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Health survey of U.S. long-haul truck drivers: Work environment, physical health, and healthcare access

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Abstract.

OBJECTIVE: While trucking in industrialized nations is linked with driver health afflictions, the role of trucking in U.S. truckers' health remains largely unknown. This paper sheds light on links between the trucking work environment and drivers' physical health.

METHODS: Using a cross-sectional design, 316 truckers were enrolled in the Healthy Trucker Survey. Questions included work history, physical and mental health, and healthcare access. PASW 18 was used to examine patterns among factors.

PARTICIPANTS: 316 truckers participated.

RESULTS: Respondents were mainly full-time, long-haul drivers with over 5 years of experience, and who spent over 17 days on the road per month. While almost 75% described their health as good, 83.4% were overweight/obese, 57.9% had sleeping disturbances, 56.3% fatigue, 42.3% musculoskeletal disorders, and about 40% cardiovascular disease concerns. About 33% had no health insurance, 70% had no regular healthcare visits, 24.4% could not afford insurance, and 42.1% took over-the-counter drugs when sick, while 20.1% waited to reach home for medical care. Exercise facilities were unavailable in over 70% of trucking worksites and 70% of drivers did not exercise regularly.

CONCLUSIONS: The trucking occupation places drivers at high risk for poor health outcomes. Prospective studies are needed to delve into how continued exposure to trucking influences the progression of disease burden.

Keywords: Long-haul truckers, trucking work environment, occupational health

1. Introduction

Long-haul truck driving in industrialized nations has been recognized as a highly detrimental occupation for

the health of drivers [1]. Truck drivers operate in a work environment characterized by excess workload, low job control, chronic stress, erratic schedules, disrupted sleep patterns, and extreme time pressures, among others [2]. Exposure to the trucking work environment has been linked with symptoms of distress, hypertension, hyperlipidaemia, diabetes, cancer, sleep apnea, and musculoskeletal and gastrointestinal disorders for truckers, along with road-traffic accidents, often fatal

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for truckers and the public at large [3]. Inexplicably, in such an endemically risk-laden work environment, truckers' access to healthcare services is scant [4], and participation in industry-sponsored wellness programs is limited [5]. Given this context, this paper intends to: (a) discuss the unique occupational context of commercial vehicle driving; (b) examine potential links between the trucking work environment and truck drivers' physical health; and (c) examine truck drivers' level of access to healthcare services and participation in health promotion programs. The overall goal of this paper is to provide the trucking sector, other stakeholders, and regulatory agencies with health data needed for implementing policies that would curb the trucking work environment's detrimental effects on driver health.

2. Trucking and U.S. driver health

2.1. Trucking work environment

Nearly four million long-haul, regional, and local U.S. truck drivers are susceptible to a wide array of health risks that are mainly attributable to their unique work environment [6]. The multilayered occupational context of commercial vehicle driving is deeply embedded within institutional, organizational, policy and physical domains and influenced by government regulations [3]. The structure and organization of trucking are defined by a highly competitive sector, excessive scheduling and delivery pressures, and mile-based driver compensation systems, within federally-mandated and excessive hours-of-service (HOS) [2]. In short, trucking is replete with a multitude of interconnected stressors for drivers, which not only exacerbate endemic risks associated with the transport sector itself, but which literally define driver health and highway safety [3]. Key among these stressors are: excessively long workhours (legally up to 14 HOS per day); high demands for continual mental alertness despite mostly monotonous tasks; overall strenuous, stressful, and rushed work context; excess workload and fatigue; pressures due to tight-running schedules and just-in-time deliveries; irregular shiftwork leading to disrupted sleep patterns; low job-control and satisfaction along with high insecurity; high financial pressures and low returns; high work-life conflicts; and chronic social isolation [1,7,8].

2.2. Consequences for truck driver health

These work conditions and intertwined stressors not only have the potential to adversely impact and exacerbate the health of truck drivers but also to jeopardize highway safety. Combined overweight and obesity rates among truckers range from 56% to 92% [9, 10] – about 15% higher than that of the general population [11]. Heavy workload demands weigh heavily in the development of burnout, anxiety and depression, while job strain, shiftwork, and long work hours with mostly erratic schedules have been implicated in sleep disorders (SLDs), physical injuries, and even the development of cardiovascular disease (CVD) [1,2,6]. Epidemiological evidence has consistently demonstrated that compromised sleep quality confers additional risks for obesity, diabetes, hypertension, CVD, and even early mortality [12]. As for truckers' elevated CVD risk in particular, combined work stressors (e.g., long work hours) and lifestyle factors (e.g., sedentary lives) are closely linked to the trucking work environment, which essentially burdens truckers with a unique constellation of CVD risk factors [13]. Not unexpectedly, major truck crashes regularly involve drivers who apparently experienced heart attacks while operating commercial vehicles [14].

