

CHARACTERISTICS OF INTERCITY COMMERCIAL DRIVERS: IMPLICATIONS FOR ROAD SAFETY.

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ABSTRACT

Aim: To assess the knowledge, attitude and safety practices of commercial intercity bus drivers towards occupational health hazards, in Benin City, Edo State.

Methodology: A descriptive cross sectional study design was adopted for the study. One hundred and ninety four long distance drivers selected using systematic random sampling technique were interviewed using a pre-tested interviewer administered questionnaire. Data was analyzed with IBM SPSS version 21.0 software. The level of significant was set at $p < 0.05$.

Results: The mean age (SD) of respondents was 40.50 ± 7.31 . One hundred and seven (55.2%) respondents had fair knowledge of occupational hazards. Majority 149 (76.8%) of the respondents had a negative attitude towards occupational health hazards associated with commercial intercity transportation. One hundred and fifty five (59.3%) of the respondents had fair occupational safety practice.

Conclusion: The study revealed a relatively fair knowledge and safety practice towards occupational hazards among the respondents. Despite this, majority of the respondents had a negative attitude towards occupational hazards and safety. Hence, the need to increase the awareness levels of these drivers on occupational hazards and workplace safety practices through continuous and regular health education messages and training.

KEY WORDS – Assessment, Commercial city drivers, Occupational hazard

INTRODUCTION

Intercity bus drivers provide transportation for people, goods and services between two or more cities, towns, or isolated clusters. Majority of individuals in low and middle income countries rely on commercial transportation, thus making it an integral part of socioeconomic development in the society.^{1,2,3}

Globally, work place fatalities, injuries, accidents, illness to which intercity transportation contribute results in enormous economic loss amounting to 4-5% of GDP.⁴ Road crashes which is one of the commonest hazards associated with commercial driving is the leading cause of death

between the individuals aged fifteen and twenty nine.^{1,5} Worldwide, more than 1.2 million deaths are attributed to road traffic accidents annually.⁵ Developing countries are the worst hit as 90% of these world's road fatalities occur there.^{1,5} In Nigeria, 33.7 road traffic death rate per 100,000 population was reported in 2010.⁶

Occupational hazards associated with commercial drivers are largely dependent on three factors: the road environment, the road user and the vehicle. In recent times, deterioration in the road environment of drivers have been reported resulting from traffic congestion which is associated with air and noise pollution. Diesels and fuels used by vehicles have carcinogenic properties, also exhaust emissions from the total vehicle fleet contain pollutants such as carbon monoxide, nitrogen oxides and sulphur dioxide. These pollutants have negative effect on the respiratory system and are associated with asthma, bronchitis, headaches, sore eyes and ear

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problems.³ The road user factors on the other hand includes: poor visual acuity, impaired hearing, physical defect, negligence and non-use of personal protective measures, addiction and substance abuse. Lastly, the vehicular factors which encompasses poor maintenance and monitoring of vehicles.

There is paucity of data as regards the knowledge, practice and safety practices of commercial intercity bus drivers concerning occupational hazards. This study will reveal existing gaps in knowledge, attitude and safety practice of commercial intercity bus drivers in Benin City, Edo State towards occupational hazards, following which targeted education and awareness campaigns can be institutionalized to cover these gaps.

MATERIALS AND METHODS

A descriptive cross-sectional study was carried out among intercity bus drivers in Benin City, Edo State between November 2014 and October 2015. Benin City is made up of three local government areas namely; Egor, Oredo, and Ikpoba-Okha. Edo state is located in the south-south geo-political zone in Nigeria. It has a total land area of 19,281.93 square kilometers. The state is well served by a good network of roads, and the state capital, Benin City. Benin City serves as a transit area, with four major highways linking the eastern part of Nigeria to the northern part and the western part of Nigeria to the east. The highways include; the Lagos-Benin express road which connects Benin to the Western part of Nigeria, the Benin-Sapele highway which connects Benin to the Niger-Delta region, the Benin- Asaba-Onitsha highway which connects Benin to the East, the Benin – Auchi-Okene highway which connects Benin to the Northern parts of Nigeria. Commercial driving is a common occupation and there are numerous commercial road transport operators in the city carrying passengers to different states in Nigeria. There over 1000 commercial long distance drivers in Benin City.

