FACTORS ASSOCIATED WITH KNOWLEDGE OF ROAD SIGNS AND PAST HISTORY OF ROAD TRAFFIC ACCIDENT AMONG COMMERCIAL DRIVERS PLYING THE KADUNA-ABUJA EXPRESSWAY, NIGERIA.

Pannan I. Da'ap*[1], Cinjel P. Stephen[1], Julfa J. Nden[2], Arome K. Okeme[3], Adamu U. Shehu[4]

[1]Department of Obstetrics and Gynaecology, Jos University Teaching Hospital Jos, Plateau State, Nigeria.
[2]Plateau State Contributory Healthcare Management Agency, No. 53 Hospital Place, Jos, Plateau State.
[3]14A Bambari Crescent, Zone 7, Wuse, FCT, Abuja, Nigeria.
[4]Department of Community Medicine, Faculty of Clinical Sciences, College of Health Sciences, Ahmadu Bello University, Zaria Nigeria

***Corresponding author:** *Pannan Ignatius Da'ap. Department of Obstetrics and Gynaecology, Jos University Teaching Hospital Jos, Plateau State, Nigeria. P.M.B 2084. E-mail: panydaps@gmail.com*

ABSTRACT

Background: Road traffic signs are salient ways of communication to road users, violations of which is implicated in causing road traffic accidents with good knowledge, interpretation, and observance required to reduce the incidence of road traffic accidents. This research aimed to assess factors associated with knowledge of road signs and past history of road traffic accident among commercial drivers plying the Kaduna-Abuja expressway.

Methods: A descriptive cross-sectional survey was carried out among 366 registered commercial drivers plying the Kaduna-Abuja expressway using a semi-structured interviewer-administered questionnaire and observations. The drivers were recruited through a multistage sampling technique. Common road signs in their usual colors were shown to the drivers to test their ability to correctly identify the signs. Their responses were recorded and analyzed using IBM Statistical Package for Social Science (SPSS) version 23 and presented as frequencies, percentages, and charts. Fisher's exact and Chi-square were done; and conclusions made at a p-value of <0.05 level of significance.

Results: A total of 366 participants were interviewed in this study, all of which were males. The study found that only 126 (34.4%) respondents had good knowledge of road traffic signs while most 240 (65.6%) had poor knowledge. One hundred and six drivers (44.3%) have a history of accidents in the past. The average score for awareness of road traffic signs was 50.1%, with the 'Slippery surface' sign as the least identified sign 41(11.2%) while the 'Children crossing' sign was the most familiar sign, 304 (83.1%). Only age (middle age) and mode of training (driving school) had a statistically significant relationship with knowledge ($p=0.006$; $p=0.006$, respectively). On the history of accidents in the past and driving characteristics only possession of a driver's license had a statistically significant relationship ($p=0.017$)

Conclusion: There is inadequate knowledge of road signs among most of the commercial drivers plying the Kaduna-Abuja expressway. It was therefore recommended that all commercial drivers are educated on road signs at points of obtaining a driver's license and a revision done during the renewal of such license.

Keywords: Road signs, Knowledge level, Awareness, Commercial Drivers Kaduna-Abuja expressway.

INTRODUCTION

All drivers must have a thorough awareness and knowledge of all traffic signs, signals, roads, and pavement markings; be able to recognize them immediately, and obey them without hesitation. Traffic signs tell drivers about traffic regulations; special hazards and road conditions, construction areas, speed limits, etc. They are presented in different shapes as follows:

Regulatory signs- these give positive instructions, are mostly circular, and of two types:

Prohibitive signs- are usually circular with a yellow or white background, black inscription, and red border, example:

Stop at the intersection

Stop Police

No Left Turn

Mandatory signs- these are usually circular with a blue background, white inscription, and sometimes with a white border; they give positive instruction. The stop sign is a prohibitive sign, it is the only and-sided traffic sign- it means to come to a complete stop before entering. Proceed when it is safe to do so.

