

CELL PHONE COMMUNICATION AND RISK OF ROAD TRAFFIC CRASH

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ABSTRACT

Background: Consecutive communication apparatuses are revolutionizing the world of *Homo sapiens loquens* right from pre-historic era to modern-day internet epoch's global village. Untoward utility of cell phones is a likelihood of road traffic crash. This study investigated attitudes of driver/conductor and pedestrian/passenger categories on roads and made recommendations. **Methods:** In Southwestern Nigeria, a self-administered questionnaire with Likert-style was formulated. Participants were engaged at weeks in different commercial motor parks and fuel stations across a city. Data entered into a statistical package. Statistical-significance was taken as $p < 0.05$. **Results:** Randomized sample of 1000 individuals participated with equal ratio of drivers and pedestrians. Modal age group was 41-50years; male:female=3:2. Majority (54.4%) attained tertiary education. Civil servants 254(25.4%) was the largest in occupation. Five-hundred and seventy people (57.0%) had been using cell phone for the past 6-10years and 770(77.0%) had inbuilt camera incorporated. Less than 50% never practiced picking/making calls while on roads. Greater than and less than 50% never sent/read text messages and never enjoyed music with earpiece on roads respectively. Less than 50% switched off cell phones on roads. More than 50% knew the moral obligations associated with cell phone communication. **Conclusion:** Majority recognized cell phone communication on roads as a potential risk of crash. One-fifth of respondents never heard anything about abuse of cell phone on roads causing crash. A quarter never obeyed the idea of pulling over/stopping at a convenient spot to utilize cell phone. Legislation against abuse of cell phone should be extended to pedestrians on or by roads.

KEYWORDS: Cell phone; Driver; Pedestrian; Injury; Prevention.

BACKGROUND

Communication (from Latin *commūnicāre*, meaning 'to share') is the act of imparting or exchanging information by speaking, writing, viewing or using some other media. Consecutively, human communication apparatus revolutionized right from the pre-historic era of origin of speech, culminating into language and culture at about 500,000BCE up to the present internet audio-visual and mobile phones.^[1,2] With ceaseless advancement in science and technology, cell phones now seem to be completely essential across the globe considering the numerous crucial communication and entertainment functions. Cell phones assist in keeping quick and prompt track of loved ones, family friends, workmates and events rather than postage system that can take hours if not days. One can call for assistance in time of dangers, distress and or rightly put make emergency contact with cell phone while driving depending on the circumstances including alerting to important or imputed events in order to stay connected to social and office affairs. On the whole, with internet facility, there are some applications providing maps to navigate: one need

not seeking someone's else assistance to get to various destinations.

The desiderata for road conveyance have made it undoubtedly the oldest and the most popularly engaged mode of transport in which the insubordinate utility of cell phone can be dangerous while driving. The reliability of cell phone is also not 100% guaranteed all the time because of occasional poor networking, most especially in developing nations like ours. Addiction by some drivers while vehicles are on motion in giving all their attention to communication with cell phone is one more misconduct amounting to insurmountable interruption of driving and abuse of privilege. Apart from driving after taking psycho-active agents including alcohol; poor weather condition, over-speeding, and mechanical faults; distraction from cell phone communication is an integral likelihood of road traffic crash.^[3] Drivers who utilized cell phones while driving had a higher risk of road traffic crash (RTC) and the risk was linked to their lifestyle, attitude and personality factors as earlier documented in the USA.^[4,5] In year

2013 according to the UN, 1.25 million people were deceased from road traffic crashes and another 20-50 million suffered from non-fatal injuries in which abuse of cell phone might have been a contributory factor.^[6]

Cell phone while driving (CPWD) is banned in some countries including the USA, Japan, Denmark and Nigeria with legislation.^[7-11] The rules are the same even if one is stopped at traffic lights or hold-ups in traffic. It is also illegal to use a cell phone or similar devices when supervising a learner in driving or riding. Penalties for CPWD and other related offences in Nigeria are handled by the agency in charge of road safety called Federal Road Safety Commission (FRSC). It is not an uncommon matter to see an individual behind the wheel of a vehicle in motion, using a mobile phone in spite of the many risks involved. The Nigerian Road Safety Law for Defaulters as at present stipulated just four thousand Naira (₦4,000.00) which seems not to be removing any dime from the offenders. In the USA, lack of appropriate controls and other challenges in conducting strong evaluations limited the findings of some studies and despite the proliferation of laws limiting CPWD, it is rather unclear whether the laws are having the desired effects on road safety.^[9] The continuous increasing road traffic injury in Nigeria had orchestrated the design of this study to rattle those ones due to cell phone with their attendant complications needing surgical intervention with the hope of proffering innovative precautionary measures. Specific objectives: to evaluate likelihood of traumatic injury related to road traffic crash with the use of cell phone while driving; to audit compliance with cell phone legislation on roads; and to demonstrate pedestrians' inputs in combating harms due to cell phone along the roads.

