49/subtitle-B/chapter-III/subchapter-B/part-395#395.3

Radun, I., Radun, J., Kaistinen, J., Parkkari, I., Kecklund, G., Olivier, J., & Theorell, T. (2020). Suicide by crashing into a heavy vehicle: A one-year follow-up study of professional drivers. *Transportation Research Part F: Traffic Psychology and Behaviour*, 73(3), 318–324. https://doi.org/10.1016/j.trf.2020.07.003

Raj, A., Johns, N. E., & Jose, R. (2020). Gender parity at work and its association with workplace sexual harassment. *Workplace Health & Safety*, 68(6), 279–292. https://doi.org/10.1177/2165079919900793

Reed, D. B., & Cronin, J. S. (2003). Health on the road: Issues faced by female truck drivers. *AAOHN Journal*, 51(3), 120–125. https://doi.org/10.1177/216507990305100305

Riddle, K., & Heaton, K. (2023). *Antecedents to sexual harassment of women in selected male dominated occupations: A systematic review*. Workplace Health & Safety. https://doi.org/10.1177/21650799231157085

Rocha, F. P., Marqueze, E. C., Kecklund, G., & Moreno, C. R. d. C. (2022). Evaluation of truck driver rest locations and sleep quality. *Sleep Science*, 15(1), 55–61. https://doi.org/10.5935/1984-0063.20210028

Shattell, M., Apostolopoulos, Y., Collins, C., Sönmez, S., & Fehrenbacher, C. (2012). Trucking organization and mental health disorders of truck drivers. *Issues in Mental Health Nursing*, 33(7), 436–444. https://doi.org/10.3109/01612840.2012.665156

Shattell, M., Apostolopoulos, Y., Sönmez, S., & Griffin, M. (2010). Occupational stressors and the mental health of truckers. *Issues in Mental Health Nursing*, 31(9), 561–568. https://doi.org/10.3109/01612840.2010.488783

Sunwoo, J. S., Shin, D. S., Hwangbo, Y., Kim, W. J., Chu, M. K., Yun, C. H., Jang, T., & Yang, K. I. (2019). High risk of obstructive sleep apnea, insomnia, and daytime sleepiness among commercial motor vehicle drivers. *Sleep Breath*, 23(3), 979–985. https://doi.org/10.1007/s11325-019-01805-7

van Vreden, C., Xia, T., Collie, A., Pritchard, E., Newnam, S., Lubman, D. I., de Almeida Neto, A., & Iles, R. (2022). The physical and mental health of Australian truck drivers: A national cross-sectional study. *BMC Public Health*, 22(1), 464. https://doi.org/10.1186/s12889-022-12850-5

Wise, J., Heaton, K., & Shattell, M. (2020). Mindfulness, sleep, and post-traumatic stress in long-haul truck drivers. *Work (Reading, Mass.)*, 67(1), 103–111. https://doi.org/10.3233/WOR-203256

Yager, J., & Kay, J. (2020). Autotramautic stress disorders: Post-traumatic stress disorder variants when the victim bears responsibility for the trauma. *Journal of Nervous & Mental Disease and Mental Disease*, 208(12), 947–952. https://doi.org/10.1097/NMD.0000000000001235

Yosef, M., Abdelhamid, M. A., Salaheldin, W., Elhabiby, M., & Rady, M. (2020). Sleep quality among a sample of Egyptian truck drivers. *QJM: An International Journal of Medicine*, 113(-Suppl._1), hcaa045.007. https://doi.org/10.1093/qjmed/hcaa045.007