Truckers have on-the-job fatality rates 11 times higher when compared with the general worker population [15]. Getting paid-by-the-mile further compromises safety by encouraging drivers to use excessive driving speed and working while fatigued [16]. In 2006 alone, truck accidents caused over 5,300 deaths and more than 126,000 injuries, with truckers at fault in over 80% of incidents [17]. Over 500,000 accidents involving trucks are recorded annually, with a fatal crash rate 50% greater than the rate for all vehicle accidents on the road [18]. In 2008 alone, almost two million truckers either experienced a near miss or actually crashed, causing death or injury to thousands [18]. Although data are sparse, there is ample evidence to suggest that truckers' health problems (e.g., sleep disorders) and modifiable risk factors (e.g., insufficient physical activity) could significantly influence road-traffic accident rates [17,18]. As a result of the accumulation of such health risk burdens, life expectancy of U.S. truck drivers is 16 years lower than that of the general U.S. male population [19].

2.3. Health promotion and healthcare access for truckers

For endemically and chronically overstressed and fatigued truckers, available resources for healthful liv-

ing, such as the availability of wellness programs and healthful food options at trucking work settings (e.g., warehouses, trucking terminals, truckstops) where truckers work and spend long periods of time waiting for loads or where they pass the time during downtimes, are minimal at best [20]. A review of wellness programs in the trucking sector yields only a few that have been implemented over the past two decades, which are relatively small-scale, oddly compartmentalized, inefficiently run, and mostly underfunded [5]. In the 1990s a number of trucking companies initiated various forms of wellness programs for their employees and achieved relatively good results in improving individual health while at the same time reducing healthcare costs and increasing productivity; however some have since discontinued these programs [20]. In light of truckers' fatal crashes that are costly both in fatalities and financially, and speculations about their underlying causes, the Federal Motor Carrier Safety Administration in its efforts to provide supporting evidence for the preventive function of wellness programs co-sponsored the "Gettin' in Gear" program in order to address risks associated with commercial driving [5].

Additionally, ample anecdotal and empirical evidence suggests that access to healthcare services for over-the-road truck drivers entails several challenges [4]. When a healthcare need arises for a driver who is thousands of miles away from home, holding responsibility for valuable commodities, and operating an expensive and cumbersome tractor trailer rig, his barriers to seeking healthcare in a timely manner may be overwhelming. Challenges experienced by drivers in their efforts to access healthcare include (but are not limited to) lack of physical access for trucks at most healthcare facilities, restrictions on payment options, lack of insurance coverage away from their home state (as with an HMO), health insurance exclusion for emergency room treatment (or requirements to obtain preauthorization prior to care seeking), and strict schedules limiting drivers' time to seek healthcare [4,21]. This challenging and labor-intensive environment clearly does not afford many opportunities for preventive care.

3. Methods

3.1. Data collection

A small-scale cross-sectional study was designed to assess connections between the trucking work environ-

Table 1
Demographic profile of truck drivers (N = 316)

	Percentage
<i>Race</i>	
Caucasian	73.5
African American	19.2
Latino/Hispanic	2.2
Native American	1.9
Asian	0.6
Other	2.6
<i>Marital status</i>	
Never married	16.6
Married	55.9
Separated	4.8
Divorced	19.5
Widowed	3.2
<i>Number of children</i>	
None	25.0
1-2	40.4
3-4	27.2
5+	7.4
<i>Educational attainment</i>	
Less than high school	9.9
High school/GED diploma	53.2
Some trade/trade school	30.9
Some college	3.5
College degree	2.5
<i>Residential location</i>	
Northeast	12.5
Midwest	20.6
Southwest	10.6
Southeast	42.4
Central	8.7
West	5.1
	<i>Mean (SD)</i>
<i>Age (years)</i>	44.17 (10.71)

ment and U.S. truck drivers' physical health, their access to healthcare services and medical treatment, as well as participation in health promotion programs. A total of 316 randomly selected truckers were recruited from truckstops and trucking terminals in central North Carolina and invited to participate in a survey. Female truckers were excluded because they represent less than 5% of the truck driving population, and known morbidities are predominantly linked with male drivers [22]. Approval from the Institutional Review Board of the University of North Carolina Greensboro was acquired prior to data collection. Field researchers obtained signed informed consent from all study participants after explaining study objectives. Study participants' privacy was maintained by allowing them to complete the surveys in their truck cabs and permitting the use of aliases in place of their actual names.

