

Knowledge, attitude, practices of road traffic regulations among pedestrians in a university community in Southwestern Nigeria

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Abstract

Background: Road traffic injury is a major cause of trauma and preventable death worldwide. This study assessed the knowledge, attitude and practices of road traffic regulations among pedestrians at Obafemi Awolowo University, Ile-Ife, Nigeria.

Materials and Methods: Descriptive cross-sectional study of 393 consenting pedestrians that completed a semi-structured questionnaire containing information on their socio-demographic characteristics, knowledge, attitude and practices of road traffic regulations. Data collected were analysed.

Results: Mean age of the study participants was 25.1 (7.3) years ranging 18 to 63 years. Majority were young (82.7%), males (63.1%), single (85.8%), undergraduate students (73.3%), Christians (78.9%) and of Yoruba ethnicity (82.2%). Although most respondents were aware of road traffic regulations, they displayed poor knowledge, negative attitude and poor practices towards the regulations. The significant factors associated with good knowledge include age 40 years and above (OR=2.94, 95%CI= 1.25-6.90, p=0.013), male gender (OR=1.95, 95%CI=1.21-3.14, p=0.006), being a university staff (OR=1.98, 95%CI=1.16-3.38, p=0.012), tertiary education (OR=1.90, 95%CI=1.13-3.20, p=0.016), and higher income (OR=3.45, 95%CI=2.17-5.49, p=0.0001).

Conclusion: Poor knowledge, negative attitude and poor practices towards road traffic regulations were reported among pedestrians. It is necessary to increase knowledge of safety education to enhance compliance with road traffic regulations among pedestrians.

Key words: Knowledge, Attitude, Practices, Road traffic regulations. Pedestrians, University community

Introduction

Worldwide, road traffic injury is a major cause of morbidity and mortality with over 1.2 million people dying while 20-50 million get injured every year.[1,2] Most road traffic injuries, that is over 85%, occur in middle and low income countries.[2] In Africa and other continents where road traffic injuries are prevalent, it increases their economy burden with high amount of money lost to care for victims. Road traffic injuries cost the global community annually USD 518 billion, with resultant killing or handicap of manpower, destruction of facilities, and creation of new economic crisis as the affected countries require resources to tackle and reduce the negative effects of road traffic injuries.[2-4]

A road traffic injury occurs when vehicles collide with each other, pedestrians, trees, animals and other obstacles which results in injury, property damage or death.[3,5] Human error is the major cause of road traffic injuries accounting for 64-95% of crashes in developing countries.[5-8] Inappropriate or excessive vehicular speed is a major single cause of road traffic injuries worldwide resulting in over 40% of fatal collisions.[6,9] Other causes include rash driving, mobile telephone use, deliberate violation of rules, inability to understand or obey road signs, driving or walking under the influence of drugs or alcohol, and avoidance of safety gears such as seat belts and helmets.[6-8] Other causes contributing to road traffic injuries include the environment, poor road conditions, and poorly maintained vehicles.[9-11]

The effects of road traffic injuries on victims could include physical injuries, psychological with extreme fear, helplessness and loss of control.[11,12] Physical injuries could led to partial or total disability with the major consequence being death which account for 25% of such injuries.[11] Total

disability involves the head and spinal cord with victims unable to return to their normal lives while partial disability involves lacerations, loss of limbs or fractured bones.[6] The most common complaint in road traffic injury victims is pain with resultant emotional effects affecting both the survived victims and their relatives. Such emotional effects include acute stress disorder, post traumatic stress disorder, anxiety, depression and mood disorders.

Members of the family of victims of such injuries are affected psychologically and socially as the family are usually unpaid caregivers of their relatives involved in road traffic injuries.[11-13]

The prevention of road traffic injuries require the collective effort of the government and the people. The government should ensure that the roads are in good condition, that traffic laws are obeyed. The first step in making our roads safe is by ensuring that drivers and pedestrians obey traffic rules. It is therefore important that all road users understand the traffic rules including the traffic signs. The traffic rules and precautions include taking proper driving lessons, pedestrians crossing the road only through zebra lines, constant observation of both sides while walking slowly to cross the road, walking always on the side elevated foot path of the road, walking only across the road while obeying the traffic lights. Other road safety measures include use of seat belts by all vehicle occupants and wearing of helmets by motorcyclists, and obeying the speed limits.[12-15]

In Nigeria, road transport is the dominant mode of movement for both freight and passenger traffic with the relative absence of rail, water and air transportation in most parts of the country. Nigeria recorded 337,301 road traffic crashes from 1990 to 2012, out of which 96,563 (28.6%) were fatal, 150,613 (44.7%) were serious and 90,125 (26.7%) were minor.[16] The Nigerian government through the Federal Road Safety Corps and the Nigerian Police have made several efforts to reduce the high fatality from road traffic injuries with the drivers as the major focus. However, more efforts need to target the vulnerable population especially the pedestrian that continue to suffer and at times die from these crashes.