There are 88 commercial transport parks in Benin City. Fifty two are privately owned, while 36 are government owned. Of the total, 17 commercial transport parks are involved in commercial long

distance transportation. These parks cater for travel needs of passengers, goods and services to and from Benin City.

Permission to conduct the study was obtained from the employers of the commercial intercity bus drivers. Informed verbal consent was sought from the study participants. Ethical clearance was obtained from the University of Benin Teaching Hospital Ethical Committee.

Registered commercial intercity bus drivers in Benin City who have spent a minimum of 6months in employment, who were available at the time of the study and were willing to participate.

The minimum sample size for commercial long distance drivers was calculated using the Cochran's formula⁷ for cross sectional study. In this study, p was taken as 12.5% which was the prevalence of road traffic accidents among commercial drivers resulting from human factor in a study done in Kwara State.⁸ The final sample size was adjusted for non- response using appropriate formulae to 184.

Selection of respondents was done using a systematic random sampling technique and a total of 194 commercial intercity bus drivers were recruited for the study. Data was obtained with the aid of a pre-tested interviewer's administered questionnaire comprising of the following sections: socio-demographic characteristics of respondents, occupational hazards among commercial intercity bus drivers, knowledge and attitude of respondents towards occupational hazards and safety practice of respondents. Four final year medical students of the University of Benin were utilized as research assistants. They were trained for three days on occupational hazards and how to administer the questionnaires.

Knowledge score: Seven questions were used to assess knowledge. Correct answers were scored 1 while incorrect answers were scored 0. The scores was converted to percentages and classified thus: Poor knowledge;- $0 \leq 49.9\%$; fair knowledge:- $50.0\% - 69.9\%$ and good knowledge:- $70.0\% - 100\%$.

Attitude score: Questions on attitude of commercial intercity bus drivers was assessed

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using a 5 item Likert scale of strongly agree, agree, indifferent, disagree, and strongly disagree consisting of 6 questions. Strongly was given a score of '5' while strongly disagree a score of 1. The total score was then converted to percentages and classified thus: Negative attitude < 50%; positive attitude \geq 50%.

Practice score: Twelve questions were used to assess practice of safety measures among the commercial intercity bus driver. For each question a score of 3 was given for always, a score of 2 for sometimes, a score of 1 for rarely, while never was given a score of '0', maximum possible marks of 42. The total score was converted to percentages and classified thus: poor practice:- 0-49.9%; fair practice:- 50% to 69.9%; good practice:- \geq 70%.

Data was screened for completeness coded and entered into the IBM-SPSS statistics 21.0 software. Level of significance was set at $p < 0.05$

RESULTS

Socio-demographic characteristics of respondents

Eighty nine (45.9%) of the respondents were within the age group of 31-40 years. Sixty six (34.0%) were in the 41-50 years age group while 18 (9.3%) fell within the 51-60 years age group. The mean age of the respondents \pm SD was 40.5 ± 7.3 years. One hundred and seventy eight (91.8%) were married, 8 (4.1%) were single, 3 (1.5%) were cohabiting, while 3 (1.5%) were separated and 2 (1.0%) were widowed. All the respondents 194 (100%) were males. One hundred and seventy three (89.2%) had secondary level of education, 13 (6.7%) had a primary level of education while 8 (4.1%) had tertiary education. Fifty seven (29.4%) of the respondents had work experience between 6-10 years, 50 (25.8%) had work experience between 11-15 years, 40 (20.6%) had work experience ranging from 0-5 years, 27 (13.9%) had work experience ranging from 16-20 years, while 20 (10.3%) had over 21 years work experience. Eighty nine (45.9%) and 87 (44.8%) of the respondents respectively drove for 4-6 and 7-9 hours respectively, eighteen (9.3%) drove for over 10 hours a day. (Table 1)

