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Prevalence of occupational hazards on truck drivers in rivers state

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Abstract
This study investigated the prevalence of occupational hazards on truck drivers in Rivers State. The cross-sectional descriptive survey research design and the is Rivers State. The population for this study comprised of all 3000 registered industrial truck drivers in Rivers State. The sample of this study was 500 truck drivers. The study adopted simple random sampling technique. Data collection for the study was collected through the use of structured questionnaires. The questionnaire was titled: 'Prevalence of Occupational Hazards among Truck Drivers Questionnaire (POHTDQ). A structured questionnaire was used for data collection and analysis was done using descriptive statistics such as percentage, mean and t-test. The finding of the study showed that there is no significant difference between the mean responses of drivers and the prevalence of fatigue among truck drivers in Rivers State [tcal (1.22); t-crit (1.96); $p>0.05$]; there is no significant difference between the mean responses of drivers and the prevalence of biological hazard among truck drivers in Rivers State [tcal (1.23); t-crit (1.96); $p>0.05$]; amongst others. The study concluded that amongst the prevalence of occupational hazards includes: fatigue and biological hazard, among truck drivers in Rivers. It was recommended that, industries and Managers should improve work policies and procedures, and provide personal government should encourage Truck drivers through counseling or seminars to take regular sleep schedule, healthy diet and frequent exercise to help reduce fatigue. They should also be encouraged to consume less caffeine during the day and avoid caffeine at night which may also help.

Keywords: Prevalence, occupational hazards, biological hazards, truck drivers, fatigue

Introduction
Transportation is an important part of human activity. It forms the basis of all socioeconomic interactions. In many developing countries, lack of transport facilities often hinders economic development. Prior to this time, man had transported himself and goods on land with the aid of animals, on wheels (aided by animals) and most recently automobile and trains. Water travel is as old as civilization with the invention of the ships to sail at the time of the earliest cities in hundreds of centuries BC. Trade and exchange were greatly facilitated between regions across the globe through water transportation. This did not go without its own evils such as slave trade and the problem of sea pirates. Air travel has not only aided movement of man and goods but also importantly man's exploration to space to study the operations of the universe and aid communication. It is not to be overlooked that pipelines have equally assisted in transporting raw and finished liquid materials such as crude oil which is a major economic resource and one of the most lucrative foreign exchange earner across the globe. Road transportation has its own history. Its flexibility and ability to create accessibility to the smallest units of land uses gives a great advantage and helps in the development of local economy. In Nigeria, road transportation is the commonest and most extensively used form of transportation. It involves the use of bicycles, motorbikes, carts, cars, buses, lorries, trailers, tankers, etc., in moving people, goods and services from one location to another where they are needed using truck drivers (Mohammadzadeh, Tabibi, Sadeghi, Ayati, & Ghotbi, 2017) [16].

Driving is a profession that is vital to the economy of every country, yet it is a career about which most people know very little. Mohan, Tiwari and Bhalla (2015) [17] reported that surveys of the general public indicate that most people are ambivalent about truck driving and view it as a dead-end profession requiring little intelligence or skill. Nonetheless, people all over the world are dependent upon truck drivers one way or the other, and the work they perform. Manufactured goods from different parts of the world and within the country are moved to final destinations by long haul truckers.

A truck at some point and time transports nearly all goods consumed in the world. According to the American Transportation Research Institute (2004), the trucking industry hauled 68.9% of all freight transported in the United States in 2003, equaling 9.1 billion tons. The trucking industry was a $610 billion industry in the same year under review, representing 86.9% of the nation's freight bill. Trucks transport the "tangible" goods portion of the economy, which is nearly everything consumed by households and businesses. Trucking also plays a critical role in keeping costs down throughout the business community. Specifically, for businesses that produce high-value, low-weight goods, inventory-carrying costs can be considerable. Many of these producers now count on trucks to deliver products efficiently and in a timely manner so that inventory can be kept as low as possible and warehouse operating cost can be lowered.

In recent years, the health of truck drivers has become a concern both in the United States and abroad (Møller & Haustein, 2014) [18]. According to researchers and safety analysts, truck driving is ranked as one of the most dangerous occupations in the world (MORTH. 2018). It is also the occupation ranked as having "the greatest number of injuries and illnesses" according to occupational health experts. The work of a truck driver involves a wide range of tasks associated with the control of a large and often heavily loaded vehicle, and it also exposes the driver to all the hazards of a heavy traffic environment.

