

Assessment of Safety Practices Among Commercial Long Distance Bus Drivers in Benin City, Edo State, Nigeria

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ABSTRACT

Introduction: Safety practices by road users are important for road safety. The actions or inactions of drivers can result in Road Traffic crashes⁶. To assess safety practices and related factors among commercial long distance bus drivers in Benin City, Edo State, Nigeria. **Materials and Methods:** A descriptive cross sectional study design was used, and data was collected from 315 commercial long distance bus drivers and their vehicles from January to October, 2015 using a structured interviewer administered questionnaires and focus group discussion guide. Respondents were recruited using systematic random sampling technique. Data was analysed using SPSS version 20. **Results:** Data showed that 114 (36.2%) were within the age group of 31-40 years. Most of the respondents 272 (86.3%) were married, almost all the respondents 311 (98.7%) were males, while, 4 (1.3%) were females. More than half of the respondents 172 (54.6%) had a secondary level of education, 112 (35.6%) had a primary level of education while 12 (3.8%) had no formal education. About a quarter 83 (26.3%) drive at a safe speed of 80-100 km/hour as approved by the Nigerian high way code. More than two thirds of the respondents 216 (68.6%) drive at a speed between >100-120 km/hour, while 12 (3.8%) drive above 120 km/hour. Majority of the respondents 235 (74.6%) were observed using seat belt as a safety practice while 80 (25.4%) were not using their seat belt. There was a statistically significant association between the respondents' level of education and their use of seat belts ($p = 0.002$). Other safety practices done by respondents were daily vehicle checks 272 (86.3%), obeying traffic rules 284 (90.2%), Unsafe practices done by drivers include violation of road traffic signs (48.4%), violation of parking regulations (45.2%), Use of mobile phones (48.9%),

having a soft drink while driving (23.5%), putting a child on the front seat while driving (3.5%), drinking alcohol while driving (2.5%), smoking while driving (1.6%), reading newspapers while driving (0.6%). Conclusion: The common safety practice seen in commercial drivers included, use of seat belt, driving within speed limits, daily vehicle checks, obeying traffic rules, avoidance of substance use and avoidance of use of mobile phones while driving. Recommendations include encouraging drivers organizing quarterly meetings, workshops and seminars for commercial long-distance drivers on safety practices during driving, prevention and control of road traffic accidents and promoting and ensuring drivers' compliance with traffic rules.

Keywords: Commercial long-distance drivers, Safety practice, seat belt use, speed.

INTRODUCTION

Road traffic injuries are the second leading cause of death among children aged 5 -14 years and young people aged 15 - 29 years ¹. Morbidity and mortality following road crashes are also on the increase in Nigeria². It is widely known that, holding the number of accidents fixed, the direct effect of seat belt usage reduces fatalities among those wearing seat belts. ³, The use of seat belts has been found to be effective for the reduction in the number of accidents attributable to vehicles. Data shows that seat belt use by front seat passengers could prevent 40 percent to 50 percent fatalities when compared to otherwise unrestrained individuals^{4,5}.

Safety practices by road users are important for road safety. The actions or inactions of drivers can result in Road Traffic crashes⁶. Traffic law violations, road sign violation, park regulation violations, use of mobile phones, alcohol consumption, smoking, seem to be minor offenses for many, but in reality, they have the potentials of causing terrific accidents, with consequent loss of lives, and damages on property^{6,7}.

Seatbelts are indisputably a relatively low-cost safety device that provides easy basic protection for occupants of passenger vehicles, especially long-distance bus drivers. However, law-breaking drivers are likely to resist using seat belts and are also prone to being involved in crashes^{2,8}.

Injury control in road traffic accidents is a public health problem thus the need to view road safety as a system, whose safety must be assured⁹. This view is holistic and comprises of the road user, the road environment and the vehicle. Thus, road safety management strategies are seen in this light. The Organization for Economic Cooperation and Development/International Transport Federation report¹⁰ "Towards Zero" concluded that a fundamental shift in road safety management to a safe system approach is required. This report pointed out that the safest communities in the future will be those that embrace this shift and begin work now on the interventions required to close the gap between current performance and the performance associated with a genuinely safe road transport system. It reiterated the need to see road safety management from the public health perspective using the systems approach as a management strategy^{11,12}.