3.2. Survey instrument

Study participants completed the self-administered paper-and-pencil *Healthy Trucker Survey* (HEATS) [23]. HEATS is based on the *Long-Haul Trucker Interview Guide* [24], the *Health Appraisal Survey* [25] and the *Health Survey of the NSW Transport Industry* [26], which examine: (a) connections between trucking, drug use and disease spread, (b) employee health in the workplace, and (c) health of transport workers, respectively. HEATS has 82 questions and includes components on demographics, work history, workplace conditions, physical health and wellness, mental health, healthcare access, and medical treatment history.

3.3. Data analysis

Descriptive statistics including mean, standard deviation, skewness, and kurtosis were used for interval-level variables while frequency distribution and proportion were used for nominal-level variables. Variables with several categories were clustered to obtain more parsimonious categories prior to statistical analyses, which were completed using PASW 18 (SPSS, Inc., Chicago IL).

4. Results

Demographic profiles of truck drivers who completed the HEATS survey instrument are summarized below in Table 1. Participating truckers have a mean age of 44.17 (SD = 10.71) years and are mainly Caucasian (73.5%) and African American (19.2%). Over half of them are married (55.9%) and most of them have one to two children (40.4%). As for their educational level, most have a high school or GED diploma (53.2%), while 30.9% have either attended or completed trade school. Finally, regarding their region of origin, 42.4% live in the southeastern part of the U.S.

Professional histories of truck drivers in our sample are presented in Table 2 below. The great majority of the drivers are full-time (97.5%), long-haul (89.6%), and commercial fleet or company drivers (61.1%), while about 75% of truckers have more than five years of driving experience. With respect to the financial returns of the truck-driving profession, 50.3% earn annual incomes between \$35,000 and \$64,000, while nearly 70% are paid by the mile. The drivers in our sample work an average of 60.84 hours per week (SD = 23.44)

Table 2
Professional history of truck drivers (N = 316)

	Percentage
<i>Driver employment status</i>	
Full-time driver	97.5
Part-time driver	1.6
Occasional driver	0.9
<i>Haul type</i>	
Short-haul (local) driver	10.4
Long-haul driver	89.6
<i>Years of driving experience</i>	
5 years or less	25.6
6–15 years	41.1
16 years or more	33.2
<i>Type of driver</i>	
Commercial fleet/company driver	61.1
Owner operator/Independent driver	35.8
Other	1.9
<i>Compensation type</i>	
By the mile	67.4
By the load	25.5
Other	7.1
<i>Consecutive days on the road (per trip)</i>	
Less than 4	19.0
5–10	30.8
11–16	13.3
17–21	10.8
22 or more	26.0
<i>Total days on the road (per month)</i>	
Less than 4	2.3
5–10	4.2
11–16	7.8
17–21	28.8
22 or more	57.0
<i>Income (U.S. Dollars)</i>	
10,000–34,000	24.8
35,000–64,000	50.3
65,000 and above	24.8
	<i>Mean (SD)</i>
Total hours of work in a week	60.84 (23.44)
Employer expectations of total work hours a week	61.89 (22.18)
Total hours of work in a month	220.36 (90.37)

or 220.36 hours per month (SD = 90.37). Finally, most truckers (50.1%) spend more than 11 consecutive days on the road per trip, while the overwhelming majority (85.8%) spends more than a total of 17 days on the road each month. Nearly 90% of truckers reported spending over 17 days and about 60% reported spending over 22 days each month on the road. Many respondents also reported working about 61 consecutive hours each week even though they are not allowed to drive more than 60 hours in a seven-day week as per HOS regulations; in fact, many drive even longer hours and manage by keeping a double set of log books [3,20].