It is widely recognized that long-haul trucking presents significant occupational hazards for drivers (Bureau of Labor Statistics, 2006). Although the Bureau of Labor Statistics (2006) acknowledges that "truck driving has become less physically demanding because trucks now have more comfortable seats, better ventilation, and improved ergonomically designed cabs, driving for many hours at a stretch, loading and unloading cargo, and making many deliveries can be tiring". In fact, research substantiates that truck drivers are at increased risk for numerous preventable diseases, such as myocardial infarction, musculoskeletal disorders, hypertension, ulcers, and cancers of the lung, prostate, and bladder when compared to people in other professions (Newnam, Mamo & Tulu, 2014) [19].

In addition to physical threats, long-haul truck driving is also taxing psychologically, which can exacerbate existing health problems. Long-haul truck drivers are more stressed when compared with other commercial drivers. All professional drivers are expected to perform what is called "threat-avoidant vigilant activity" (NHTSA. 2011), requiring a high level of attention, the ability to process a large amount of information and stimuli from different sources, and the ability to react quickly in high-stakes situations. A momentary lapse in one's focus or a seemingly simple wrong decision can have serious, and even fatal, consequences. Oppenheim, Oron-Gilad, Parmet and Shinar (2016) [22] cites the medical literature, and claims that threat avoidant vigilant activity is highly stressful and often results in stress induced medical problems, including heart attacks and fatigue.

Fatigue is a nonspecific symptom because it can be indicative of many causes or conditions including physiological states such as sleep deprivation or excessive muscular activity; medical conditions such as chronic inflammatory conditions, bacterial or viral infections, or autoimmune illnesses; and psychiatric disorders such as major depression, anxiety disorders, and somatoform disorders (Poirier, Blais & Faubert, 2018) [24]. Many of the conference participants considered fatigue to be a critical problem for drivers and the trucking industry. Safe vehicle operation requires sustained vigilance, excellent judgment, and quick reactions, particularly during heavy traffic or poor driving conditions. Fatigue impairs all of these abilities, endangering not only truck drivers, but also other motorists who share the road with them. A common proximate cause of fatigue among truck drivers is partial sleep restriction, which in turn causes sleep debt and semichronic sleepiness. One study reported that drivers slept an average of only 4.78 hours per day, while those who worked on a steady night schedule averaged only 3.83 hours of sleep per day. Sleep restriction, in turn, stems both from medical problems such as sleep apnea and from employment conditions in trucking. Long work hours cut into time available for sleep, and work-related stress makes it hard for drivers to sleep even when time is available. Shift work or an irregular work schedule forces many drivers to sleep during the day, in opposition to natural circadian rhythms, and most team drivers probably experience this irregular schedule. Sleeper berths do not provide optimal sleeping conditions, and sleep likely is fragmented for solo drivers and team drivers alike. Some drivers find it difficult to sleep in a moving vehicle, especially if they do not trust the driving ability of their partner, or if the vehicle is making numerous stops. Likewise, solo drivers' sleep may be fragmented while awaiting notification of the availability of their next load.

Occupational infectious diseases are commonly found as part of a systemic infection involving the respiratory organs in immunocompromised workers. There has been a lot of discussion on biological hazards at work, their diagnosis, and treatment. Known etiological causes of the disease are increasing and include occupational factors (Stephens & Fitzharris, 2016) [32]. Two main groups of biological agents are regarded as occupational biohazards: allergenic and/or toxic agents forming bioaerosols, causing occupational diseases of the respiratory tract and skin, primarily in agricultural workers; and agents causing zoonoses and other infectious diseases that could be spread by tick or insect vectors, through various exposure routes. Bioaerosols are biological particles of organic dust and/or droplets suspended in the air, such as viruses, bacteria, endotoxin, fungi, secondary metabolites of fungi, particles of feces, bodies of mites and insects, and feather, hair, feces, and urine of birds and mammals. They often induce disorders of the respiratory system or skin. Bioaerosols are a main health problem in agriculture, medical or veterinary facilities, diagnostic laboratories, plants producing biofuel from rape blossoms, the metallurgical industry, libraries, and even art conservation.

Occupational safety aims to minimize the risk to employee's health from harmful factors at work, and to prevent occupational diseases and accidents. Occupational safety denotes the principles and procedures used to prevent

occupational accidents and inquires in all types of manufacturing and service industries, combining health promotion with occupational health and safety management may be more effective in maintaining or improving the working capacity of employees, and in reducing the rate of sickness, absenteeism or premature permanent work disability, than only protecting the health and safety of employees from occupational risks, (Thompson, Newman & Stevenson, 2015).