The road user is a critical component of the system approach⁹. Thus, driver's safety practices are critical in the road safety system. Noncompliance with road safety will eventually lead to

road deaths and injuries⁸. These deaths and injuries despite being largely preventable are massively wasteful, destroying lives beyond those of the actual victims, limiting future productivity and draining money from economies. The current deficit and losses from road traffic crashes, including spending on road traffic related events has reduced the funds available to individuals, communities and national governments for other sectors like health service and education. Road mishaps are the single biggest non-natural killer of children and young people, thus there is a need to prioritize strategies and approaches to integrating road safety into public health, developing 'place-based' approaches and accessing expertise and funding^{12, 13}. Safety practices in road safety can form a unique bond between the public, private and voluntary sectors in tackling one of the major social ills – preventable road deaths and injuries⁵.

Key stakeholders in road safety in Nigeria include all road users (commercial and private), regulatory agencies like Federal Road Safety Commission, State-run transport regulators, Ministries of Works and Transport, health care providers, corporate organizations, non-governmental organizations (NGOs) and international agencies and the general public. Legal backing for road safety stems from the FRSC Act of 2007 and the National Road Traffic Regulation of 2004^{6,7, 14}.

International Road Assessment Programme (IRAP), which is a tool for the identification of the highest-risk highways, increase security and quality of the driver licensing and vehicle certification process; "Operation Zero" aimed at mitigating the challenges of seasonal traffic gridlocks and associated high road traffic crashes (RTCs) along specific routes and free vehicle safety checks to create awareness on need for road worthiness checks for vehicles^{6,7}.

The roads are maximally utilized by commercial drivers and firms in transport business. Nigerian roads are in a poor state, characterized by sharp bends, deep ditches, pot holes, uneven surfaces, and defacement. Sometimes, bridges are left without protective rails, gully erosions are eating up the roads creating risks for road crashes¹⁵. These badly constructed and poorly maintained roads will have untoward effects in commercial driving. In fact, some RTAs have largely been due to the effects of bad roads and poor road networks^{16,17}.

In Nigeria, the law permits Federal road Safety Officers to stop and issue a fine to non-compliant drivers of vehicles. The FRSC is the agency charged with the responsibility of enforcing the law on seat belt, punishing violators of traffic rules and others. Although the law has yet to be extended to front and rear seat passengers^{1, 13}.

This study sought to assess safety practices among commercial long-distance drivers, and factors affecting it.

METHODOLOGY

A Descriptive Cross-Sectional Study Was Done Between January to October, 2015 Among 315 Selected Commercial Long Distance Bus Drivers in Benin City

This study was conducted in Benin City, the capital of Edo State. The city is made up of three Local Government Areas namely, Oredo, Egor and Ikpoba-Okha. The total population of Benin City as at 2006 was one million, eighty-five thousand, six hundred and seventy-six (1,085,676). Benin City serves as a transit area, it has four major highways linking the western part of Nigeria to the east and the eastern part of Nigeria to the northern part. The highways include; the Lagos-

were filled.