A glimpse of the actual and perceived physical health of participant truckers is offered in Table 3 below. Inter-

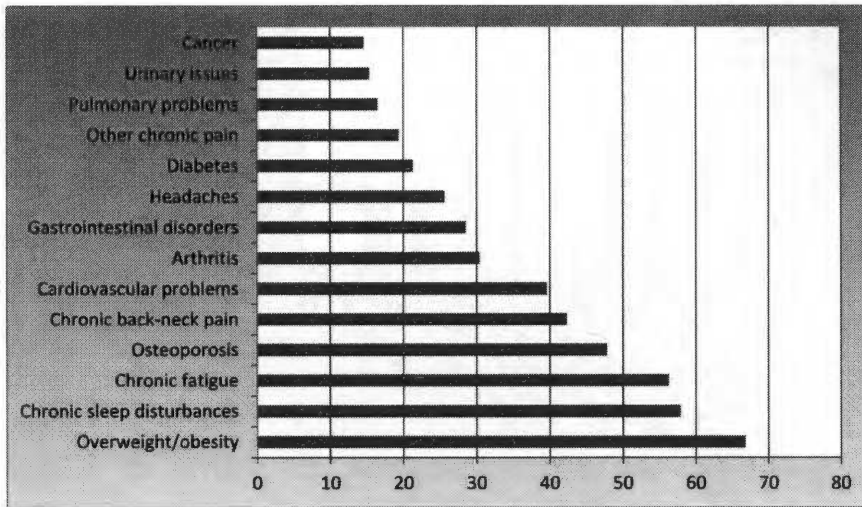


Fig. 1. Truckers' physical health problems. (Colours are visible in the online version of the article; <http://dx.doi.org/10.3233/WOR-121553>)

Table 3
Physical health of truck drivers (N = 316)

	Percentage
BMI (kg/m²)	
Less than 25	16.6
25–29.99	30.0
30 and above	53.4
Perceived physical health	
Poor to very poor	3.6
Fair	22.8
Good to very good	65.9
Excellent	7.7
Work-related accident or injury (past 12 months)	
No	96.1
Yes	3.9

estingly, nearly 75% of the truck drivers who completed the survey described their health as “good,” “very good” or “excellent,” while at the same time most of them (66.8%) acknowledged having a problem with overweight or obesity. Furthermore, researchers later calculated body mass indexes (BMI) for each respondent using their self-reported height and weight data as higher than 25 kg/m² for 83.4% of the respondents.

Moreover, more than half of the respondents reported problems with chronic sleeping disturbances (57.9%) and chronic fatigue (56.3%) (Fig. 1). Musculoskeletal disorders, as exemplified by chronic back and neck pain (42.3%), osteoporosis (47.8%), and arthritis (30.4%) were also reported as major health concerns by the drivers. Cardiovascular issues that include mainly high cholesterol, hypertension, and other heart related problems, emerged as a serious health concern for about 40% of the respondents. Lastly, only 3.9% of truck drivers reported being involved in a work-

related accident or experiencing an injury during the prior 12 months.

Truckers' access to healthcare services and their treatment histories are presented in Fig. 2 and Tables 4 and 5 below. While the majority of truckers stated having either private (45.5%) or public (12.6%) health insurance, over a third (32.3%) reported having no health insurance of any type. About half of the truck drivers (50.5%) stated that their employer did not provide any health insurance and 84.2% of them confirmed the absence of provisions for paid sick leave. Thus, when these drivers get sick while on the road, they either take over-the-counter drugs (42.1%), wait until they reach home (20.9%), or visit the emergency room of the nearest hospital (18%). When asked about the primary medical care used during the previous 12 months, most truckers noted using a physician's office (36.1%) or hospital/emergency room (11.1%), while 50% identified a physician or nurse practitioner as the health professional they visited when they needed medical attention during the past 12 months. A significant portion of drivers (40.2%) mentioned the lack of medical services on the road, while this coincides with an overwhelming proportion of drivers (71.1%) who reported not having regular healthcare visits, and nearly a quarter of drivers reporting difficulty in keeping appointments (25%) and inability to afford medical care at all (24.4%).