Statement of the Problem

Most commercial truck drivers work in poor conditions without rest or the benefit of taking an annual leave while their remuneration is far below the minimum wage and this informs why they try to maximize passenger kilometre on the principle of more passengers, more load and faster speed to earn more money. Consequently, the long hours of work in trying to maximize passenger kilometre keeps them away from family, causing them to live under poor conditions on the road, exposing them to the dangers of contracting diseases, theft, and other forms of dangers which create both physical and emotional problems for them and this situation is aggravated by lack of effective law enforcement and regulation. Even though commercial transport operators most especially, the truck drivers have remained the main providers of transportation in Nigeria, some of these transport operators are not been regulated by the transport unions and this has constituted a big problem in the transport sector in Nigeria. In an economy where unemployment is high and where almost anybody that can drive could be a commercial truck driver especially the low income earners, retrenched and retired workers who need to continue to earn a living through steady income, commercial truck driving is now the order of the day. Therefore, this study set out to investigate whether this category of drivers would be able to contribute positively to the reduction in prevalence of occupational hazards and ensure a sustainable transport system that will be reliable and cost-efficient as enshrined in the Transformation Agenda in Rivers State.

Aim and Objectives

The aim and objective of the study is to find out the prevalence of occupational hazards on truck drivers in Rivers State**.** Specifically**,** the study tends to determine the following:

1. Examine the prevalence of fatigue among truck drivers in Rivers State,
2. Investigate the prevalence of biological hazard among truck drivers in Rivers State,

Research Questions

The following research questions were formulated to guide the study:

1. What are the prevalence of fatigue among truck drivers in Rivers State?
2. What are the prevalence of biological hazards among truck drivers in Rivers State?

Hypotheses

The following hypotheses were formulated and tested at .05 level of significance:

Ho1 There is no significant difference between the mean responses of drivers and the prevalence of fatigue among truck drivers in Rivers State.

Ho2 There is no significant difference between the mean responses of drivers and the prevalence of biological hazard among truck drivers in Rivers State.

Conceptual Review

Occupational Health Hazard

Occupational health is the branch of health science concerned with the promotion and protection of the health, safety and welfare of workers of all categories (Adeniyi, 2002). Danbenspeck (1974) as cited in Awoyemi (2019) further viewed occupational health as the study of factors or conditions influencing the health and well-being of the workers not only in their work places but also in their homes. He also indicated that it was concerned with the detection, evaluation and control of environmental and safety hazards associated with work environment and their homes. Occupational health is at the centre of sustainable development as stipulated in WHO global strategy of Occupational Health for all by the year 2000, (WHO, 2000) this will enable the workers to know the minimum standard required in any workplace especially at the health sectors. The prevention of occupational hazards, accidents, injuries and diseases and the protection of workers against physical and psychological overload. These imply a parsimonious use of resources, minimizing the unnecessary loss of human and material resources; the objective of healthy and safe work environment which call for the use of safest, low-energy, low-emission, low waste (green) technology and in many countries requires the use of the best available production technology.

Industrial Truck Drivers

The steep rise in contributions in the field of sustainable transportation demonstrates active debate in this area (Tseng, 2013) [34], especially related to environmental impacts and drivers' and support staff's quality of life. However, there remains scant empirical research which critically focuses on the role of truck drivers and their skills development, which are important for achieving sustainable transportation goals. The trucking industry is the backbone of transportation and logistics sector (Tseng, Yeh, Tseng, Liu & Lee, 2016) [35] with a vital role in developing economies, especially in the Indian subcontinent, although this remains a largely unorganized sector. Most research focuses on clean energy use in transportation (Tzamalouka, Papadakaki & Chliaoutakis, 2005) [36]. In contrast, there is hardly any research which focuses on the skills of a truck driver, who has a major influence on carbon emissions.

Prevalence of Occupational Hazards

Occurrence of Fatigue

Fatigue is described in terms of physiological data or "objective" observations of decreasing muscle performance or decrements in work or performance. For example, fatigue has been defined as a failure to maintain a required force or output of power during sustained or repeated muscle contraction (Bedinger, Walker, Piecyk & Greening, 2016) [7] or as time-related deterioration in the ability to perform certain mental tasks. In contrast to physiological fatigue, some have defined fatigue as a subjective self-reported feeling of fatigue. This feeling of fatigue is what people generally report when they seek medical treatment. Fatigue is sometimes defined as "tiredness," feeling tired, being fatigued, feeling weak in part of the body, tired or lacking in

energy, or experiencing "everything [as] an effort". Physiological definitions are more easily measured, but the subjective feeling of fatigue is not directly observable. Further, this feeling of fatigue does not always correspond directly with physiological manifestations.