Informative signs- They are usually rectangular and provide guidance information.

Warning signs- these are usually triangular, with a red perimeter, with yellow or white background, and a black inscription. The only warning sign with an inverted triangle means YIELD or GIVE Way. It is used in areas where minor roads intersect major roads, usually placed on the minor road warning motorists of the need to yield to traffic on the left as they join the major road.[1] Examples:

Children Crossing

Slippery Surface

Dangerous Double Bend

Traffic Cone: Traffic cones or safety cones are cone-shaped markers that are placed on roads or footpaths to temporarily redirect traffic safely. They are fluorescent safety orange in colour with reflective striping around them. The cones are most times used or placed on the road to create separation or merge lanes in the event of road traffic crashes or during road construction projects.

Cordon Tape: This is a highly visible plastic barrier tape used to cordon off an area to restrict unauthorized persons. It is used at crash or crime scenes.

Traffic Lights/ Signals: These are light signaling devices positioned at road intersections, pedestrian crossings, and other locations to control traffic flow.
RED means 'Stop' waiting behind the stop line on the carriageway.
RED and AMBER also mean 'stop' do not pass through or start until GREEN shows.
GREEN means you may go on if the road is clear. Take particular care if you intend to turn left or right and give way to pedestrians who may be crossing.
AMBER means 'stop' at the stop line. You may go on only if the AMBER appears after you have crossed the stop line or are so close to it that pulling up might cause a crash.

Zebra Crossing: The driver must stop at the "Give Way" line about 1 meter before the crossing when pedestrians are crossing. Driver should not queue over the crossing and should take extra care when moving off, looking out for pedestrians; driver must not overtake a vehicle that has stopped to allow pedestrians to cross.

Double white lines: They are solid lines preventing overtaking where visibility is restricted, and separate the opposing flow of vehicles on hills and bends with lanes. If the line close to you is continuous, you must not cross except when exiting, avoiding obstruction, or slow-moving vehicles. Where the line close to you is broken, you may cross the line to overtake if it is safe to do so. You must not stop on any length of the road that has double white lines even if the line on that side of the road is broken.

Driving Precautions
Every driver should know the basic rules and regulations guiding driving; as total concentration is required.

Turning Left: Before a driver turns left, he/she must use the vehicle's mirror to know the position and movements of traffic behind. When it is safe, give a left turn signal; start to use the signal indicator and slowdown from 40m for a Two-way onto a one-way street (60m for a divided dual carriageway), take up a position just left of the middle of the road or in the space marked for left turning traffic. Leave room for other vehicles to pass on the right. Stay parallel to the lane until the driver can wheel left. The driver should not position the vehicle in a half turn as it will obstruct other vehicles thereafter wait until there is a safe gap between him/her and any on-coming vehicle, then make the turn.[1]

Turning Right: the driver must wait before turning right, use the vehicle's mirror, and give a right turn signal, usually at a 40m distance. No driver should swing out to the left before or after the turn.[1]
Road Traffic Accident, (RTA), is associated with a myriad of problems worldwide. It is said to occur when a road vehicle collides with another vehicle, pedestrian, animal, road debris, or other geographical or architectural obstacle leading to death and/or loss of property.
The Oxford Advanced Learners Dictionary defines an accident as an unpleasant event, especially in a vehicle, that happens unexpectedly and causes injury or damage.[2]
The rate at which road traffic accidents are increasing in Nigeria calls for a more pragmatic approach to instituting measures that will curb the menace. These approaches will include creating awareness among drivers especially the

commercial drivers who are almost always on the road, about understanding road signs and encouraging strict compliance to the message these signs carry to reduce to the barest minimum road traffic accident rates. Adams and Toyin noted that authorities in virtually all countries of the world are concerned about the growth in the number of people killed and seriously injured on their roads; this hampers the economic development of many nations and causes enormous suffering. They also submitted that road traffic accidents kill and maim millions of people annually in African countries and that, the magnitude of the road safety problem varied between different countries with recent research showing that many developing countries have serious road accident problems with accident rates higher than those of western industrial countries.[3]