RESULTS

Sociodemographic Characteristics of Commercial Long-Distance Drivers

More than a third of the respondents 114 (36.2%) were within the age group of 31-40 years. Ninety-one (28.9%) were in the 41-50 years age group while 18 (5.7%) fell within the 61-70 years age group. Most of the respondents 272 (86.3%) were married, 28 (8.9%) were single, 10 (3.2%) were cohabiting, while 2 (0.6%) were separated. Most of the married respondents 247 (90.8%) were in monogamous marriages and 242 (76.8%) had nuclear families. Almost all the respondents 311 (98.7%) were males while 4 (1.3%) were surprisingly females. More than half of the respondents 172 (54.6%) had a secondary level of education, 112 (35.6%) had a primary level of education while 12 (3.8%) had no formal education. One hundred and sixty-nine (53.3%) respondents were Benin, 48 (15.1%) were Esan, 21 (6.6%) were Igbo, 19 (6.0%) were Urhobo while smaller proportions were Etsako 15 (4.8%), Yoruba 9 (2.9%), Isoko 8 (2.5%), Owan 7 (2.2%) and Itsekiri 7 (2.2%), Ukwuani 7 (2.2%) and Ibibio 3 (1.0%). Most of the respondents 300 (95.2%) were Christians, 10 (3.2%) were traditional in their beliefs while 5 (1.6%) were Muslims. Two hundred and ninety-three (92.7%) of the respondents were resident in Edo state, 7 (2.3%) were resident in Lagos, 7 (2.3%) in Delta, while smaller proportions were resident in Oyo, Kwara and Rivers [(0.6%) each]. (Table 1)

Table 1: Socio-demographic characteristics of the Bus drivers

Variable	Frequency (n = 315)	Percent
Age (Years)		
21-30	26	8.3
31-40	114	36.2
41-50	91	28.9
51-60	66	20.9
61-70	18	5.7
Marital status		
Single	28	8.9
Married	272	86.3
Cohabiting	10	3.2
Separated	2	0.6
Divorced	3	1.0
Marriage type (n = 272)		
Monogamous	247	90.8
Polygamous	25	9.2
Family type		
Nuclear	242	76.8
Extended	73	23.2
Sex		
Male	311	98.7
Female	4	1.3
Level of education		
No formal education	12	3.8
Primary	112	35.6
Secondary	172	54.6

Tertiary	19	6.0
Ethnic group		
Benin	169	53.7
Esan	48	15.2
Igbo	21	6.7
Urhobo	19	6.0
Etsako	15	4.8
Yoruba	9	2.9
Isoko	8	2.5
Owan	7	2.2
Itsekiri	7	2.2
Ukwuani	7	2.2
Ibibio	3	1.0
Others ^a	2	0.6
Religion		
Christianity	300	95.2
African traditional religion	10	3.2
Islam	5	1.6
State of residence		
Edo	293	93.0
Lagos	7	2.3
Delta	7	2.3
Oyo	2	0.6
Kwara	2	0.6
Rivers	2	0.6
Others ^b	2	0.6
Duration of driving (years)		
0-10	84	26.7
11-20	113	35.9
21-30	63	20.0
31-40	49	15.6
41-50	6	1.8

Safety Practices of Commercial Long-Distance Drivers

About a quarter 83 (26.3%) drive at a safe speed of 80-100 km/hour as approved by the Nigerian high way code. More than two thirds of the respondents 216 (68.6%) drive at a speed between >100-120 km/hour, while 12 (3.8%) drive above 120 km/hour. Most of the respondents 284 (90.2%) denied ever violating traffic rules as, while 31 (9.8%) stated that they did. Two hundred and seventy-two (86.3%) drivers performed daily checks on their vehicles. Majority of the respondents 235 (74.6%) were observed using seat belt as a safety practice while 80 (25.4%) were not using their seat belt. There was a statistically significant association between the respondents' level of education and their use of seat belts ($p = 0.002$). Unsafe practices done by drivers include violation of road traffic signs (48.4%), violation of parking regulations (45.2%), Use of mobile phones (48.9%), having a soft drink while driving (23.5%), putting a child on the front seat while driving (3.5%), drinking alcohol while driving (2.5%), smoking while driving (1.6%), reading newspapers while driving (0.6%). (Table 2)

Table 2: Respondents Safety Practices

Variable	Frequency	Percent
Speed (n = 315)		
< 80 km/hour	4	1.3
80-100 km/hour	83	26.3
> 100-120 km/hour	216	68.6
> 120 km/hour	12	3.8
Ever violated traffic (n = 315)		
Yes	31	9.8
No	284	90.2
Type of traffic violations* (n = 31)		
Violation of road traffic signs	15	48.4
Violation of parking regulations	14	45.2
Daily Vehicle check		
Yes	272	86.3
No	43	13.7
Activities carried out when driving* (n = 315)		
Use mobile phone	154	48.9
Have a soft drink	74	23.5
Put a child in the front seat	11	3.5
Drink alcohol	8	2.5
Smoking	5	1.6
Read newspaper	2	0.6