The involvement of truckers in health promotion and wellness activities is presented in Table 6 below. More than half of the participants (54.9%) received health information from their healthcare providers. A surprising number of drivers (55.6%) indicated no interest in receiving health information. From these drivers who

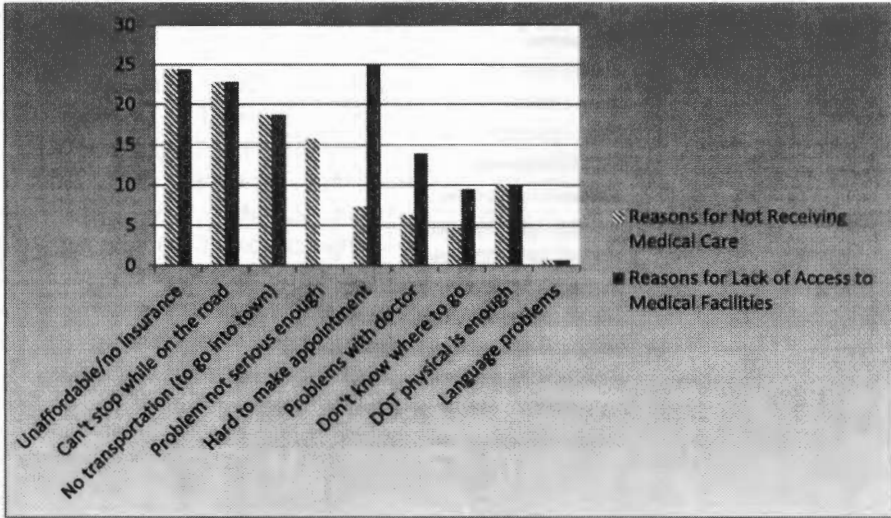


Fig. 2. Explanations for lack of access to medical facility or not receiving medical care. (Colours are visible in the online version of the article; <http://dx.doi.org/10.3233/WOR-121553>)

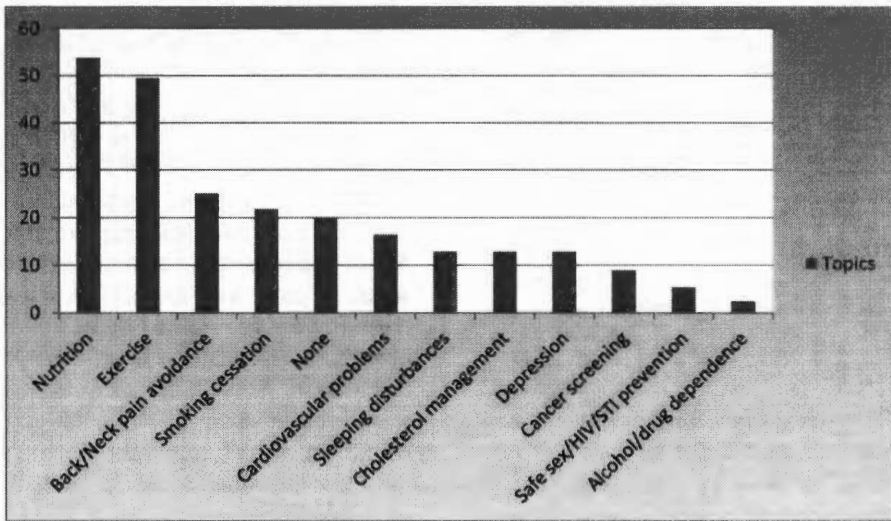


Fig. 3. Health topics of interest to truckers. (Colours are visible in the online version of the article; <http://dx.doi.org/10.3233/WOR-121553>)

were open to receiving information, guidelines for exercise (49.5%) and healthful eating (53.8%) were the topics of highest interest (Fig. 3).

Truck drivers' were asked about their observations of the availability of fitness facilities, wellness programs, and/or preventive risk assessments at a variety of trucking work environments where they spent time. The first four categories of possible answers – “most,” “many,” “some,” and “few” – were combined to signify “presence” of such facilities and programs, whereas the fifth category – “none” – signified their “absence.” Study participants were asked about the types of facilities or

programs with the greatest likelihood of being available at different work settings (e.g., truck companies, terminals, warehouses, truckstops) or anywhere else truckers might have encountered them during the course of their work. Fitness facilities in any form were reported as unavailable for over 70% of truckstops, nearly 70% of trucking terminals, and 88% of trucking warehouses. Similarly wellness programs of any type were reported as unavailable at over 70% of trucking companies and at nearly 81% of truckstops, and even fewer truckstops or trucking companies provided some type of preventive risk assessment (Fig. 4). While over half of the