MATERIALS AND METHODS

The study was carried out in Ado-Ekiti, the capital and most populated part of Ekiti State, Southwestern Nigeria. Ekiti is a homogeneous state of Nigeria [Density is 380/km² (980/sqm) and Area occupied is 6,353km² (2,453sqm) of 7^o40'N 5^o15'E] with 16 local government areas having a population of 2,398,957 out of Nigeria population of 140, 431,790 as at 2006 census.^[12] A self-

administered simple-structured questionnaire administered to drivers (motorists/conductors and motorcyclists) and pedestrians/passengers across Ado-Ekiti. There were two sections: A socio-demographics; B context on cell phone with drivers and pedestrians. The options were graded on a 4-point Likert scale: 4 = never, 3 = rarely, 2 = often and 1 = always. Inquiries were made simple for maximal compliance. Besides, the questions were structured in a chronological manner to address the specific objectives of the study. An approval was obtained from the institution's ethics and clearance committee. The questionnaire paper was administered randomly for four weeks at different bus stops and fuel stations across the city and completion done voluntarily without any incentive. Exemptions from the study were individuals without cell phones, age less than 15years and people lacking any form of formal education. Collated data were entered into IBM Statistical Package for Social Scientists (SPSS version-25) software for analysis with utilization of simple means, frequency, median, mode and Kendall's Coefficient of Concordance (KCC). Statistical-significance was taken as $p < 0.05$.

Limitation: Socio-economic status not assessed based on impatience of participants, most especially, individuals in driver category who were always on the move during the pilot study. Besides, some people were afraid of disclosing their earnings for security and other reasons best known to them.

RESULTS

One thousand (1000) participants were randomized for the study with 500 each for categories of driver and pedestrian. Mean age 41.35±13.60years, modal age group 41-50years, median age group 31-40years and age range 15-74years. Male 609(60.9%) and female 391(39.1%) with male:female ratio of 3:2. Educational status with category: primary 126(12.6%), secondary 330(33.0%) and tertiary 544(54.4%). Period of using cell phone: ≤5years, 360(36.0%); 6-10years, 570(57.0%); and >10years, 70(7.0%). Inbuilt camera in cell phone: 'yes' 770(77.0%), 'no' 220(22.0%) and 'uncertain' 10(1.0%).

Table 1: Occupation (n=1000).

Parameter	Frequency(%)
Commercial motorist/motorcyclist	97(9.7)
Farmer	86(8.6)
Civil servant	254(25.4)
Student	119(11.9)
Business owner	233(23.3)
Applicant/unemployed	64(6.4)
Casual labourer	59(5.9)
Housewife	29(2.9)
Others (priests, retirees, security agents, etc)	59(5.9)

Table 2: Context on cell phone communication and trauma.

N ^o	Inquiry	Never(%)	Rarely(%)	Often(%)	Always(%)
Q1	Pick calls while driving/riding or crossing the road?	305(30.5)	370(37.0)	185(18.5)	140(14.0)
Q2	Making calls while driving/ riding or crossing the road?	328(32.8)	319(31.9)	213(21.3)	140(14.0)
Q3	Sending text messages while driving/riding or crossing the road?	624(62.4)	230(23.0)	96(9.6)	50(5.0)
Q4	Reading text messages while driving/riding or crossing the road?	557(55.7)	243(24.3)	130(13.0)	70(7.0)
Q5	Accessing email/newspaper while driving/riding or while on road?	719(71.9)	171(17.1)	80(8.0)	30(3.0)
Q6	Enjoying music with earpiece connected to cell phone while driving/riding or on road?	418(41.8)	159(15.9)	161(16.1)	262(26.2)
Q7	Switch cell phone off while driving/riding or while on road?	430(43.0)	340(34.0)	180(18.0)	50(5.0)
Q8	Pull over/stop at a convenient spot to use cell phone or while on road?	271(27.1)	419(41.9)	200(20.0)	110(11.0)
Q9	Consider usage deadly act while driving/riding or while on road?	150(15.0)	360(36.0)	210(21.0)	280(28.0)
Q10	Witnessed/heard in mass media: road traffic crash with attendant injuries due to cell phone utility?	219(21.9)	521(52.1)	230(23.0)	30(3.0)

Table 3: Some characteristics with Kendall’s Coefficient of Concordance (KCC).