The World Report on Road Traffic Injury Prevention summary captured that, every day around the world, more than 3000 people die from road traffic injuries. Low-income and middle-income countries account for about 85% of the deaths and 90% of the annual disability-adjusted life years (DALYs) lost because of road traffic injury. It was projected that, between the years 2000 and 2020, road traffic deaths would decline by about 30% in high-income countries but increase substantially in low-income and middle-income countries, and without appropriate action, by the year 2020, road traffic injuries were predicted to be the third leading contributor to the global burden of disease and injury.[4] These indicate the importance of the need to assess the level of awareness and knowledge of drivers on road signs and road safety measures and education about aspects they do not know for road traffic safety.

Road traffic accidents occur worldwide but the incidence is higher in developing countries and they often lead to death and disability as well as financial costs to both society and the individual involved.[5]

Demola and Mahmud looked at 'Sign' as an observable substance, the mental image of which is associated in our minds with another image or concept, and that it is a form that is marked by an intention to communicate something meaningful. They further explained that signs are codified symbols in the form of materials, gestures, visuals, and linguistic elements fused to form meaningful expressions of thought and idea through connectivity. Road signs are used as linguistic landscape in road creation; they form part of road architecture, performing communicative functions, to inform, instruct, warn, and direct road users.[6]

This research therefore aimed to assess the awareness and knowledge of road signs and other road safety measures among commercial drivers plying the Kaduna-Abuja Expressway towards reducing RTA.

METHODOLOGY

Background of Study Area

The Kaduna-Abuja expressway is a lanes-two-way divided road that runs from Kaduna to Abuja; it measures about 163km. The road passes through some settlements such as Gonin Gora, Kakau, Sabon Gaya, Rijana, Jongom, Sabon Maro, Doka, Katari, Jere, Gidan Abe, Taffa, Sabon Wuse, Madalla, and Zuba; all of which are communities in Kaduna and Niger states. It is one of the major roads that connects northern Nigeria to Southern Nigeria. It is a busy road as it has very heavy traffic all days of the week, most of the settlers along the road are either into farming or petty trading.

The most prominent infrastructures located on the road are Crown Flour Ltd, the Kaduna State National Youth Service Corp orientation camp, Rural Hospital Doka, Foltz Medical Centre Katari, Zuma barrack, St Luke's Hospital in Madalla, and several secondary and primary schools.

Among the vehicles that ply the road are trucks transporting goods such as cement, animals, fruits, and vegetables from one part of the country to another; tankers are also frequently seen transporting petroleum products to different locations.

The route was chosen for the study because studies and experiences have shown that the route among others records high accident rates.

Study Design/Population

A descriptive cross-sectional survey was carried out among the commercial vehicle drivers who are registered with the National Union of Road Transport Workers, (NURTW), of the four parks that were selected along the Kaduna-Abuja expressway for the study.

Commercial drivers registered for at least 1 year with the National Union of Road Transport Workers of the following parks: Abuja Junction Park in Kaduna, Katari Park, Dikko Junction Park, and Zuba Park, were selected for the research.

Data Collection

A semi-structured interviewer-administered questionnaire and observations were used to collect data for the study. All participants were assured of the confidentiality of the information they provided which created trust and gave them the confidence to attempt every question to the best of their ability and knowledge, sets of both closed and open-ended questions were posed to all of them. (Appendix 1). Knowledge was scored from 0 to 59.9% as poor knowledge and 60 to 100% as good knowledge. Also, observation was used to gather information, about the road condition of the Kaduna-Abuja expressway and the availability, clarity, and positioning of the road signs and other road safety devices. A camera was then used to take photographs of the available road signs and the condition of the expressway. A total of 380 questionnaires were distributed and 366 were completed and returned giving a response rate of 96.3%.