In response to its complex nature, most measures of fatigue have moved away from single questions (i.e., "Do you feel tired?") to a more multidimensional approach. These measures assess the effect of fatigue on daily activities, mental and physical aspects of fatigue, and other characteristics and related symptoms (Beus, McCord & Zohar, 2016) [9]. Fatigue has also been described in terms of level of severity, level of impairment, physiological and psychological characteristics (physical vs. mental), and duration. Whereas some researchers have proposed a categorical classification (i.e., absence or presence of fatigue), several research studies suggest that fatigue is best conceptualized on a continuum, with its variability reflecting degrees of severity. Despite these more recent attempts to compartmentalize fatigue, the major problem with such measures is their subjectivity.

Physical versus Psychological Causes of Fatigue

The debate as to whether fatigue has primarily a physical or psychological etiology continues in contemporary investigations. Some researchers have distinguished between central and peripheral fatigue. Peripheral fatigue is defined as failure to sustain force or power output because of "failure in neuromuscular transmission, sarcolemmal excitation, or excitation-contraction coupling," implying neuromuscular dysfunction outside of the central nervous system, or CNS (Fathallah, Grönqvist & Cotnam, 2000) [10]. In contrast, central fatigue is defined as resulting from failure to achieve and maintain the recruitment of high-threshold motor What Is Fatigue? 9 units, implicating dysfunction in CNS neurotransmitter pathways. However, the contributions of neither peripheral fatigue nor central fatigue to overall subjective reports of fatigue is well understood.

Unexplained Fatigue in Chronic Fatigue Syndrome

Only a small minority of patients presenting with chronic or severe fatigue are actually diagnosed with chronic fatigue syndrome. The prevalence of this disorder has been estimated at 0.24 percent to 0.4 percent in community-based studies, and 2.6 percent of patients in primary care (Markley & Davis, 2007) [13]. As fatigue is the defining symptom of this illness, all persons diagnosed with chronic fatigue syndrome have experienced severe and disabling fatigue for 6 months or more (Fukuda et al., 1994). The effects of this chronic, unexplained fatigue appear to differ from individual to individual, with some persons experiencing only mild impairment, while others experience severe or very severe limitations (Mattson, 2015) [14]. The fatigue in CFS can lead to a markedly higher degree of impairment than is found other chronically ill populations (Mitra, 2016) [15].

Fatigue in Chronic Disease

In addition to unexplained fatigue, the occurrence of fatigue in specific medical diseases has also been investigated. Fatigue has come be recognized as a serious symptom of many illnesses that can significantly impair a person's functioning and have a negative impact on quality of life in many chronic illnesses, including after cancer treatment (Reiman & Putkonen, 2012) [25], systemic lupus erythematosus (SLE) (Reiman, Pekkala, Väyrynen, Putkonen & Forsman, 2014) [26], multiple sclerosis (Reiman, Putkonen, Nevala, Nyberg, Väyrynen & Forsman, 2015) [27], human immunodeficiency virus (HIV) infection, viral and cholestatic liver diseases, and rheumatoid arthritis. However, understanding fatigue in chronic medical disease continues to prove difficult. Even when fatigue is considered a primary or a common symptom, such as in multiple sclerosis or SLE, fatigue often does not correlate with disease status or physiological findings. Despite the recognition that fatigue is an integral component of chronic disease, its etiology in many chronic illnesses is not well understood, although some have proposed it is mainly of central origin. Salmoni, Cann, Gillin and Eger (2008) [29] proposes that corticotropin-releasing hormone and chronic stress, cytokines and immune activation, central neurotransmitter pathways, and mood disorders such as depression are possible factors contributing to fatigue in chronic diseases. Further, different chronic illnesses may vary in the relative contributions of peripheral and central fatigue to the overall experience of fatigue. Finally, other factors such as stress, sleep disturbance, distress of other somatic symptoms, and personality traits have been reported to contribute to the subjective experience of fatigue in chronic disease.

Prevalence of Biological Hazard

In the twenty-first century, the nature and extent of human interaction in different built environments can have a profound impact on public health. Today, we spend nearly 90 % of our time indoors in a variety of enclosed microenvironments (Schulz, Luthans & Messersmith, 2014) [30]. In broader terms, the built environment refers to any physical alteration of the natural environment through human-made structures to shelter, perform and protect their activities, ranging from dwelling and work places to recreational facilities and their supporting infrastructure. The development and expansion of transport infrastructures, especially in mega cities, has led to increased mobility of people. Today, a vast proportion of the working population spend a significant time commuting in public transport and exposure to airborne pathogens in these in-transit microenvironments is of major concern. For example, in the UK, use of public transport has increased from 9 to 11 % since 1995/97 to 2012 (Shibuya, Cleal, & Kines, 2010) [31]. However, the principles and practices in design, construction, operation and management of different built environments vary across the globe depending on a variety of factors (economic, social, political, technological and climatic) (Smith, Williams, 2014) [30], resulting in a range of exposure pathways and scenarios around biological hazards in these environments.

