

Full Length Research Paper

A study of mobile phones used by motor vehicle drivers in Trinidad and Tobago

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A cross-sectional study to determine the pattern of mobile phone use by drivers in Trinidad and Tobago. Data were obtained using a self-administered questionnaire that was completed by 1150 drivers. Data analysis was done using descriptive statistics, Chi square test and multinomial logistic regression analysis. Overall, 91% of the drivers use a mobile phone while driving. Amongst these drivers, 86% use hand-held and 14% use hands-free mobile phones. The phone calls by the drivers were reported as routine (70%) and emergency (30%). The calls were of general nature (58%), family matters (23%) and work-related (19%). The drivers believe that using a mobile phone while driving is extremely dangerous (50%) and moderately dangerous (31%). But, 25% of the drivers make no change in their driving behaviour when using a mobile phone while driving, 53% reduce their speed, 10% drive on the road shoulder and only a mere 2% stop the vehicle. There is a high level of mobile phone use by drivers in Trinidad and Tobago with the attendant challenges for road safety. There is a need for public education in Trinidad and Tobago on the hazards of mobile phone use while driving, and a concurrent need for the enactment and enforcement of legislation to curb this practice.

Key words: Hand-held, hands-free, mobile phone use, drivers, Trinidad and Tobago, West Indies.

INTRODUCTION

The advent of mobile phone technology has changed the communication landscape dramatically. Research studies from many countries have reported the use of both hand-held and hands-free mobile phones by drivers while driving (Pöysti et al., 2005; Gras et al., 2007; McEvoy et al., 2005; Sullman and Baas, 2004). This use of both hand-held and hands-free mobile phones while driving has been shown to be an unsafe driving practice. It has negative impact on road safety variables such as the response time of drivers to traffic signals, response to risky situations and the risk of occurrence of road traffic accidents (Pöysti et al., 2005; McEvoy et al., 2005; White et al., 2009). The use of mobile phones while driving has been reported as resulting in a four-fold increased risk of road traffic crashes, resulting in hospital attendance. Hence, many countries in the world, especially those in Europe, North America and Australia have enacted laws

against the use of hand-held mobile phones by motor vehicle drivers while driving (McEvoy et al., 2005). But, the prohibition of the use of hand-held mobile phones while driving has not deterred many drivers from this hazardous practice. In Australia for instance, 39 to 73% of drivers have been reported as using hand-held mobile phones sometimes, while driving (White et al., 2009).

There is a general perception that the use of a hands-free mobile phone is safer, compared to a hand-held mobile phone. Hence, there are drivers who use hands-free mobile phones with the mistaken notion that it is safe to do so. This perception has been challenged by studies that indicate that the use of both types of mobile phones represents a significant distraction for the driver and hence, an unsafe driving practice (Lamble et al., 1999; Törnros and Bolling, 2005, 2007; Strayer and Drews, 2007; Virginia Tech Transportation Institute, 2009; Insurance Information Institute, 2010).

Trinidad and Tobago is a twin-island Caribbean Republic of about 1.3 million people. There are more than 1.6 million current mobile phones in use in the country. But, there is currently no law prohibiting the use of a mobile phone

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while driving in Trinidad and Tobago. Therefore, it is not uncommon to see many drivers using both hand-held and hands-free mobile phones while driving on different road types and locations, including highways and major intersections. It has been claimed that this unrestrained use of mobile phones while driving is a major contributing factor to the high number of road traffic accidents and fatalities in the country. The government of Trinidad and Tobago is looking at the enactment of legislation to prohibit the use of mobile phones while driving in the country as some of the measures to improve the safety of the country's roads (Trinidad Express 2010a,b).

The main objective of this study was to determine the self-reported use of hand-held and hands-free mobile phones by motor vehicle drivers in Trinidad and Tobago. In addition, we looked at the socio-demographic characteristics that influence mobile phone use such as purpose and nature of the calls, the perception of the danger associated with the use of mobile phones while driving and modifications of the driving behaviour by drivers when using a phone while the vehicle is in motion.