Sample Size Determination

The sample size was calculated using the formula, $n = z^2 pq/d^2$

Where n minimum sample size for population

z= standard normal deviate (which corresponds to 1.96 at a 95% confidence interval)

p= prevalence from a previous study which shows that 35% of respondents recognized the significance of the road signs as communicative symbols to guide road users.[6]

q = Alternate outcome

d = level of significance, which is set at 5% = 0.05

Finite correction was then applied since the total population of drivers plying the Kaduna-Abuja Expressway in total was roughly estimated to be 8000 which is less than 10 000 and then a non-response rate of 10% was used to get the final sample size that was used as shown below.

=349

Finite correction was done where N total number of drivers (8000) makes the calculated sample size to be 334.41. If the non-response is 10%, then the minimum sample size is 371.568 ≈372.

Sampling Technique

Two-stage sampling technique was applied.

Stage 1: Selection of motor parks

Stage 2: Selection of respondents which was done based on proportionality to their number in each park using the formula

$n1 = n/N \times S$.[7]

Where n1 = number (population) of persons or items to be selected from the stratum.

n = number (population) of persons in the stratum.

N = total number (population) of persons or items in the strata.

S = Total number of samples (sample size) to be selected or stratified.

Allocation to Abuja Junction Park Kaduna

= 130/500 x 372 = 96.72 = 97Allocation to Katari Park

= 120/500 x 372 = 89.28 = 89Allocation to Dikko Junction Park

= 100/500 x 372 = 74.4 = 74Allocation to Zuba Park

= 150/500 x 372 = 111.6 = 112

Data Processing and Analysis

The data were sorted out manually, correctly, and filled questionnaires were then coded using numbers, recorded in an Excel spreadsheet, and filled in for analysis using the Statistical Package for Social Sciences (IBM SPSS) Version 23. After this frequency distribution tables, proportions, and Chi-square test were used to present the findings for analysis.

Ethical Consideration

Ethical clearance for this study was obtained from the Health Research Ethics Committee of the Ahmadu Bello University Teaching Hospital (ABUTH) Shika with ABUTH Ethics Committee (ABUTHZ/HREC/G30/2019). Written informed consent was obtained from the officials of all the motor parks and also from each participant before enrolling them in the study.

RESULTS

Table 1: Socio-demographic Characteristics of the Commercial Drivers

Socio-demographic Characteristics	Frequency (n=366)	Percent
Age group (years)		
Young (18-<39)	262	71.6
Middle-aged (40-<59)	104	28.4
Gender		
Male	366	100
Female	0	0
Educational Status		
Never Been to School	61	16.7
Primary	126	34.4
Secondary	136	37.2
Tertiary	43	11.7
Marital Status		
Married	339	92.6
Single	27	7.4

Table 1 (above) shows that the majority of the commercial drivers fell in the young age group category 262 (71.6%) and middle-aged group category 104 (28.4%). Three hundred and thirty-nine (92.6%) of the 366 respondents were married while only 27 (7.4%) were single. All 366 (100%) of the respondents were males.