TABLE 1: SOCIO-DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Socio-demographic characteristics	Frequency (n=194)	Percent (%)
Age (Years)		
21-30	21	10.8
31-40	89	45.9
41-50	66	34.0
51-60	18	9.3
Marital status		
Single	8	4.1
Married	178	91.8
Separated	3	1.5
Widowed	2	1.0
Cohabiting	3	1.5
Sex		
Male	194	100.0
Female	0	0.0
Level of education		
Primary	13	6.7
Secondary	173	89.2
Tertiary	8	4.1
Work experience (Years)		
≤ 10	97	50.0
11-20	77	39.7
≥ 21	20	10.3
Driving duration per day (years)		
4-6	89	45.9
7-9	87	44.8
10 and above	18	9.3

Mean age of respondents \pm SD (years) = 40.5 ± 7.3 , Mean years of work experience \pm SD = 12.5 ± 3.5 , Mean duration of driving \pm SD (hours) = 7.5 ± 1.5

Prevalence of occupational hazards among respondents

Seventy five (38.7%) of all respondents reported back pain, 22 (11.3%) reported being exposed to noise pollution, 20 (10.3%) reported exposure to smoke inhalation, 19 (9.8%) reported assaults as hazard experienced while driving. Seventy six (30.4%) of the respondents had ever been involved in road traffic accidents.

Knowledge of occupational hazards among respondents

One hundred and ninety one (98.5%) of the respondents were aware of the presence of occupational hazards associated with driving, 169 (87.1%) knew that the effect of occupational hazards may take a long time to manifest, while 177 (91.2%) knew that long hours driving can cause low back pain. One hundred and eighty (14.4%) of the respondents knew that noise from vehicles can cause annoyance and irritability, 28 (14.4%) knew that vibrations and long hours of driving can cause headaches, while 29 (14.9%) knew that inhalation of fumes from vehicles are dangerous. Thirty three (17.0%) of the respondents knew that non-compliance with safety measures while driving can result in road traffic accidents. (Table 2)

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TABLE 2: KNOWLEDGE OF OCCUPATIONAL HAZARDS AMONG RESPONDENTS

Knowledge of occupational hazards	Frequency	Percent(%)
Presence of occupational hazards associated with driving	191	98.5
Effects of occupational hazard may take a long time to manifest	169	87.1
Long hours of driving can cause low back pain	177	91.2
Noise from vehicles can cause annoyance or irritability	180	92.8
Vibrations and long hours of driving can cause headaches	28	14.4
Inhalation of fumes from vehicles are dangerous	29	14.9
Non-compliance with safety measures while driving can result in road traffic accidents	33	17.0

Respondents' source of information on occupational hazards associated with their occupation were seminars 50 (25.8%), radio/television 47 (24.2%), colleague 26 (13.4%), newspaper 18 (9.3%)

One hundred and seven (55.2%) of the respondents had fair knowledge of occupational hazards with only one fourth of the drivers 49(25.2%) having good knowledge of occupational hazards. Good knowledge of occupational hazards was found to increase with increasing age of drivers, with the highest proportion 27(32.2%) of drivers with good knowledge belonging to the over 40 years age group. However, this association was not statistically significant ($p = 0.710$). Knowledge of occupational hazards was found to increase as level of education increases with all drivers who had tertiary level of education having good knowledge of occupational hazards, this was found to be statistically significant ($p = 0.001$). Good knowledge of occupational hazards was found to be higher among drivers with over 20 years work experience 8 (40.0%). This was however not statistically significant ($p = 0.345$). (Table 3)

TABLE 3: SOCIO-DEMOGRAPHIC CHARACTERISTICS AND KNOWLEDGE OF OCCUPATIONAL HAZARDS AMONG RESPONDENTS

Socio-demographic characteristics	Knowledge Frequency (%)		
	Good	Fair	Poor
Age group (years)			
21-30	4 (19.0)	13 (62.0)	4 (19.0)
31-40	18 (20.2)	55 (61.8)	16 (18.0)
>40	27 (32.2)	39 (46.4)	18 (21.4)
$\chi^2 = 2.169$; $p = 0.710$			
Level of education*			
Primary	3 (23.0)	6 (46.2)	4 (30.8)
Secondary	27 (16.6)	101 (62.0)	35 (21.4)
Tertiary	8 (100.0)	0 (0.0)	0 (0.0)
Fisher's exact = 25.788; $p = 0.001^*$			
Work Experience (years)			
<10	24 (24.7)	54 (55.7)	19 (19.6)
11-20	17 (22.4)	43 (55.5)	17 (22.1)
>20	8 (40.0)	11 (55.0)	1 (5.0)
Fisher's exact = 4.496; $p = 0.345$			
TOTAL	49 (25.2)	107 (55.2)	38 (19.6)