Theoretical Framework

The Health Belief Model (HBM) of Rosenstock, Becker, Kirserit (1988) was one of the first models which adapted theories from the behavioural science to examine health problems. It is still one of the most widely recognized and used models in health applications. This model was originally introduced by a group of psychologists in the 1950"s to help explain why people would or would not use available preventive services. These researchers assumed that people feared diseases and that the health actions of people were motivated by the degree of fear (Perceived threat) and the expected fear reduction of actions, as long as that possible

reduction out weighted practical and psychological barriers to taking action (net benefits). The HBM can be outlined using four constructs which represents the perceived threat and net benefits. These, according to Rosenstock, Becker, & Kirserit (1988) are:

1. Perceived severity or a person's opinion of how serious this condition is;
2. Perceived susceptibility or a person's opinion of the chances of getting a certain condition;
3. Perceived benefits or a person's opinion of the effectiveness of some advised action to reduce the risk or seriousness of the impact; and
4. Perceived barriers or a person's opinion of the concrete and psychological costs of this advised action

The above four tenets of HBM apply to this study because HBM attempts to explain health behaviour in terms of individual decision making and proposes that the likelihood of a person adopting a given health related behaviour is a function of the individual's perception of a threat to their personal health and their belief that the recommended behaviour will reduce this threat. This model has its focus on the prevention of disease rather than control.

HBM states that the perception of a personal health behaviour threat is itself influenced by at least three factors: general health values, which include interest and concern about health; specific health beliefs about vulnerability to a particular health threat; and belief about consequences of the health problem. Once an individual perceives a threat to one's health, such a person is stimulated into action. When perceived benefits outweighs perceived loses, then such a person is most likely to undertake the recommended preventive health action. In doing this, the health workers perception of occupational health hazards in government hospitals in Rivers state will be sought based on this theory.

Empirical Studies

Bashir, Umar, Simeon, Nathaniel and Sunday (2019) Driving Behaviour of Taxi Drivers towards Sustainable Public Road Transport in Ogun State, Nigeria. Driving is a psychomotor activity that requires combination of mental concentration and good visual functions. Multiple Regression and Analysis of Variance (ANOVA) were used to test postulated hypotheses at 0.05 level of significance. More males (94%) are involved in commercial taxi driving than female (6%); and 91% had driving experience of more than two years. Factors influencing deviant driving behaviour of taxi drivers are intake of alcohol (72%); intake of drugs and other local substances before and while driving (65%); attitudes of traffic officers (96%); traffic situation (90%); demand for services (96%) and vehicle condition (88%). There is statistically significant relationship between years of driving experience and driving behaviour of taxi drivers (F14 735 17.118= P< 0.05). Meanwhile, nine (9) out of the fourteen (14) predictors best predict driving behaviour of commercial drivers. This study recommends adherence to road safety driving rules and enforcement measures.

Obi, Aniebue, Okonkwo, Okeke and Ugwunna (2014) Prevalence of depression among health workers in Enugu, South East Nigeria. Results: The total of 46 of the 309 workers (14.9%) were found to be depressed. Of the health workers found to be depressed, there were more females (18.0%) than males (8.7%). A feeling of sadness over family, living and working conditions was more consistent among the depressed. Conclusions: The condition of depression is present among health workers in this part of the world. Being a female health worker, may be associated with depression in South East Nigeria. Studies to investigate the determinants and effects of depression in the Nigerian health work force are necessary.

Osungbemiro, Adejumo, Akinbodewa and Adelosoye (2016) Assessment of Occupational Health Safety and Hazard among Government Health Workers in Ondo City, Southwest Nigeria. Results: A total of 345 respondents participated in the study comprising of 136 (39.4%) males and 209 (60.4%) females. About 85% of the respondents were aware of OHS and undergraduate training was the major source of awareness in 177 (51.3%). The common hazards identified among the respondents were sharp related injuries in 280(75.4%), infections from patients in 244(70.7%), cuts and wounds in 207(60%), air borne disease in 207(60%) and stress in 268(77.7%), physical/verbal abuses in 184(53.3%). One hundred and thirty one (38%) respondents had high level of occupational risk while only 21(6.1%) had good level of safety measures. Nonclinical HCWs had significantly better safety practices (P < 0.001). Also, HCWs with > 10 years of practice had better awareness of OHS (P =0 .01).