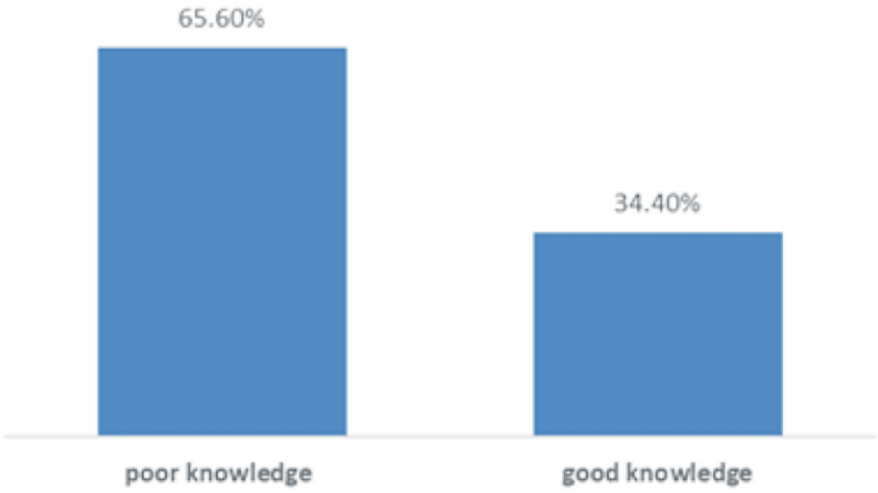

Figure 1: Level of Knowledge of the Drivers on Road Traffic Signs

Figure 1 (above) shows that only 126 (34.4%) of the study participants had good knowledge of road signs; while 240(65.6%) had poor knowledge of road signs

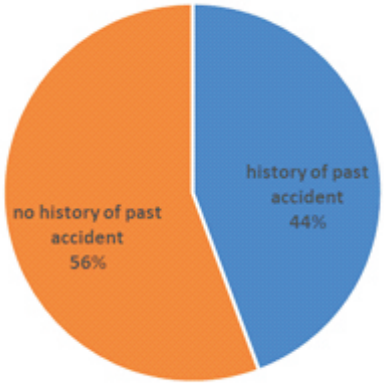

Figure 2: History of Accident in the Past by the Drivers

Figure 2 (above) shows that only 204(55.7%) of the research participants did not have an accident in the past while close to half 106(44.3%) reported having had an accident in the past.

Table 2: The Drivers' Awareness of Road Signs

Road signs	Correct Answer	Percent
Narrow bridge	192	52.5
Dangerous Double Bend	261	71.3
Carriage Way Widens	111	30.3
Beware of Animals	299	81.7
Pedestrian Crossing	297	81.1
Road Work	223	60.9
Children Crossing	304	83.1
Carriageway Narrows	129	34.7
Give Way to traffic	118	32.2
Cross Road	113	30.9
"T" Junction	216	59.0
Dangerous Bend Right	284	77.6
Slippery Surface	41	11.2
Roundabout	264	72.1
Uneven Road	181	49.5
Stop at Intersection	268	73.2
No Left Turn	126	34.4
Overtaking Prohibited	144	39.3
No Entry for All Vehi cles	116	31.7
No Stopping	58	15.8
Speed Limit (Maximum)	174	47.5
Diversion	131	35.8
2-Lane 2-Way Ahead	168	45.9

Table 2 (above) shows that the mean awareness of commercial drivers on road signs was 50.1%. The least familiar road traffic sign to them was the slippery surface sign with only 41 (11.2%) of the study participants identifying it while the most familiar road traffic sign was the children crossing sign, of which 304 (83.1%) of study participants identified it correctly.

Table 3: Driving Characteristics of the Drivers

Characteristic		Frequency (n=366)	Percent
Mode of training before licensing	Driving School	70	19.1
	Others	296	80.9
Duration of training before licensing	1-3Months	63	17.5
	4-6Months	34	9.3
	7-12Months	44	12.0
	Above 1 Year	225	61.5
Years as a driver	1-5years	66	18.0
	6-10years	86	23.5
	Above 10years	214	58.5
Possession of Driver's license	Yes	309	84.4
	No	57	15.6

Table 3 (above) shows that 296(80.9%) of the commercial drivers did not learn driving from a driving school, as only 70(19.1%) learned driving from a driving school. Of Sixty-three divers, 17.5% learned driving only for 1-3 months before getting a driver's license, 34(9.3%) for 4-6months, 44(12.0%) for 7-12months while 225(61.5%) for over 1 year. Sixty-six (18.0%) had a driving experience of 1-5 years, 86(23.5) had an experience of 6- 10 years in driving and 214(58.5) had an experience of over 10 years. Three hundred and nine, (84.4%) had a driver's license with 57(15.6%) without it.