Therefore, it is important to collect data that will inform policy on how best to prevent road traffic injuries among pedestrians, hence, this study. Therefore, this study assessed the knowledge, attitude and practices to road traffic regulations among pedestrians of Obafemi Awolowo University, Ile-Ife, Nigeria.

Materials and Methods

Study site

Obafemi Awolowo University, Ile-Ife, a first generation university in Nigeria, was established in 1962. The university has 13 faculties with current population of about 150,000 staff and students. It has various road networks linking the administrative, academic, residential areas and the university teaching hospital with the rest of the Ile-Ife community and beyond. The university has a road safety committee that collaborate with existing security apparatus on campus to ensure road safety. Various traffic signs and signals are stationed in strategic places while efforts are made by concerned authority to enforce the traffic regulations. The university health centre has an ambulance on standby to carry casualties to the nearby teaching hospital. Despite these efforts, several pedestrians have lost their life to road traffic crashes on campus.

Study design

Descriptive cross-sectional study design

Study population

The study population included all pedestrians age 18 years and above whether staff, students or visitors to the university.

Sample size calculation

The sample size of 385 was calculated using an appropriate statistical formula for descriptive health studies ($n = \frac{Z^2 pq}{d^2}$), [17] where 50% of pedestrians were involved in road traffic injuries in Nigeria. [12] A sample size of 400 were used after non-responders were taken into consideration.

Sampling technique

Pedestrians at the university bus stops or walking along the university roads that fulfilled the inclusion criteria were approached to participate in this study from 8.00 hours to 17.00 hours after taking their written consent.

Instrument for data collection

Information was obtained from the respondents using a pre-tested, semi-structured interviewer-administered questionnaire that has four sections: Section A on socio-demographic characteristics, section B on information about knowledge of road traffic regulations including identification and interpretation of traffic signs and signals, section C on attitude to road traffic regulations, section D on practices of road traffic regulations. The questionnaire was derived from review of appropriate literature. [4-6,8-12,15,16,20] Face validity was done by the authors with the instrument pretested among pedestrians not included in this study. The final instrument was derived after making necessary adjustments before use in this study.

Data collection

Data were collected by final year medical students after being trained in the administration of the instrument.

Data analysis

Data collected were analyzed using Statistical Package for Social Science (SPSS) version 20 (SPSS Inc., Chicago, IL, U.S.A.). Descriptive analysis was carried out to determine the socio-demographic distribution of study participants through the use of frequency tables and percentages. The appropriate bivariate analysis was carried out to determine the relevant associations. Knowledge, attitude and practices score was computed with '+1' assigned for correct response while '0' was assigned for incorrect response. The mean score was used as cut off with score graded as good or poor knowledge, positive or negative attitude, and good or poor practices. Bivariate chi-square test and multivariate regression analyses were performed on participant variables, knowledge, attitude and practices of road traffic regulations. Variables in the bivariate test with p-value < 0.2 were included in the multivariate model. Odd ratios (OR) and 95% confidence intervals (CI) were presented and used as measures of the strength of association. The level of statistical significance was taken to be < 0.05.

Ethical Consideration

Ethical clearance was obtained from the Research and Ethics Committee of the Institute of Public Health (IPH), Obafemi Awolowo University, Ile-Ife, Nigeria. Written informed consent was obtained from the pedestrians after explanation of the purpose of the study to them. Data obtained were entered and kept in a passworded computer.

Results

A total of 393 pedestrians completed the study and were analysed. (response rate 98.3%). Mean age (SD) was 25.1 (7.3) years ranging 18-63 years. Majority were young (82.7%), males (63.1%), single (85.8%), undergraduate students (73.3%), Christians (78.9%) and of Yoruba ethnicity (82.2%) (Table 1).

Table 2 shows the graded score on pedestrians' knowledge, attitude and practices of road traffic regulations, and reasons for road traffic injuries. About 30% had good knowledge, 59.3% had positive attitude, 36.9% had good practices while high speed, bad roads, reckless driving, lack of awareness of road traffic regulations and night driving were major reasons suggested for road traffic injuries. However, the contribution of phone calls and ear phone use to road traffic injuries were understated by the respondents.