Hitomi, Bryan and Pete (2017) Hazard scenarios of truck drivers' occupational accidents on and around trucks during loading and unloading. Recent epidemiological studies have shown that there is a clear need for efforts to prevent non-traffic occupational injuries among truck drivers. Analyses of text descriptions of 136 accidents, including 63 cases of fall from height, collected in one company over a period of three years, revealed that: (a) the major triggering factors for falls from heights on and around the truck were stepping off the edge at height (33.3%), wrong footing (27.0%), and loss of balance/control of wagon (15.9%); (b) the major triggering factors for accidents on and around the truck in general were slip/trip (44.1%) and defect/malfunction (14.7%). The present study identified four target areas for improving prevention of occupational accidents of truck drivers in connection with movement/operation on and around trucks during loading/unloading: (1) improvement of the procedures for unloading to reduce the risk of fall from the back-hatch lift, (2) improvements of shoes and housekeeping to reduce the risk of slip/trip, (3) improvement of truck maintenance, and (4) reconciliation of views on causes of accidents between employers and truck drivers as a first step for a dialogue for improving safety in the goods-transport branch.

Jose, Arto, Jose, Seppo, Janne and Mikael (2015) Delivery truck drivers' work outside the cab: psychosocial discomforts and risks based on participatory video analyses. Results: All together 99 identified situations - over half (53%) of which included a fear of causing different types of undesired events with risks of losses, such as human injuries or material damages. The results showed not only do risks and discomforts exist in demanding work situations, which seemed relevant, but they also indicated the importance of involving different stakeholders. Conclusions: This study provides a unique methodological approach, as video observations and analyses and qualitative data analysis are combined to provide more in-depth data with visualizations into risk management processes.

Arun Garg (2006) conducted a study in America on occupational health hazards and safety engineering that deal with the protection of worker's health, through control of the work environment to reduce or eliminate hazards. It was

found that there were no significant differences in the perception of male and female workers in the occupational hazard with respect to location and level of education (location x2 = 3.32; df =3; p>.05). The researcher then recommended intensive education through seminars and campaign to improve the awareness level of male and female workers. Hazards related to the handling of agro-chemicals and existing facilities for health and hygiene were surveyed by Ahasan, (2001). Sanitary system (e.g. latrines, toilets), water supply (e.g. drinking, washing)and canteen facility, provision of storage, first aid facility, and so on were investigated since agro-chemical factories were built in the vicinity of human habitation without maintaining enough health, hygiene and safety precaution. The workers in agro-chemical factories had less access to health and hygiene practice as well as safety measures because a low priority of occupational health and safety/ergonomics application was attached to the national program. The workers had had poor health due to a poor hygienic situation and non-ergonomic tasks. Many toxic substances were available and many workers are thus exposed to poisonous effects from handling of agro-chemicals. The agro-chemical factories were built in the vicinity of human habitation with a poor maintenance of health, hygiene and safety precaution. The sources of work-related problems (WRPs) in these factories were suspected to be the unhygienic and congested space, informal work-setting and rare use of personal protective devices (PPDs). With regard to health, hygiene and safety measures, 90% of the small-scale factories were found to be poorly maintained. About 58% of the medium-sized factories did not have health and safety measures according to any bylaw or revised article of the factory Act (1965) and factory rules (1979). Approximately 31% of the small-scale factories had poor latrines and 50% of these factories had no good supply of safe drinking water and canteen facility. In the medium-sized factories, 83% of the latrines were found to be of average condition (e.g.; limited access to women workers), with no toilet papers and other facilities. Small number of factories (14%) had a good system for safe drinking and washing water (e.g., supplied by the local municipality) but working environment was observed as very poor and non-hygienic. In all, 28% of the medium-sized factories had subsidized food (or nasta, a piece of bread and a banana) for the workers but these are perhaps offered as incentives.

Methodology

This study employed the cross-sectional descriptive survey research design and theis Rivers State. The population for this study comprised of all 3000 registered industrial truck drivers in Rivers State. The sample of this study was 500 truck drivers. The study adopted simple random sampling technique. Data collection for the study was collected through the use of structured questionnaires. The questionnaire was titled: 'Occupational Hazards among Truck Drivers Questionnaire (OATDQ). The structured questionnaire underwent face and content validity testing so as to ensure that the items on the instruments actually measure the constructs they were intended to measure. Data analysis for this study was done using the statistical package for social sciences (SPSS) 23.0 version. Mean and standard deviation were used to describe the set of data used for the study and to answer the research questions, while T-test was used to test the hypothesis at 0.05 alpha level of significance.

Data Presentation, Analysis, Results and Discussion of Findings

Research Question 1: What are the prevalence of fatigue among truck drivers in Rivers State?