Table 4: Sociodemographic, Driving Characteristics, and Factors associated with knowledge about road signs

Characteristic	Knowledge f (%)		X^2	df	p-value
	Poor	Good			
Age					
Young	183(69.8)	79(30.2)	7.459	1	***0.006****
Middle-Age	57(54.8)	47(45.2)			
Level of Education					
Never been to school	42(68.9)	19(31.1)	1.409^L	3	0.703
Primary	86(68.3)	40(31.7)			
Secondary	85(62.5)	51(37.5)			
Tertiary	27(52.8)	16(37.2)			
Marital Status					
Married	221(65.2)	118(34.8)	0.297	1	0.586
Single	19(70.4)	8(29.6)			
Mode of training in driving	36(51.4)	34(48.6)	7.672	1	***0.006****
Driving School	204(68.9)	92(31.1)			
Others					
Duration of training	42(66.7)	21(33.3)	1.574^L	3	0.665
1 – 3 Months	19(55.9)	15(41.4)			
4 – 6 Months	30(68.2)	14(31.8)			
7 – 12 Months	149(66.2)	76(33.8)			
Above 1 Year					
Years as a driver	47(71.2)	19(28.8)	4.401^L	2	0.111
1 – 5 Years	62(72.1)	24(27.9)			
6 – 10 Years	131(61.2)	83(38.8)			
Above 10 Years					
Possession of Driver's License	203(65.7)	106(34.3)	0.013	1	0.909
Yes	37(64.9)	20(35.1)			
No					

*L-Likelihood ratio; * -Statistical significance at P<0.005*

Table 4 (above) a cross-tabulation between the sociodemographic characteristics and knowledge of the commercial drivers on road traffic signs revealed that only age had a statistically significant relationship with a p-value of 0.006 while education and marital status did not with p-values of 0.703 and 0.586 respectively. Similarly, when the driving characteristics and knowledge of the commercial drivers on road traffic signs were compared with the knowledge-only mode of training in driving had a statistically significant relationship with a p-value of 0.006, the remaining variables: duration of training, years of experience as a driver and possession of a driver's license all had no statistical significance with p-values of 0.665, 0.111, and 0.909 respectively.

Table 5: Sociodemographic, Driving Characteristics and Knowledge Versus History of Accidents in the Past Cross Tabulation

Characteristic	History of accident (%)				
	No	Yes	X^2	df	p-value
Age					
Young	146(55.7)	116(44.3)	0.000	1	0.994
Middle-aged	58(55.8)	46(44.2)			
Level of education					
Never been to school	45(73.8)	16(26.2)	11.724^{L}	3	***0.008****
Primary	62(49.2)	64(50.8)			
Secondary	71(52.2)	65(47.8)			
Tertiary	26(60.5)	17(39.5)			
Marital Status					
Married	182(53.7)	157(46.3)	7.831	1	***0.005****
Single	22(81.5)	5(18.5)			
Mode of training in Driving					
Driving School	43(61.4)	27(38.6)	1.136	1	0.286
Others	161(54.4)	135(45.6)			
Duration of training					
1-3 Months	37(58.7)	26(41.3)	2.495^{L}	3	0.476
4-6 Months	16(47.1)	18(52.9)			
7-12 Months	28(63.6)	16(36.4)			
Above 1 Year	123(54.7)	102(45.3)			
Years as a driver					
1-5 Years	45(68.2)	21(31.8)	5.192^{L}	2	0.075
6-10 Years	46(63.5)	40(46.5)			
Above 10 Years	113(52.8)	101(47.2)			
Possession of driver's License					
Yes	164(53.1)	145(46.9)	5.704	1	***0.017****
No	40(70.2)	17(29.8)			
Knowledge					
Poor	126(52.5)	114(47.5)	2.962	1	0.085
Good	78(61.9)	48(38.1)			

L-Likelihood ratio, * -Statistical significance at P<0.005

Table 5 (above) shows that level of education and marital status had a statistically significant relationship with history of having had an accident in the past. Possession of a driver's license had a statistically significant relationship with a history of accident in the past while mode of training in driving, duration of training before licensing, and years of experience as a driver had no statistically significant relationship when compared with history of accident in the past.