Table 4
Truck drivers' access to healthcare (N = 316)

	Percentage
<i>Type of health insurance</i>	
Private	45.5
Public	12.6
Other	9.7
None	32.3
<i>Health insurance provided by employer</i>	
No	50.5
Yes	48.2
Don't know	1.3
<i>Availability of paid sick leave</i>	
No	84.2
Yes	10.6
Don't know	5.1
<i>Use of medical care during previous 12 months</i>	
No	50.2
Yes	48.5
Don't know	1.4
<i>Primary medical facility used in previous 12 months</i>	
Doctor office	36.1
School health clinic	1.3
Community center	0.9
County clinic	2.5
Private clinic	2.8
Hospital/emergency room	11.1
VA hospital	6.3
Military healthcare facility	1.3
Urgent care	3.2
Don't know	0.6

truckers surveyed (54.9%) identified their healthcare provider or physician as the primary source of health information, a similar percentage (55.6%) indicated no interest in receiving health information. Finally, nearly 70% of truck drivers reported not participating in some form of regular exercise (Table 6).

5. Discussion

These findings corroborate the overarching working hypothesis of our long-standing work on trucking, which supports that the extant organization of commercial vehicle driving immersed within current governmental and corporate policies, creates a work environment that is not conducive to healthful living for U.S. truck drivers [1-3,6]. In several industrialized nations, such as Australia, Denmark, Finland, Great Britain, Iceland, Israel, and Sweden, a significant body of empirical evidence has firmly established connections between aspects of the trucking work context and drivers' elevated health risks, with a particular emphasis on links to fatigue and road-traffic accidents [27-30]. Nevertheless, there remains a paucity of empirical work

Table 5
Truck drivers' medical treatment history (N = 316)

	Percentage
<i>Availability of medical facility to seek healthcare</i>	
No	40.2
Yes	51.3
There's more than one place	5.7
<i>Actions taken when sick while on the road</i>	
Wait until at home	20.9
Take over-the-counter-medicine	42.1
Ignore it	14.6
Consult a pharmacist	2.8
Pull over until felt better	11.4
Visit public clinic	4.7
Visit a hospital/emergency room	18.0
Visit local doctor's office	3.2
Call family doctor	5.4
<i>Type of health professional visited during past 12 months</i>	
Psychiatrist	3.5
Psychologist	1.9
Counselor	2.2
Physician or nurse practitioner	50.0
Social worker	1.3
Religious advisor	4.1
Therapist	0.9
Don't know	34.2
<i>Regular visit to health professional</i>	
No	71.1
Yes	28.9

Table 6
Truck drivers' response to health promotion (N = 316)

	Percentage
<i>Primary source of health information</i>	
Healthcare provider/physician	54.9
Trade/popular magazines	6.3
Trucking company/employer/truckstops	8.0
Trucker websites/other websites	17.0
Public health clinics	3.5
Other	10.4
<i>Interest in receiving health information</i>	
No	55.6
Yes	44.4
<i>Performance of regular exercise</i>	
No	69.4
Yes	30.6

on U.S. truckers that delves into whether and how the trucking work environment influences drivers' physical health, their access to health services, and their participation in wellness programs. The results presented herein are intended to shed some light on the work and health conditions of the trucking sector's employees, with a particular emphasis on long-haul truckers.

Work and workplace organization, including its structure, content and characteristics, scheduling and time pressures, and work-life conflicts present serious challenges for U.S. drivers. It should be noted that