*Statistically significant; χ^2 - Chi square test

Attitude towards occupational hazards among respondents

One hundred and eight (55.7%) of the respondents strongly agreed that occupational hazards are preventable, 170(87.6%) and 106(54.6%) strongly agreed that management and workers had a role to play in prevention of occupational hazards respectively. One hundred and thirty six (70.1%) of the respondents were indifferent about alcohol intake while driving. One hundred (51.5%) of the respondents were also indifferent about use of mobile phone while driving. One hundred and thirty three (68.6%) of agreed that routine health examination minimizes occupational hazards. One hundred and forty nine (76.8%) of the respondents had a negative attitude towards occupational hazards. (Table 4)

TABLE 4: ATTITUDE OF RESPONDENTS TOWARDS OCCUPATIONAL HAZARDS

Attitude	Frequency (%)				
	Strongly agree	Agree	Indifferent	Disagree	Strongly disagree
Occupational hazards are preventable	108 (55.7)	24 (12.4)	52 (26.8)	6 (3.1)	4 (2.1)
Management have a role to play in preventing occupational hazards	170 (87.6)	5 (2.6)	13 (6.7)	4 (2.1)	2 (1.0)
Workers have a role to play in prevention of occupational hazards	106 (54.6)	8 (4.1)	19 (9.8)	30 (15.5)	31 (16.0)
Drinking of alcohol while driving is not advisable	10 (5.2)	21 (10.8)	136 (70.1)	9 (4.6)	18 (9.3)
Use of mobile phone while driving is not advisable	6 (3.1)	29 (15.0)	100 (51.5)	58 (29.9)	1 (0.5)
Routine health examination minimizes occupational hazards	2 (1.0)	133 (68.6)	21 (10.8)	12 (6.2)	26 (13.4)

Positive attitude towards occupational hazards was observed to increase with increasing age. However, this was not statistically significant ($p = 0.548$). A higher proportion of drivers 132 (79.8%) who driver for less than 10 hours had negative attitude towards occupational hazards and this was not statistically significant ($p = 0.079$). The proportion of drivers with positive attitude towards occupational hazards increased with increasing level of education; this relationship was statistically significant ($p = 0.001$). With increasing work experience, the proportion of drivers with positive attitude towards occupational hazards also increased and this was not statistically found to be significant ($p = 0.195$). (Table 5)

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TABLE 5: SOCIO-DEMOGRAPHIC CHARACTERISTICS AND ATTITUDE OF RESPONDENTS TOWARDS OCCUPATIONAL HAZARDS

Socio-demographic characteristics	Frequency (%)	
	Positive	Negative
Age group		
21-30	5(19.0)	16(81.0)
31-40	16(20.2)	62(79.8)
>40	24(22.7)	71(77.3)
$\chi^2=0.73$; $p=0.548$		
Level of education		
Primary	2 (15.4)	11 (84.6)
Secondary	35(20.2)	138 (79.8)
Tertiary	8 (100.0)	0 (0.0)
$\chi^2=27.788$; $p=0.001^*$		
Work experience		
<10	19 (17.5)	78 (82.5)
11-20	23 (17.5)	54 (82.5)
>20	3 (28.0)	17 (72.0)
$\chi^2=3.388$; $p=0.195$		
TOTAL	45 (23.2)	149 (76.8)