Multiple response*

Majority of the respondents 235 (74.6%) were observed using seat belt as a safety practice while 80 (25.4%) were not using their seat belt. (Figure 1)

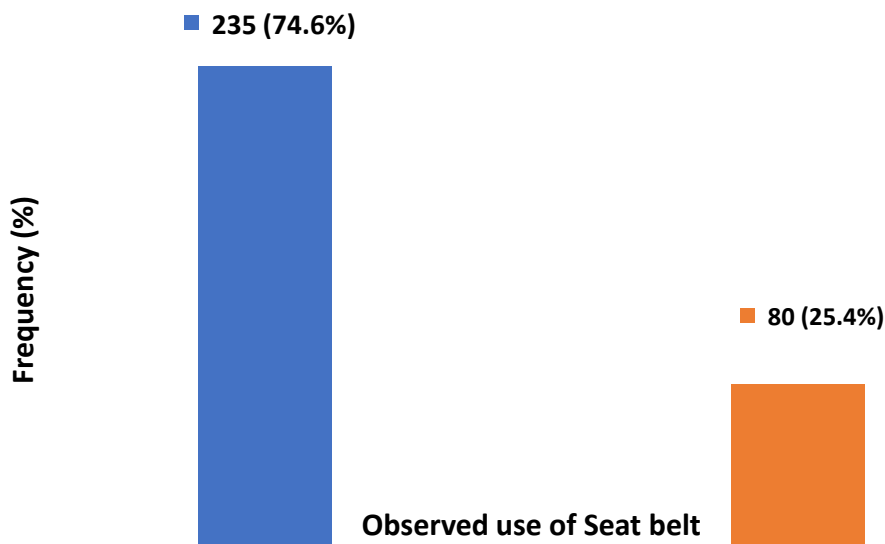


Figure 1: Observed use of seat belt as safety practice among commercial long-distance drivers

Factors Influencing Safety Practices of Commercial Long-Distance Drivers

There was no statistically significant relationship between the age of the respondents and their use of seat belt though there was an increased tendency to use it with increased age ($p = 0.310$). Also, there were no statistically significant relationships between the sex, marital status and driving experience with their use of seat belts ($p = 0.268, 0.124, 0.767$ respectively). There was a statistically significant association between the respondents' level of education and their use of seat belts ($p = 0.002$). (Table 3)

Table 3: Predictor variables of use of seat belt among respondents

Variable		Use of seat belt			p value
		Yes n (%)	No n (%)	Test statistics	
Age group (years)	21 – 30	17 (65.4)	9 (34.6)	$\chi^2 = 4.783$	0.310
	31 – 40	83 (72.8)	31 (27.2)		
	41 – 50	71 (78.0)	20 (22.0)		
	51 – 60	53 (80.3)	13 (19.7)		
	61 – 70	11 (61.1)	7 (38.9)		
Sex				Fisher's exact= 1.294	0.268
	Male	233 (74.9)	78 (25.1)		
Marital status					0.124
	Female	2 (50.0)	2 (50.0)		
	Single	21 (75.0)	7 (25.0)	Fisher's exact= 6.540	
	Married	206 (75.7)	66 (24.3)		
	Cohabiting	6 (60.0)	4 (40.0)		
	Separated	0 (0.0)	2 (100.0)		
	Widower	2 (66.7)	1 (33.3)		
Level of education	No formal	4 (33.3)	8 (66.7)	Fisher's exact= 13.792	0.002*
	Primary	86 (76.8)	26 (23.2)		
	Secondary	127 (73.8)	45 (26.2)		
	Tertiary	18 (94.7)	1 (5.3)		
Driving experience (years)	0 – 10	59 (70.2)	25 (29.8)	$\chi^2 = 1.830$	0.767
	11 – 20	88 (77.9)	25 (22.1)		
	21 – 30	46 (73.0)	17 (27.0)		
	31 – 40	37 (75.5)	12 (24.5)		
	41 – 50	5 (83.3)	1 (16.7)		

*Significant

Binary logistic regression analysis of the relationship between the level of education and their use of seat belts with an OR (95% CI) = 1.191 (0.711 – 1.994).