Table 1: Mean and Standard Deviation on prevalence of fatigue among truck drivers

S/N	Prevalence of fatigue	X	SD	RMK
1	I feel very tired and sleepy	3.57	.692	Agree
2	Troubled with headache and dizziness	3.56	.732	Agree
3	Full of sore and aching muscles	4.28	.750	Agree
4	Slowed reflexes and responses	4.93	1.004	Agree
5	Loosing weight	4.16	.941	Agree
6	Loss of appetite	4.95	.875	Agree
7	Blurry vision	4.25	.931	Agree
8	Short term memory problem	4.99	1.088	Agree
9	Moodiness such as irritability	4.05	.990	Agree
	Grand Mean	**4.31**	**0.88**	**Agree**

Table 4.1 showed that items 1 – 9 have positive response rates. Since their weighted mean 3.57, 3.56, 4.28, 4.93, 4.16, 4.95, 4.99 and 4.05 are all greater than the criterion mean of 2.50, this implies that the respondents agreed to a high extent that fatigue affect truck drivers in Rivers State.

Research Question 2: What are the prevalence of biological hazard among truck drivers in Rivers State?

Table 2: Mean and Standard Deviation on prevalence of biological hazard among truck drivers

S/N	Prevalence of biological hazard	X	SD	RMK
1	Exposure to occupational risks related to global epidemics;	4.23	.834	Agree
2	Exposure to difficult assessment of biological risks;	4.40	.821	Agree
3	workers exposure to drug-resistant microorganisms	4.09	.722	Agree
4	lack of information on biological risk	4.18	.658	Agree
5	poor maintenance of air-conditioning and water systems	4.05	.924	Agree
6	inadequate OSH (Occupational Safety Health) training of local authorities staff	4.19	.953	Agree
7	Exposure to biohazards in waste treatment plants	3.99	.881	Agree
8	combined exposure to bioaerosols and chemicals;	3.95	.990	Agree
9	Exposure to moulds in indoor workplaces	3.98	1.03	Agree
	Grand Mean	**4.13**	**0.89**	Agree

Table 4.2 showed that items 1-9 have positive response rates. Since their weighted mean 4.23, 4.40, 4.09, 4.18, 4.05, 4.19, 3.99, 3.95 and 3.98 are all greater than the criterion mean of 2.50, this implies that the respondents agreed to a high extent that biological hazards affect truck drivers in Rivers State.

Hypotheses

H_{O1} There is no significant difference between the mean responses of drivers and the prevalence of fatigue among truck drivers in Rivers State.

Table 3: t-test analysis on occurrence of fatigue among truck drivers

Variable	N	X	SD	α	DF	t-Cal	t-Crit	RMK
Driver	210	4.31	0.88					
				0.05	493	1.22	1.96	No Sig
Fatigue	285	4.19	0.83					

Result in Tale 3 revealed that t-cal (1.22) is less than t-crit (1.96) which indicates that the hypothesis stated was accepted. Therefore there is no significant difference between the mean responses of drivers and the prevalence of fatigue among truck drivers in Rivers State.

H_{O2} There is no significant difference between the mean responses of drivers and the prevalence of biological hazard among truck drivers in Rivers State.

Table 4: t-test analysis on prevalence of biological hazard among truck drivers.

Variable	N	X	SD	α	DF	t-Cal	t-Crit	RMK
Driver	210	4.12	0.85					
				0.05	493	1.23	1.96	No Sig
Fatigue	285	4.19	0.83					

Result in Table 4 revealed that t-cal (1.23) is less than t-crit (1.69) which indicates that the hypothesis stated was accepted. Therefore there is no significant difference between the mean responses of drivers and the prevalence of biological hazard among truck drivers in Rivers State.

Discussion of Findings

The findings of the study showed that to a high extent, fatigue affect truck drivers in Rivers State. Therefore there is no significant difference between the mean responses of drivers and the prevalence of fatigue on truck drivers in Rivers State. Findings of the study is in line with Alvaro, Burnett, Kennedy, Min, McMahon, Barnes and Howard (2018) who explained that fatigue is common among professional drivers such as truck drivers. The nature of the occupation, irregular sleep patterns, long working hours and shift work increase the risk of insufficient sleep and fatigue. Perceived pain or mental discomfort can also lead to increased fatigue while driving. At present, fatigue driving has become the primary safety problem of the truck transportation industry. It can easily lead to decreased judgment ability, slow reaction and increase of operational errors, and as well as probability of road traffic accidents. According to American Federal Statistics, truck drivers are more prone to drowsiness within 120, 000 national fatal and major traffic accidents than other drivers, with 13% of large truck crashes due to driving fatigue. The high prevalence of fatigue is also reported in the UK drivers, where two-thirds of drivers who fall asleep at the wheel are truck drivers, and about 40% of the sleep-related accidents involve commercial heavy vehicle drivers.