Table 3 shows the pedestrians' knowledge of road traffic regulations and traffic signs. Although, most respondents were aware of road traffic regulations (63.9%), their knowledge of road traffic regulations and traffic signs was inadequate in some areas. For instance, only 17.3% knew that pedestrians should never cross in front of a stopped vehicle.

Table 4 shows the pedestrians' attitude and practices to road traffic regulations. Some respondents displayed negative attitude and poor practices. About 23% do not consider seat belt as life saving while only 10.2% agreed that eating and drinking could distract during road crossing. Also, 8.9% always checked for vehicle before crossing a zebra crossing.

Table 5 shows the association between socio-demographic variables and knowledge of road traffic regulations among pedestrians. Significant socio-demographic variables include age 40 years and above, male gender, single, having tertiary education and earning above 18,000 Naira (\approx 50USD) ($p < 0.05$).

Table 6 shows the logistic regression analysis of factors associated with good knowledge of road traffic regulations among pedestrians. The significant factors include age 40 years and above (OR=2.94, 95%CI= 1.25-6.90, $p=0.013$), male gender (OR=1.95, 95%CI=1.21-3.14, $p=0.006$), being a university staff (OR=1.98, 95%CI=1.16-3.38, $p=0.012$), tertiary education (OR=1.90, 95%CI=1.13-3.20, $p=0.016$), and earning over 50USD (OR=3.45, 95%CI=2.17-5.49, $p=0.0001$).

Table 1: Socio-demographic characteristics of pedestrians

Variable	Frequency (n=393)	%
Age group (years)		
18-29	325	82.7
30-39	45	11.5
≥40	23	5.8
Sex		
Male	248	63.1
Female	145	36.9
Level of education		
≤Secondary	318	80.9
Tertiary	75	19.1
Marital status		
Single	337	85.8
married	48	12.2
Divorced	8	2.0
Category		
Undergraduate student	288	73.3
Postgraduate student	34	8.7
Staff	71	18.0
Ethnicity		
Yoruba	323	82.2
Igbo	31	7.9
Hausa	14	3.6
*Others	25	6.4
Religion		
Christianity	310	78.9
Islam	78	19.8
Traditional/Eckankar	5	1.3
Income/month (USD)		
None	213	54.2
<50	66	16.8
≥50	114	29.0
Owns a driving licence (yes)	79	20.1
Attended a driving school (yes)	29	7.4
Drives a vehicle (yes)	85	21.6
**Type of vehicle driven before		
Car	51	60.0
Motorcycle	26	30.6
Bicycle	13	15.3
Lorry/trailer	4	4.7

Driving duration (years)		
<1	7	8.2
1-5	25	29.4
6-10	27	31.8
>10	26	30.6
Previous road traffic injury		
No	306	77.9
Yes and fatal	19	4.8
Yes but not fatal	68	17.3

*Edo, Igbira, Itshekiri, Ekwere, Tiv **multiple response

Table 2: Graded score on Pedestrians' knowledge, attitude and practices of road traffic regulations, and reasons for road traffic injuries

Variable	Frequency (n=393)	%
Knowledge		
Good	117	29.8
Poor	276	70.2
Attitude		
Positive	233	59.3
Negative	160	40.7
Practices		
Good	145	36.9
Poor	248	63.1
*Reasons for road traffic injuries		
High speed	289	73.5
Bad roads	279	71.0
Lack of awareness of road traffic regulations	248	63.1
Reckless driving	247	62.8
Non-compliance with road traffic regulations	242	61.6
Night driving	224	57.0
Use of ear phones while driving	178	45.3
Receiving phone calls while driving	156	39.7
Receiving phone calls while crossing the road	149	37.9
Use of ear phone while crossing the road	147	37.4

*multiple response

Table 3: Pedestrians’ knowledge of road traffic regulations and traffic signs

Variable	Frequency (n=393)	%
Heard of road traffic regulations		
Yes	251	63.9
No	142	36.1
Avoid crossing in front of a vehicle		
Yes	68	17.3
No	325	82.7
Obeying traffic regulations prevents accident		
Yes	243	61.8
No	150	38.2
Child restraint prevent accident		
Yes	289	73.5
No	104	26.5
Pedestrians must use the foot path when available		
Yes	298	75.8
No	95	24.2
Using touch when dark prevents accident		
Yes	323	82.2
No	70	17.8
Do not cross at a corner or bend in the road		
Yes	67	17.0
No	326	83.0
Every vehicle occupant should use seat belt		
Yes	61	15.5
No	332	84.5
At intersections, check for vehicles before crossing		
Yes	306	77.9
No	87	22.1
Adults should hold children hands while walking		
Yes	244	62.1
No	149	37.9
Using zebra crossing improve road safety		
Yes	250	63.6
No	143	36.4
Pedestrians should expect drivers to stop for them		
Yes	278	70.7
No	115	29.3
Pedestrians should look out for vehicles driving against traffic		
Yes	289	73.5