Table 4: Binary logistic regression of the relationship between LOE and use of seat belt

Variable	B coefficient	p value	OR	95% CI	
				Lower	Upper
LOE					
Primary or less*					
Secondary or more	0.175	0.507	1.191	0.711	1.994

*Reference category

Reference category, R2 (coefficient of determination) = 0.1% to 0.2%

There were no statistically significant associations between the socio-demographic characteristics and the respondents' use of seat belts.

Table 5: Predictor variables of use of seat belt among respondents

Variable		Usual driving speed		Test statistics	p value
		≤ 100 km/hr n (%)	> 100 km/hr n (%)		
Age group (years)	21 – 30	7 (26.9)	19 (73.1)	$\chi^2 = 0.342$	0.987
	31 – 40	30 (26.3)	84 (73.7)		
	41 – 50	25 (27.5)	66 (72.5)		
	51 – 60	20 (30.3)	46 (69.7)		
	61 – 70	5 (27.8)	13 (72.2)		
Sex				Fisher's exact= 1.546	0.579
	Male	87 (28.0)	224 (72.0)		
Marital status	Female	0 (0.0)	4 (100.0)	Fisher's exact= 4.782	0.268
	Single	7 (25.0)	21 (75.0)		
	Married	74 (27.2)	198 (72.8)		
	Cohabiting	3 (30.0)	7 (70.0)		
	Separated	2 (100.0)	0 (0.0)		
	Widower	1 (33.3)	2 (66.7)		
Level of education	No formal	0 (0.0)	12 (100.0)	$\chi^2 = 7.183$	0.066
	Primary	38 (33.9)	74 (66.1)		
	Secondary	44 (25.6)	128 (74.4)		
	Tertiary	5 (26.3)	14 (73.7)		
Driving experience (years)	0 – 10	29 (34.5)	55 (65.5)	$\chi^2 = 3.571$	0.467
	11 – 20	26 (23.0)	87 (77.0)		
	21 – 30	18 (28.6)	45 (71.4)		
	31 – 40	12 (24.5)	37 (75.5)		
	41 – 50	2 (33.3)	4 (66.7)		

Focus Group Discussion

When asked about their usual speed, most drivers mentioned 100km per hour as their usual speed. A few others stated that 120km per hour was normal for them. Some participants stated as follows, "The maximum speed of an experienced driver is 100km/ph. I apply 100km/ph usually. But the only time I get to 120-130km/ph is when I am overtaking because I will not want in case of any eventuality maybe the Vehicle, I am overtaking the tire burst I dont want the vehicle to run into me so that is why but after the overtaking I go back to my 100 km/ph." ... A 66-year-old driver with 25 years driving experience. "Everybody have (has) his own speed I go above 120km/ph" ... A 29-year-old driver with 5 years driving experience.

DISCUSSION

Safety practice of seat belt use was observed by three-quarters of the respondents. This finding is higher than that found in an observational cross-sectional study done ⁷⁹in University College Hospital, Ibadan to determine the seat belt use by vehicle occupants showed that of the 402 drivers, 76 (18.9%) used their seat belt. This disparity maybe due to the fact that the index

study was by self-report by drivers who may not tell the truth, while the Ibadan study was an observation done at the only petrol station in UCH over a period of 6 days between 8.30a.m to 6p.m. Higher proportions are found in another observational cross-sectional study done in Nanjing,⁸⁰ China among drivers in 17,147 vehicles revealed 67.3% of the drivers were using seat belt. The study aimed at describing the pattern of seat belt use in China. In a cross-sectional study involving 959 motor vehicle drivers⁸¹ in Trinidad and Tobago showed that 36.1% of the drivers use seat belt.