Category	Description	Statistical parameter	Evaluated items		
A	Advancement in communication		Period of cell phone use		Presence of camera
		MR	1.70		1.30
		KCC	0.222		
B	Issues on calls		Q1	Q2	
		MR	1.50		1.50
		KCC	0.001*		
C	Text messages		Q3	Q4	
		MR	1.44		1.56
		KCC	0.038*		
D	Issues on sounds		Q6	Q7	
		MR	1.52		1.48
		KCC	0.002*		
E	Moral obligation on cell phone		Q8	Q9	Q10
		MR	1.86	2.34	1.80
		KCC	0.141		

Key:

KCC Kendall’s Coefficient of Concordance at 95% Confidence Interval (CI)

MR Mean Rank

* Statistically-Significant KCC values; H₀ null hypothesis rejected and H₁ alternate hypotheses accepted (items in each category were interdependent).

DISCUSSION

With the advent of cell phones, the world is turning into a global village in terms of communication. In this study, males were more than females in the occupation category

to ascertain the known fact that automobiles are handled more by the males who were more adventurous with resultant exposure to its traumatic injuries.^[13] Besides, the commercial motorists and cyclists were all males. Female cyclists who participated were business owners riding motor-cycles for home running and never for commercial resolves. Contrarily, the females were more amongst the business owners; perhaps, a lot do hawk in the streets with their business wears apart from making business trips for petty trading. In terms of educational status this study demonstrated that the people with lower educational status were getting attuned with reality of

cell phone communication technology in the last 6-10 years, even though, utility of cell phone was introduced less than 20 years in Nigeria.

Amongst the participants, 30.5% wholly despised the idea of picking calls either while behind the steering or crossing the road and this was equivalent to 1/3 of people who did not practise picking calls while driving. The remaining 2/3 involved those picking calls for one reason or the other contrary to existing laws banning the utility of CPWD which could equally be applied to pedestrians while crossing the roads (cell phone while crossing road, CPWCR), thereby risking their lives and or the innocent occupants towards sustenance of traumatic injuries following crashes.^[7-11] From the study, those who usually pick calls behind steering were mainly the young males and applicant/unemployed seemingly as youthful exuberance and act of frustration respectively. The same explanation goes for those making calls while driving or crossing the roads. Equally, the more time-consuming actions of 'sending text message', 'reading text message' and 'accessing email' were criminal offences much more in gravity than mere calling or receiving calls in which majorities: 624(62.4%), 557(55.7%) and 719(71.9%) respectively did never subscribe to these acts. Be that as it may, the individuals that saw nothing wrong in CPWD were discovered to be young male drivers/conductors and students who were involved one way or the other in internet fraud and other misdemeanours. All these acts were likened to what happened in the USA on lifestyle attitude and personality factors.^[4,5]

Music is a pleasant instrument bringing about common ideas for sincerity, intimacy and freedom of creative expression contrary to noise which is an unwanted sound. The idea of enjoying music in a background manner while driving could be quantified as a way of boosting one's spirit while at an exercise (of driving) or at work as earlier supported by the majority of responders on audio gadgets in reducing emotional stress as diversionary therapy in dissection room.^[14] In this present study, a sum of 582(58.2%) individuals nevertheless constituted 'rarely', 'often' and 'always' enjoying music with earpiece connected to cell phone while driving or crossing roads. These groups might be enjoying music to take away emotional stress or for the fun of it without recourse to prudent driving culture. In the same vein, the 418(41.8%) who never believed in using earpiece while behind the steering or crossing roads might be doing it legitimately to concentrate on their driving or crossing exercise believing music could be enjoyed in another fora. In spite of expectations, in a situation where there was more than one occupant on board, others within the vehicle might perceive the lack of concentration from the driver while utilizing cell phone behind the steering, an act that might lead to recklessness in driving with attendant crash and injury. This act of adventurism was actually not being reported to law-enforcement agents in this locality, most especially, while the commuters might be questing

attention of the pilot (driver) for one matter or the other. There was no doubt all these untoward behavioural attitudes could increase the risk of road traffic crash with economic, social and physical consequences demanding attention of physicians or surgeons at the various healthcare institutions.^[3]