No	104	26.5
Crossing supervisors prevent accidents involving children		
Yes	142	36.1
No	251	63.9
Never cross near the brow of a hill		
Yes	45	11.5
No	348	88.5
Never hold onto or climb onto moving vehicle		
Yes	121	30.8
No	272	69.2
Watch and listen for traffic when crossing		
Yes	337	85.8
No	56	14.2
Do not run across the road		
Yes	345	87.8
No	48	12.2
With island, treat each side as separate crossing		
Yes	167	42.5
No	126	57.5
Do not cross when the 'wait' or 'red man' light is showing		
Yes	201	51.1
No	192	48.9
Pedestrians should look out for the driver before crossing		
Yes	256	65.1
No	137	34.9
Never expect an ambulance or fire vehicle to stop for you		
Yes	297	75.6
No	96	24.4

Table 4: Pedestrians’ attitude and practices to road traffic regulations

Variable	Frequency	%
Attitude		
Seat belt use by passengers is life saving		
Agree	303	77.1
Disagree	90	22.9
Seat belt is not for passengers sitting in the back seat		
Agree	343	87.3
Disagree	50	12.7
Alcohol drinking increases risk taking while walking		
Agree	242	61.6
Disagree	151	38.4
Sick people need assistance to cross the road		
Agree	253	64.4
Disagree	140	35.6
Walking on the Zebra crossing is safe		
Agree	268	68.2
Disagree	125	31.8
Using earphones while crossing the road is safe		
Agree	231	58.8
Disagree	162	41.2
Receiving phone call while crossing the road is safe		
Agree	223	56.7
Disagree	170	43.3
Creating awareness about pedestrian safety is necessary		
Agree	220	56.0
Disagree	173	44.0
It is better to cross express road than use the overhead bridge		
Agree	96	24.4
Disagree	297	75.6
Eating and drinking distract while crossing the road		
Agree	40	10.2
Disagree	353	89.8
Yellow or green traffic light indicate safe pass		
Agree	111	28.2
Disagree	282	71.8
Looking left and right before crossing the road is safe		
Agree	294	74.8
Disagree	99	25.2
Entering or getting off a bus anywhere is safe		
Agree	157	39.9
Disagree	236	60.1

Staying off the road when I hear the siren or see the flashing light by ambulance or police is safe		
Agree	130	33.1
Disagree	263	66.9
Crossing both lane without staying on the island in a double lane road is safe		
Agree	187	47.6
Disagree	206	52.4
It is better to cross the road in a lighted area at night		
Agree	45	11.5
Disagree	348	88.5
Practices		
Make use of roadside pavements and overhead bridges (318)		
Always	156	49.1
Sometimes	151	47.5
Never	11	3.4
Back on-coming traffic when on the road (317)		
Always	24	7.6
Sometimes	194	61.2
Never	99	31.2
Look left and right before crossing the road (317)		
Always	284	89.6
Sometimes	29	9.1
Never	4	1.3
Look out for vehicle before crossing a zebra crossing (315)		
Always	28	8.9
Sometimes	115	36.5
Never	172	54.6
Check the traffic lights before crossing the road (314)		
Always	182	58.0
Sometimes	117	37.3
Never	15	4.7

Table 5: Association between socio-demography variables and knowledge of road traffic regulations among pedestrians

Variable	Knowledge of road traffic regulations		Test statistics χ^2 ; p-value
	Poor (%)	Good (%)	
Age group (years)			
18-29	237 (72.9)	88 (27.1)	8.029; 0.018
30-39	28 (62.2)	17 (37.8)	
≥40	11 (47.8)	12 (52.2)	
Sex			
Male	162 (65.3)	86 (34.7)	7.739; 0.005
Female	114 (78.6)	31 (21.4)	
Category			
Undergraduate	207 (71.9)	81 (28.1)	10.617; 0.005
Postgraduate	29 (85.3)	5 (14.7)	
Staff	40 (56.3)	31 (43.7)	
Marital status			
Single	246 (73.0)	91 (27.0)	10.717; 0.005
Married	24 (50)	24 (50)	
Divorced	6 (75)	2 (25)	
Level of education			
≤Secondary	232 (73.0)	86 (27.0)	5.927; 0.015
Tertiary	44 (58.7)	31 (41.3)	
Religion			
Islam	59 (75.6)	19 (24.4)	1.721; 0.491**
Christianity	213 (68.7)	97 (31.3)	
*Others	4 (80.0)	1 (20.0)	
Income (USD)			
<50	218 (78.1)	61 (21.9)	28.763; 0.0001
≥50	58 (50.9)	56 (49.1)	