Also, only a quarter of the drivers drove at the Federal Road Safety recommended speed for commercial buses which is 80km/h for highways and 90km/h for expressways.¹⁰ Majority drive at > 100km/h, a fact that was corroborated by the focal group discussion (FGD). The drivers claimed the speed limit was a management policy. This presents danger as driving at 100km/h means a vehicle moves at 28meters per second, thus the driver may be unable to control the vehicle if there is a brake failure, burst tyre and other emergencies.¹⁰ A greater percentage of drivers did not violate traffic rules; those that did mainly violated the red traffic light indication and parking regulations. Majority had daily checked on their vehicle for water, oil, fan belts and tyre, nearly half of the respondents used their mobile phones while driving; others had soft drink, put children in the front seat, smoked, read newspaper and drank alcohol while driving. These activities are unsafe and dangerous practices as they can distract the driver, altering the level of concentration leading to road traffic accident. Majority drive at > 100km/h, a fact that was corroborated by the focal group discussion (FGD). The drivers claimed the speed limit was a management policy. This presents danger as driving at 100km/h means a vehicle moves at 28meters per second, thus the driver may be unable to control the vehicle if there is a brake failure, burst tyre and other emergencies. As speed of the driver increases, occurrence of RTA increases.

In conclusion, the common safety practice used by commercial drivers included, use of seat belt, driving within speed limits, daily vehicle checks, obeying traffic rules, avoidance of substance use and avoidance of use of mobile phones while driving. The drivers' level of education was a statistically significant predictor of safety practice use.

It is recommended that commercial Long-Distance drivers should make personal and collective effort to avoid alcohol use before and during driving by avoiding drinking spots around the parks and peer encouragement and support. They should also use peer enforcement of seat belt use. Road safety officers, drivers and vehicle licensing authorities should have regular meetings to increase awareness on seat belt use, obeying traffic laws, avoidance of substances, avoiding drinks and other forms of distractions. The drivers should also comply with traffic rules. Targeted messages on safe driving practices can make a difference – saving lives, time, money and other resources.¹⁸

CONCLUSIONS

About a quarter 83 (26.3%) drive at a safe speed of 80-100 km/hour as approved by the Nigerian high way code. More than two thirds of the respondents 216 (68.6%) drive at a speed between >100-120 km/hour, while 12 (3.8%) drive above 120 km/hour. Majority of the respondents 235 (74.6%) were observed using seat belt as a safety practice while 80 (25.4%) were not using their seat belt. There was a statistically significant association between the respondents' level of education and their use of seat belts ($p = 0.002$). Other safety practices

done by respondents were daily vehicle checks 272 (86.3%), obeying traffic rules 284 (90.2%), Unsafe practices done by drivers include violation of road traffic signs (48.4%), violation of parking regulations (45.2%), Use of mobile phones (48.9%), having a soft drink while driving (23.5%), putting a child on the front seat while driving (3.5%), drinking alcohol while driving (2.5%), smoking while driving (1.6%), reading newspapers while driving (0.6%)

RECOMMENDATIONS

Governments, road safety officers should organize health education and training for the drivers on need to drive within speed limit as only a quarter drive at safe limits. They should be trained on the outcomes of over speeding and the consequences of exceeding speed limits.

Enforcement of the use of seat belt should be carried out among the drivers. Employers, 'road safety officers and the general public should report those not complying with seat belt use while driving. Incentive should be giving to drivers who keep to the law on use of seat belt.

Drivers should be encouraged to continue the routine daily checks on their vehicles especially tires, brakes and other.

Majority claimed to obey all traffic rules, this assertion should be encouraged among drivers with peer support. The use of phones while driving should be discouraged among drivers as half drive while using their phones. This should be a target of health education and enforcement. Drivers should be encouraged to stay focused on driving instead of eating, drinking, smoking, and reading newspapers while driving.

Encouraging drivers organizing quarterly meetings, workshops and seminars for commercial long-distance drivers on safety practices during driving, prevention and control of road traffic accidents and promoting and ensuring drivers' compliance with traffic rules.

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