Figure 3:A. Narrow bridge sign, B. Road sign of children crossing, C. Temporary Road sign 'indicating no overtaking' at a Road Construction site, D. Diversion Signs at a Road Diversion Site, observed along the Kaduna-Abuja Expressway.

DISCUSSION

All the study participants in this research were males, from which over seventy percent were young men and a little below thirty percent were middle-aged men; none was less than 18 years, the age an individual must attain before being given the license to drive in Nigeria. Over ninety percent of the drivers were married with only less than a tenth being single. Only a little above a tenth of them had tertiary education, a little below forty percent and over thirty percent had secondary and primary education respectively while almost twenty percent had no formal education.

This study shows that only about a third of the study participants had good knowledge of road signs and almost seventy percent had poor knowledge with over forty percent having a history of being involved in RTA in the past. This is low compared to what was reported in a study in Bangladesh that which recorded that the overall traffic sign understanding of drivers was 68.68%; and the 67% recorded as the average comprehension of the respondents with regard to the 15 traffic signs tested in a similar study carried out in Indonesia. This significant difference may be attributed to the fact that training prior to issuance of driver's license is deficient and may also be responsible for why most of the respondents most have been involved in RTA in the past. Hence, regulatory bodies and road traffic enforcement agencies must make deliberate laws and policies to increase commercial drivers' knowledge of road signs.

Concerning awareness, the mean awareness of commercial drivers on road signs was fifty percent. This was similar to the 55% recorded in a study in a secondary school in Jos,[8] but lower than what was found in a similar study in Bangladesh which reported an overall traffic sign understanding of 68.68% among drivers;[9] and over 70% in another study in Iraq.[10] The slippery surface sign was the least familiar road traffic sign in this research with only a little above one-tenth of the study participants identifying it correctly while the 'Children crossing' sign was the most familiar road traffic sign with over eighty percent of the study participants identifying it correctly. Other familiar signs included 'Beware of animals' and 'Pedestrian crossing sign', with over eighty percent of the study population correctly identifying them and their meaning. This may not be unconnected to the fact that the pictures on those signs most have helped the drivers in identifying them. Furthermore, eighty percent of the drivers did not learnt driving from a driving school as only about twenty percent of them went to a driving school to learn how to drive. Although more the eighty percent of the drivers have a driver's license, only over sixty percent of them spent the required minimum of 1 year while learning how to drive with over half of them having a driving experience of more than ten years.

It was observed from this research that, most parts of the road had the necessary road signs to guide road users to provide for their protection and safety, but some parts were without the road signs which were broken without replacement or completely absent.

In a test of statistical significance involving sociodemographic characteristics and knowledge of the study participants, only age showed statistical significance; level of education and marital status did not. This may be because increasing age may come with more duration and experience in driving and more knowledge. This finding is similar to what was found in a study in Iraq which reported that driver's age, gender, and marital status have no significant influence on sign understanding;[10] but different from what was found in another study on drivers' comprehension of the traffic signs in Indonesia which found out that comprehension of road traffic signs can be influenced by variables of age, sex, and educational background.[11] In another similar study it was found that older drivers have a higher understanding of road signs.[12] Possible factors responsible for the variations found in this study may not be unconnected to the two level of road safety campaigns and awareness, literacy levels of the study participants, level and access to pre-driving training and cultural differences. The implication

of this on public health is poor knowledge on road signs by commercial drivers which may lead to the practice of recklessness on the road leading to avoidable RTAs.