*Traditional, Eckankar **Likelihood ratio

Table 6: Logistic regression analysis of factors associated with good knowledge of road traffic regulations among pedestrians

Variable	Odd ratio	95% CI	p-value
Age group (years)			
18-29 (Ref.)	1		
30-39	1.64	0.85-3.13	0.138
≥40	2.94	1.25-6.90	0.013
Sex			
Male	1.95	1.21-3.14	0.006
Female (Ref.)	1		
Category			
Undergraduate (Ref.)	1		
Postgraduate	0.44	0.17-1.18	0.102
Staff	1.98	1.16-3.38	0.012
Level of education			
≤Secondary (Ref.)	1		
Tertiary	1.90	1.13-3.20	0.016
Income (USD)			
<50 (Ref.)	1		
≥50	3.45	2.17-5.49	0.0001

Discussion

This study assessed the knowledge, attitude, and practices of road traffic regulations among pedestrians in a university community in southwestern Nigeria. It reported poor knowledge, negative attitude and poor practices among the respondents. This finding is in congruence with previous studies in Nigeria and other less developed countries.[6,9,11,12] This implies that there is urgent need for workable solutions if there must be reduction in involvement of pedestrians in road traffic injuries. This could be achieved through general training on road safety and road traffic regulations targeting specifically pedestrians both within and outside university campuses nationwide.

This study findings that high speed, bad roads and lack of awareness of road traffic regulations were reasons suggested by the pedestrians need to be taken into consideration in order to reduce road traffic injuries. Previous studies worldwide have showed that high speed is a major cause of road traffic injuries which have been tackled through various means including imposition of speed limits, checking alcohol and other substance use by drivers and close monitoring of motorists.[16,18,21,22] Some countries have checked high speed through various sanctions with different results.[2,5,11,13] While in some countries these sanctions have succeeded in reducing road traffic injuries, some countries have not reported any change. Also, several studies in Nigeria and beyond have reported poor knowledge of road traffic regulations by various population groups such as drivers, motorists and pedestrians which has been shown to be responsible for road traffic injuries.[6,8,11-13] This finding imply that road safety education should be prioritized if road traffic injuries must be reduced. Other reasons suggested by the pedestrians as causes of road traffic injuries include phone calls while driving and use of ear phones by the drivers, motorists and pedestrians with the risk posed by them

understated. These findings implied that multidimensional ways are required to achieve safe roads and reduce the road traffic injuries.

This study reported deficiencies in the pedestrians' knowledge of road traffic regulations and traffic signs which is not acceptable if road traffic injuries must be reduced. Although, most studies have similar findings to our study, which further confirm the need for safety education.[6,8-10]

Our study reported the pedestrians' attitude and practices to road traffic regulations were not acceptable with negative attitude and poor practices to seat belt use by back seat occupants, driving school attendance and zebra lines crossing amongst others. All these contribute to road traffic injuries as shown by various studies in several countries worldwide.[9-12,23] Also, previous studies have showed that increased knowledge tend to affect positively attitude and practices.[12,14] Hence, it is important to enhance road safety education among pedestrians so that the ultimate goal of reducing road traffic injuries become achievable.

This study shows that the statistically significant factors associated with good knowledge of road traffic regulations among pedestrians include being of older age, male gender, being a university staff and earning higher income. These factors implied that younger age, female pedestrians, and those earning lower or no income tend to have poor knowledge. Several studies on knowledge of pedestrians about road traffic regulations have similar findings.[6,8,11,24-26], however, most studies reviewed were among male pedestrians hence the finding among female pedestrians need further investigation. Therefore, it is necessary to target these population especially the students who are more prone to road traffic injuries due to their poor knowledge of road traffic regulations.

The study is limited by its cross-sectional nature and the fact that it is self reported and from a single centre hence its findings might not be generalisable outside the study area. However, this baseline study will serve as a guide for planning and implementing interventions targeted at improving road safety practices among pedestrians in the study area. Also, every efforts were made to inform the study participants of the purpose of the study.

Conclusion

In conclusion, there is poor knowledge, negative attitude and poor practices to road traffic regulations among pedestrians in a university community. It is necessary to institute community based road safety education targeting pedestrians and put in place measures to enforce road safety regulations within and outside the university campuses. Also, more involvement of pedestrians in road safety through formation of road safety support groups could reduce road traffic injuries if well implemented.

Conflicts of interest

The authors have no conflicts of interest

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