*Statistically significant; χ^2 - Chi square test

Use of safety measures among respondents

One hundred and eighty three (84.0%) of the respondents sometimes used seatbelts, 126(64.9%) of respondents rarely obeyed road signs, 134 (69.1%) of the respondents sometimes adhered to warning signs and 127(65.5%) of the respondents sometimes do not exceed speed limit. One hundred and twenty nine (66.5%) of the respondents sometimes drove with a stop, 114(74.2%) of respondents sometimes used traffic light and 134(69.1%) sometimes checked their tires before driving. One hundred and fifty four (79.4%) always had fire extinguisher in their vehicle, 127(65.5%) sometimes did not overload bus and 71(36.6%) rarely adhered to vehicle safety gap. Eighty two (42.3%) of the respondents rarely went for routine health check, 71(36.6%) sometimes did not overtake, while 64(33.0%) of respondents sometimes did not use mobile. Overall, 52 (26.8%) of the respondents had good safety practices, 155 (59.3%) had fair practice of safety measure, while 27 (13.9%) had poor practice. (Table 6)

TABLE 6: SAFETY MEASURES PRACTICED AMONG RESPONDENTS

Safety practices	Frequency (%)			
	Always	Sometimes	Rarely	Never
Use of seatbelts	16(8.2)	163(84.0)	14(7.2)	1(0.5)
Use of road signs	21(10.8)	27(13.9)	126(64.9)	20(10.3)
Adherence to warning signs	21(10.8)	134(69.1)	21(10.8)	18(9.3)
Obey traffic light	31(16.0)	144(74.2)	9(4.6)	10(5.2)
Checking of tyre before driving	46 (23.7)	134 (69.1)	3 (1.5)	11 (5.7)
Fixing of bad tyre before driving	43(22.2)	111(57.2)	14(7.2)	26(13.4)
Non overloading of bus	11(5.7)	127(65.5)	42(21.6)	14(7.2)
Fire extinguisher in bus	154(79.4)	5(2.5)	22(11.3)	13(6.7)
Adherence to vehicle safety gap	13(6.7)	57(29.4)	71(36.6)	53(27.3)
Routine health check	9(4.6)	74(38.1)	82(42.3)	29(14.9)
Do not overtake	18(9.3)	71(36.6)	55(28.4)	50(25.8)
Nonuse of phone while driving	24(12.4)	64(33.0)	52(26.8)	54(27.8)

A higher proportion of respondents 24 (25.4%) with good occupational safety practices were within the age group of 31-40years and this was not statistically significant ($p=0.514$). With increasing level of education, the proportion of respondent with good occupational safety practices increased and this was statistically significant ($p=0.001$). Twenty eight (28.9%) of the drivers with less than 10 years working experience were found to have good occupational safety practices as opposed to one driver(5.0%) with greater than 20 years' work experience. This was found to be statistically significant ($p=0.004$). (Table 7)

TABLE 7: SOCIO-DEMOGRAPHIC CHARACTERISTIC AND SAFETY MEASURES AMONG RESPONDENTS

Socio-demographic characteristics	Frequency (%)		
	Good	Fair	Poor
Age group (years)			
21-30	3 (14.3)	14(66.7)	4(19.0)
31-40	24 (30.7)	46 (59.0)	8(10.3)
>40	25 (26.3)	55 (57.9)	15 (15.8)
$\chi^2=3.307$; $p=0.514$			
Level of education			
Primary	1(7.7)	5(38.5)	7(53.8)
Secondary	44(25.4)	109(63.0)	20(11.6)
Tertiary	7(87.5)	1(12.5)	0(0.0)
$\chi^2=33.893$; $p=0.001^*$			
Driving duration per day(hours)			
<10	47 (26.7)	107 (60.8)	22 (12.5)
>10	5 (2.8)	8 (44.4)	5 (27.8)
$\chi^2=3.482$; $p=0.176$			
Work Experience(years)			
<10	28 (28.9)	57 (58.8)	12 (12.4)
11-20	23 (29.9)	47 (61.0)	7 (9.1)
>20	1 (5.0)	11 (55.0)	8 (40.0)
$\chi^2=15.309$; $p=0.004^*$			
TOTAL	52 (26.8)	115 (59.3)	27 (13.9)