Even though drivers can manage part of their fatigue, work-related strategies are essential. Truck drivers who were unable to choose the timing of their rest and break time would experience more fatigue during driving and easier to get involved in crash and traffic accidents than those who were constantly being able to (Alver, Demire & Mutlu, 2014) [2]. There was also a high percentage of self-reported fatigue among truck drivers in large companies compared to small companies. Besides, lacking fatigue management in the workplace and poor organizational safety culture might be in a position to influence how drivers behave at work and, in turn, cause fatigue experience. Current evidence about fatigue management is about protection against human errors and technical failure and protection against the road accident. There is still a need to exploring more on fatigue management strategies. According to Anne, Wheaton, Chapman, Presley-Cantrell, Croft and Roehler (2013) [3] it stated those working extremely long hours (more than 16 hours in 24 hours occupied a more significant proportion of driving fatigue. Arboleda, Morrow, Crum and Shelley (2003) [4] also concluded that long work shifts increased the driver fatigue level, especially for those with little waiting or queuing time on their trip. This often forced an increase in their workload and thus longer work hours. The additional work hours were generally not accounted for as part of the driver's salary packages, meaning the drivers were not paid for the waiting or overtime work. In addition, long-distance truck transportation is highly related to fatigue and falling asleep on the steering wheel, especially when driving more than 64,000 kilometres per year. Evidence shows that long shifts are related to short sleep time or sleep disorders, especially those over 8 hours. The decrease in neurocognitive function and performance due to sleep deprivation may lead to fatigue, decreased alertness, and slower reaction time. Other studies have confirmed physiological drowsiness, such as train drivers in Crew working at night and on long-distance flights. The findings of the study revealed that to a high extent, biological hazard affect the truck drivers in Rivers State. Therefore there is no significant difference between the mean responses of drivers based on their qualifications on the prevalence of biological hazard on truck drivers in Rivers State. Findings of the study is in line with Asian Institute of Transport Development (AITD). (2000) that typically focused on the impacts of upstream elements of policy and organizational decisions on downstream working conditions. Numerous work organization-related factors have been shown to influence health at the level of individuals and subsequently produce health disparities across occupational sectors at the population level. The direct psychosocial and physical exposures that workers experience daily (i.e., long work hours, shift work, lack of support from supervisors and coworkers) have been associated with poorer health behaviors, obesity and cardiometabolic disease (CMD), sleep problems, mental illness, as well as increased risks for accidents and injuries (Asian Institute of Transport Development (AITD). (2015). Long work hours and shift work have received more research attention in relation to worker health than other work characteristics. There is growing evidence that work schedules play a significant role in diminishing sleep quality and duration, which can lead to metabolic disturbances that in turn create pathways for the development of metabolic diseases, such as obesity, Type 2

diabetes, or metabolic syndrome. Similarly, job-related stress has implications for behavioral responses (e.g., poor dietary intake, weight gain, physical inactivity, poor sleep) that, when combined with physiological stress, are associated with increased risks for CVD (Atombo, Wu, Zhong & Zhang, 2016) [5]. Beyond these physical health concerns, adverse work conditions have been associated with increased fatigue, decreased productivity while on the job, and a diminished work-life balance, resulting in poorer health behaviors, depression, and other mental illnesses. These connections between work organization and employee health have pushed the National Institute for Occupational Safety and Health (NIOSH) to make work organization a national priority for occupational health and safety researchers (Bener, Crundall, Haigney, Bensiali & Al-Falasi, 2007) [8].

Conclusion

The study showed that there is the prevalence of occupational hazards affects the truck drivers in Rivers State. Amongst the prevalence of occupational hazards includes: fatigue and biological hazard. The hypotheses indicated that there is no significant difference between the mean responses of drivers and the prevalence of occupational hazards among truck drivers in Rivers State.

Recommendations

Base on the findings of the study, the following recommendations were made:

1. Government should encourage Truck drivers through counseling or seminars to take regular sleep schedule, healthy diet and frequent exercise to help reduce fatigue. They should also be encouraged to consume less caffeine during the day and avoid caffeine at night which may also help.
2. Government should establish and implement a Management of Hazardous Chemicals Programme in the workplace based on the nature of work and the hazardous chemical(s) used for truck drivers so that they can conduct a thorough Risk Assessment (RA) before carrying out any work with chemicals.
3. Employers and Managers should ensure all relevant safe work procedures (SWP) are in place and provide the training and information necessary for the employees to work safely and healthily, communicate with employees on the hazards involved and the precautionary measures to take if they are exposed to hazardous chemicals. Such hazard communication can be done through safety data sheets (SDS) and container labels of the chemicals.

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