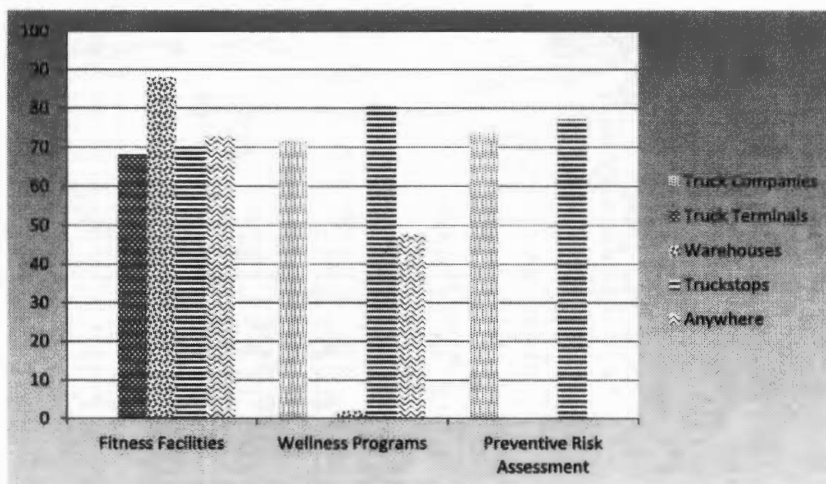


Fig. 4. Unavailability of wellness programs, fitness facilities, and preventive risk assessments at trucking work settings. (Colours are visible in the online version of the article; <http://dx.doi.org/10.3233/WOR-121553>)

U.S. long-haul truckers work in a highly stressogenic environment due to a series of interlinked factors. For example, being paid by the mile (as noted by about 70% of our sample) puts immense pressure on truck drivers and is reflected in excessive driving speeds, the poor quality of food they consume, total number of hours they work and resulting fatigue levels, absence of leisure time and time they are able to spend with family, which is particularly problematic for the overwhelming majority of our sample that is married with children. It is important to keep in mind that the study respondents' reported weekly 61 workhours greatly exceed those reported by other U.S. full-time employees who average 35 hours per week, or the 41.5 weekly hours reported by male workers alone [31] – a more than an astonishing 20 hours difference per week. In the same vein, over 65% of Australian truckers work more than 60 hours a week [26], while professional truck drivers in Israel work 12-hour shifts more than once per week [27]. Long workhours of 11 or more per day increase workers' chances for heart problems by 67% [32] – this is of particular importance given that truckers are allowed to work up to 14 hours per day and many oftentimes reach up to 84 hours of work per week [20].

This labor-intensive work context with highly precarious work conditions may lead one to question why the majority of truck drivers reported their overall satisfaction with their state of health. The authors choose to explain this in two ways: first, the sample was comprised of mainly younger drivers (mean age of 44.17) in whom the majority of serious health problems has

not yet fully manifested; second, the simple fact that the drivers were able to push themselves to continue working despite the difficult work conditions gave them the impression that they were fine. Contrary to their perceptions of good health, however, eight out of 10 drivers in our sample were either overweight or obese – with the equivalent rate for the general U.S. population at about 70% [33]. This condition is intimately associated with a host of adverse health afflictions, including sleep disorders, high cholesterol, and metabolic syndrome, among others [34]. This particular finding supports those of other small-scale studies, where combined overweight and obesity rates among U.S. truckers range from 56% to 92% [9,10] and obesity rates alone reach 32%, which is the highest rate among all occupational groups [11]. Thus, the perceptions of our sample of drivers are strongly contradicted by their self-reported health concerns: many have been diagnosed with, have in the past received, or currently receive treatment for obesity, sleeping problems, chronic fatigue, diabetes, cancer, or cardiovascular and pulmonary disorders, among others. These results support findings from other similar studies: about 70% of truckers are at high risk for sleep apnea; the average driver weighs 240 pounds; 85% of commercial drivers cite CVD or diabetes as their top health concerns; and 90% are on one or more prescription medications for blood pressure, diabetes, cholesterol, or CVD [17,18]. Such adverse health conditions are highly compatible with the prevalent trucking characteristics of intense occupational strains, fatigue, stress and long workhours that have the potential to elevate early mortality rates [35, 36].

Our sample of truck drivers' rates of work-related accidents or injuries were found to be quite low, in fact, almost half of those of Australian truckers' rates of 7.1% [26], and thus require further attention. Considering alarmingly high figures of road-traffic accidents involving trucks with costly financial and morbid ramifications [17,18], reported rates by our study participants appear particularly low. This may be partially explained by the fact that commercial drivers often under-report their accident incidents to maintain their safe-driving records in order to safeguard their employment or intentionally misclassify accidents for insurance purposes [37]. It has been established that high obesity rates of truckers and related ramifications (i.e., SLDs, CVD) increase the incidence of road-traffic accidents [15]; in fact, obese truckers and those with sleep disorders, in particular, have twofold higher crash rates [15]. In addition, many of the recorded 7.3 million violations of federal medical rules that apply to commercial vehicle drivers (e.g., acceptable BP rates) [15] can significantly degrade truck drivers' abilities to drive safely and increase their potential to cause accidents.