Of the driving characteristics looked at in this study, only the mode of training in driving had a statistical significance when compared with the knowledge of road signs while the duration of training, years of experience as a driver, and possession of a driver's license had no statistical significance; which is different from a similar study done in Indonesia which showed that mileage coverage, type of driver's license owned and the length of time a driver has obtained driver's license has influenced on knowledge of road signs.[9] Another study in Kwara state Nigeria, showed that only the years of driving experience were found to be statistically significant.[12] But after Analysis of Variance (ANOVA) both educational experience and years of driving experience were found to be statistically significant.[12] Factors that could affect the non-understanding of the road traffic signs may include lack of previous knowledge of the signs due to training of drivers outside a driving school and non-availability of these signs.

This study also showed that only a third of the commercial drivers had good knowledge of road signs, which is not good enough for their protection and safety and that of other road users. This value is low compared to what was recorded in a study carried out in Ilorin, that 60% of drivers generally comprehended traffic control devices,[12] and another study in South-South Nigeria that captured that a good number of commercial drivers had a fair knowledge of road signs.[3] The results are still low when compared to the 67% comprehension shown by commercial drivers in another study carried out in the Soloraya area, Central Java Province of Indonesia,[9] and again by far less than the 77% recorded in a similar research carried out in the Emirate of Abu Dhabi, UAE. [13] These differences may be due to higher educational attainment in the Southern part of Nigeria and other climes of the world because this study found that the ability to identify road signs with written inscription was directly proportional to higher educational attainment as in Nigeria, educational growth decreases as you move from North to South. Another factor that may be responsible for this low level of knowledge may be due to the fact that most of the drivers learnt driving outside a driving school where knowledge of road signs may not be taught.

This study also showed statistical significance with the level of education and marital status respectively but not with age. when driving characteristics were compared with a history of accidents in the past only possession of a driver's license had a statistical significance, while mode of training in driving, duration of training, and years of experience as a driver had no statistical significance. This is different from what was found in a study conducted in China which showed that younger drivers have the highest number of traffic accidents and casualties when compared to older drivers, and drivers with more than 20 years of driving experience have the lowest number of accidents.[14] Poor enforcement of traffic laws by the law enforcement agencies and lack of proper interpretation and appropriate response to the traffic signs may be responsible for these variations and accident occurrences.

Limitations of the study included inability of a driver who is next in line to load passengers to focus his attention on giving the information to the best of his knowledge as he may be distracted by the fact, he will soon be called to load passengers; Some of the drivers may show resentment or non-cooperation in providing the information and there is a possibility of interviewing a more than once. To overcome these limitations, the questionnaires were administered only to drivers second or third in line to load passengers so that they could pay full attention to giving the information to the best of their knowledge without losing focus by the fact that they would soon be called upon to go. To prevent non-cooperation, they were given the assurance that the information obtained would be shared with relevant bodies to be used to effect changes that will make the road safer for all road

users. Drivers who were already interviewed in other parks were not interviewed again, by asking them if they have been interviewed with these same sets of questions in another park.

CONCLUSION AND RECOMMENDATION

Traffic signs provide drivers with important knowledge about specific road conditions. It can therefore be concluded based on the results of this research that, there is a lack of awareness and knowledge of road signs among the commercial drivers plying the Kaduna-Abuja expressway which will affect the commercial driver's conduct while on the road with compromise of road safety. Knowledge and attitude gaps still exist, and stakeholders in RTA prevention should prioritize the sensitization of the drivers amidst other primordial prevention strategies.

The following were thus recommended: Periodic enlightenment of commercial drivers on the right interpretation and reaction of traffic signals should be strengthened and enforced through constant training and retraining of commercial drivers by the Federal Road Safety Corps; road maintenance agencies should ensure the replacement of broken road signs and the provision of new road signs in locations where none exist; and proper testing of drivers' awareness and knowledge of road signs must be done before issuing a new license and reassessment done during license renewal.

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Conflict of Interest

The authors declare no conflict of interest

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