In items Q7 and Q8, assertions on switching on and off of cell phone while on road and utility of cell phones at a convenient spot were registered. Majority of responders who did not believe in switching off equally supported the idea of pulling over or stopping at a convenient arena to utilize cell phone for one reason or the other. These individuals were in concordance with the prohibited laws against the use of cell phones while driving.^[8-10] The good gesture should be extended to the pedestrians (on or by roads) in Nigeria in order to reduce road traffic crash (RTC) due to cell phone communication to the barest minimum.^[10] Fifteen percent of respondents never considered usage of cell phone a deadly act while driving or on the roads (Q9). The same set of individuals with this submission might be those who were always in love of picking or making calls while behind the steering or crossing roads as established with 14% each in Q1 and Q2 respectively. Perusal of the questionnaire forms showed that those individuals were principally the young male students and applicants, perhaps, due to youthful outrageousness and or frustration of unemployment in the society as earlier asserted: the higher the level of unemployment, the more the vices including cell phone communication on roads either while driving or crossing roads with attendant crashes and injuries.

About one-fifth was not aware of RTC due to abuse of cell phone communication. This group of people might be more of the pedestrians who had no opportunity of obtaining driving licences where the issues related to causes of crashes as related to cell phone utilization would have been enlightened. The mode of licensing individuals then calls for more educative fact findings by the licensing agencies to organize more safety crusades thereby bolstering good driving culture along with policing the pedestrians on their activities on or by the roads. By human nature, more than 50% of respondents in this study who was aware of RTC due to discourtesy use of cell phone one way or the other might tend to be fearful with resultant obeisance to the laws guiding the utility of cell phone while driving or crossing the roads.

Ordinarily, considering some characteristics of the context (table 3), drivers and pedestrians with limited functional cell phones in use for a long period of time might tend to advance to the use of ones with incorporation of other innovative features in communication technology including camera but the KCC values of 0.222 which was not statistically-significant called for mentation. However, the explanation might be based on the fact that there were more than 50% of participants with tertiary education status who might have been newer users of cell phones

and preferred to really start from more complex phones without recourse to time or socio-economic status (though not assessed): people wanted to utilize new innovations. The idea of picking and making calls even though appeared correspondent; there seemed no similarity in this study between the two as the KCC was statistically less than 0.05 and alternate hypothesis (H_1) was accepted. Come to think about it, the initial process of picking calls may be faster than dialling to make calls. Sending and reading text messages while driving or crossing the roads were statistically-significant herewith proven the independency factors between the two acts. In other words, sending text messages might take lesser time than reading texts as a continuous venture that could add to avoidable road traffic crash. Containment of sounds by earpiece away from other vehicle occupants or other pedestrians by the roads was ordinarily different from switching off cell phone as statistically proven with KCC of 0.002 in which null hypothesis (H_0) was rejected. Weighing the pros and cons, cell phone might be better switched off or put in silence than the euphoric or inattentive effects of the sounds while on roads that could be a potential cause of crash.

Every right implies a responsibility as part of moral indebtedness of one *Homo sapiens loquens* to another in which RTC and its attendant injuries should be prevented to the barest minimum by eliminating all heinous acts including cell phone abuse on roads. Pulling over or stopping at a convenient spot seemed desirable by recognizing pudency in utility of cell phone while driving and crossing roads as a high-risk habit endangering lives and property. Besides, awareness of this risk had something to do with id, ego or super ego of a person to play to the rules of law.^[4, 5] This study aiming at contributing to prevention of crashes on our roads really established the items in 'category E' of table 3 as being synonymously explaining same assertions in different segments (Q8, 9, 10) as $KCC > 0.05$.

Conclusion/Recommendation

The deduction from the context on the utility of cell phone communication on roads showed that a reasonable degree of participants recognized its abuse as a potential risk of road traffic crash (RTC) with attendant injuries. Only one-fifth of respondents never heard anything about abuse of cell phone leading to RTC. A quarter (27.1%) never wanting to obey the idea of pulling over or stopping at a convenient spot to utilize cell phone while almost 42%, 20% and 11% 'rarely', 'often' and 'always' respectively obeyed the criminalization. Legislation against the abuse of cell phone in this part of the globe while driving should be extended to the pedestrians by the roads or while crossing the roads. Adoption of the term 'cell phone while crossing road, CPWCR' should be comprehended while evaluating cell phone communication.

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