Our sample of truck drivers also reported low numbers of work-related injuries, even though U.S. truck drivers account for 8% of all work-related musculoskeletal disorders (MSDs) and 15% of all fatalities [15], while U.S. truck drivers in general experience some of the highest rates of workplace injuries with high numbers of worker compensation claims in several states, especially for MSDs [15]. While rates of work-related fatal injuries for all occupations remained stable for 2010, the number of fatal injuries increased by 2% in truck transportation and 17% in specialized freight trucking, and truckers consistently rank among the top three occupations in nonfatal injuries and illnesses [38].

Truck driving is clearly among the highest risk occupations in the U.S. [39]. Given that the truckers who participated in this study reported having dealt with diverse health concerns and problems, it is worrisome that more than 30% did not have any health insurance. As for those drivers who reported having health insurance, over half stated it was not provided by the employer, which implies that insurance may be considered unaffordable. Furthermore, even many of the drivers who have health insurance are unable to receive medical care on the road due to inherent barriers associated with working conditions such as irregular work hours and constantly changing geographic location. Studies with U.S. truckers in Michigan [40] reported that while most drivers had a family physician, cost was a major

contributing (or prohibiting) factor for those without a family doctor. In addition, over 30% of the same truckers in the Michigan study described their health as "not excellent" due to poor access to healthcare on the road, the drivers described problems of access to healthcare, and unanimously expressed need for access to healthcare clinics near truckstops [40]. The Michigan study also revealed that these barriers sabotaged chances for any substantive and systematic form of preventive care for drivers.

As with inadequate healthcare access for over-the-road truck drivers, the presence of health promotion and wellness resources were found to be minimal as well. Trucking companies and trucking work settings – including mainly truckstops, trucking terminals, and warehouses – provided very limited resources such as fitness facilities, wellness programs, or preventive health risk assessments. The absence of these resources is at least partially responsible for the fact that seven out of 10 truck drivers do not exercise regularly, which is also corroborated by studies of U.S. truckers that have found 42% to 92% of truckers do not exercise regularly [41].

Despite the shortcomings associated with a cross-sectional design and survey methodology used in this study, our findings are generalizable for the great majority of U.S. truck drivers; however, these findings cannot be generalized to truck drivers in other industrialized nations. In the European Union, for example, different corporate and governmental regulations impose other restrictions on the trucking organization and the drivers themselves. There are several small-scale studies on trucker health with cross-sectional and retrospective designs; however, the lack of prospective studies that examine whether and how continued exposure to the trucking work environment exacerbates the incidence and progression of adverse outcomes is invaluable for the development and implementation of feasible preventive interventions. This small-scale study provides the necessary, initial descriptive data for the implementation of such studies.

6. Conclusions

Long-haul truck drivers in the U.S. operate in a stressor-filled environment, which functions within stringent governmental and corporate regulations, and exerts enormous adverse influence not only on drivers' physical health and well-being, but also hinders access to needed healthcare services. Truckers are vulnera-

ble to a plethora of health risks and are also a medically underserved population. The foregoing discussion leads us to ask: Is the physical health of truck drivers being influenced by the trucking work environment or by their lifestyle choices? Are lifestyle choices and work conditions so closely interlinked due to the nature of the work, which requires drivers to work and live away from home for weeks at a time? While important research questions, these are beyond the scope of this paper. Epidemiological studies have shown that working individuals usually tend to compensate strenuous work, involving heavy physical or psychosocial demands, with unhealthy behaviors [42,43]. In other words, physically and psychosocially strenuous work and other work-related factors can potentially have detrimental influences on behaviors, such as coping strategies related to unhealthful eating, drinking, and smoking. Long-haul truck drivers, in particular, offer a good example: at the end of a long and tiring work day, eating large quantities of comfort food (e.g., truck-stop fare such as deep-fried and grease-laden starchy foods that are unhealthful) can be a coping mechanism. While links between work and lifestyle remain an important future research direction, this study provides useful baseline data that demonstrate that the trucking work environment has a significant bearing on drivers' health in the form of morbid conditions as well as disabilities from accidents and injuries. Government, industry and healthcare providers are faced with a challenge of enormous proportions: how to keep the commercial vehicle sector profitable and competitive while taking care of drivers' health and the public's safety.

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