*Statistically significant; χ^2 - Chi square test

DISCUSSION

Commercial intercity transportation play a vital role in the socioeconomic development of Nigeria, as there is a need for migration of individuals, goods and services from one place to another, thus the health of the driver is paramount and of public health importance. Occupational hazards reported in this study included back pain, noise pollution, smoke inhalation and assaults. This is similar to a study in Chennai, India in 2013 which revealed a high prevalence of musculoskeletal disorders among professional drivers for which neck pain ranked highest.⁸ This may be attributed to sitting for long hours while driving experienced by commercial drivers. The prevalence of road traffic accidents among the drivers observed in this study was similar to findings seen in studies done in Kwara

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State and Owo, South West, Nigeria which revealed a prevalence of 64 (19.5%) and 18 (20%) respectively of road traffic accidents.^{9,10}

Majority of drivers had fair knowledge of occupational hazards. This is similar to a survey carried out among drivers in Delhi, India where respondents were found to have average awareness of traffic safety and occupational hazards associated with driving of 52% – 77%.¹¹ This finding may be attributed to the fact that over half of the drivers in the study had secondary level of education. Good knowledge of occupational hazards among drivers will help improve their awareness and perception of health risks related to driving and also adherence to hazard control measures in the work environment, which will ultimately reduce human errors and its sequelae. Seminar and media were their major source of information on occupational hazards. This is in contrast with what is expected, as in the workplace employers are supposed to be the custodians of information regarding occupational hazards as postulated by Thomas Legge in his axioms.¹²

Good knowledge of occupational hazards was observed to increase with increasing age and years of work experience. The highest proportion of drivers with good knowledge were greater than 40 years and work experience of greater than 20years. This finding is not uncommon as age and work experience are seldom intertwined. Age of the drivers increases with long stay on the job giving them the opportunity to witness occupational health and fitness campaigns, seminars and talks which might have improved their knowledge of occupational hazards.

Similarly, this study showed a statistically significant association between driver's level of education and their knowledge of occupational hazards. With increasing level of education of drivers their knowledge of occupational also increased. Possibly because education increases an individual's access to information and services to maintain and improve their own health within and outside the work place.

Majority of respondents in this study had negative attitude toward occupational hazards. Negative

attitude towards occupational hazards among drivers may translate into poor occupational safety practices which is detrimental to the health and safety of the drivers, passengers and other road users.

Majority of the respondents in this study had fair occupational safety practices. This may be due to the fact that majority of the respondents in the study sometimes used seatbelts, adhered to warning signs, not exceeding speed limits, used traffic light, checked and fixed faulty tires. This finding is similar to a Trinidad and Tobago study which showed that 16.7% of the drivers perceived that other drivers used their seat belts more frequently than they do.¹³ Seats belt use and compliance significantly reduces the severity of injury from road crashes⁵ resulting in less hospital admission and burden on health facilities. Still on safety practices, it was observed that about a quarter of the respondents never used phones while driving. A study in Trinidad and Tobago revealed that 70% of the drivers sometimes and 21% always used a mobile phone to make or receive calls while driving.¹⁴ The use of mobile phone while driving is associated with a four-fold increase in crash risk. The use of the mobile phone while driving is a distraction and impairs driving performance in numerous way hence increasing the risk of road accidents occurrence.⁵ This has necessitated it being outlawed in several countries.^{5,14}

In this study, poor occupational safety practices were found to be more prevalent among respondents who drove for greater than 10hours in a day. Long hours of driving impacts negatively on a driver's health. It can result in fatigue which ultimately leads to sleepiness while driving leading to high risk of road traffic accidents. Also, a higher proportion of drivers who had good safety practices had less than 20years work experience. This may be attributed to the fact that drivers with fewer years of experience may still be on probation period and as such are more likely to adhere to safety rules and practices.

In conclusion, the study revealed a relatively fair knowledge and safety practice towards occupational hazards among the respondents. Despite this, majority of the respondents had a

negative attitude towards occupational hazards and safety. Hence, the need to increase the awareness levels of these drivers on occupational hazards and workplace safety practices through continuous and regular health education messages and training.

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