MATERIALS AND METHODS

The study used a cross-sectional design in which a total of 1500 motor vehicle drivers were selected from the different regions across Trinidad and Tobago in order to give a reasonably representative national sample. Each of the respondents completed a self-administered questionnaire, with questions relating to the driver's use of a hand-held or hands-free mobile phone when driving; nature, type and frequency of mobile phone use, perception of the hazard associated with mobile phone use while driving and basic socio-demographic characteristics of the drivers. The questionnaire consisted mostly of closed-ended questions and allowed for only single responses.

For the purposes of data analysis, the participants were divided into 2 groups based on whether they use hand-held or hands-free mobile phones when driving. The 2 groups were described by their frequency distribution on the socio-demographic and descriptive variables. The Pearson Chi square test was used to test for statistically significant association between the socio-demographic characteristics, selected questions related to mobile phone use and the two different categories of mobile phone use by the drivers (hand-held and hands-free). A multinomial logistic regression analysis was used to identify the possible predictors of mobile phone use.

Ethical approval was granted for the study by the Ethics Committee, Faculty of Medical Sciences, University of the West Indies, St. Augustine, Trinidad, West Indies.

RESULTS

A total of 1150 questionnaires were returned out of the 1500 that were administered, giving a response rate of 76.7% by the motor vehicle drivers. Some of the returned questionnaires were discarded from the analysis due to incomplete data, leaving only 959 usable questionnaires with valid and sufficient responses.

Basic demographics

Table 1 shows the basic demographic profile and type of mobile phones used by the drivers. A majority (86%) of the drivers used hand-held mobile phones and the remaining 14% used hands-free mobile phones. Most of the drivers (56.9%) were between 18 and 34 years. There were more male drivers (70%) compared to female drivers (30%). The single drivers (53%) were more than the married drivers (41%). A majority of the drivers (88%) had either secondary or tertiary education. Those drivers without any formal education and those with primary education were about 12%. The drivers had been driving for less than 10 years (43.7%); between 10 and 19 years (26.5%) and more than 20 years (29.8%). There was a significant difference in the use of mobile phones by the drivers with respect to marital status ($\chi^2 = 6.857$, $p < 0.05$) and years of driving ($\chi^2 = 6.566$, $p < 0.05$).

Mobile phone experience and use by drivers

Table 2 shows that most of the drivers (92%) have had both hand-held and hands-free mobile phones for more than 3 years. Overall, 70% of the drivers sometimes, and 21% always used a mobile phone to make or receive calls while driving. Only 9% of the drivers never use a mobile phone to make or receive calls while driving. The drivers reported a similar pattern of usage of both hand-held and hands-free mobile phones while driving. Most of the calls made or received by the drivers while driving were of general nature (58%), 23% were about family matters and 19% were work-related. A majority (70%) of the calls made or received by the drivers while driving were reported as routine calls and 30% of the calls were reported as emergency calls. There was a significant difference in the use of mobile phones by the drivers with respect to how many years they have had a mobile phone ($\chi^2 = 4.409$, $p < 0.05$) and the nature of phone calls made or received by the drivers ($\chi^2 = 7.041$, $p < 0.05$).

Perception of Hazard and Driving Behaviour When using Phone

Table 3 shows that about 49% of the drivers reported that, using a mobile phone to make or receive calls while driving is extremely dangerous, 31% reported this practice to be moderately dangerous and about 3% responded that there is no danger associated with using a mobile phone to make or receive calls while driving. When using a mobile phone to make or receive a call while driving, most of the drivers (53.1%) only reduced their driving speed, about 25.5% made no changes whatsoever in their driving behaviour, about 9.6 and 9.9% of the drivers drove on the road shoulder or slow lane respectively, and only 1.9% of

Table 1. Basic demographics of respondents.

Age (years)	Hand-held	Hands-free	Total	X2	p value
18-24	216 (26.1%)	25 (19.2%)	241 (25.1%)	6.68	0.083
25-34	256 (30.9%)	49 (37.7%)	305 (31.8%)		
35-44	160 (19.3%)	32 (24.6%)	192 (20.0%)		
>/ 45	197 (23.8%)	24 (18.5%)	221 (23.0%)		
Total	829 (100%)	130 (100%)	959 (100%)		
Sex					
Male	563 (70.6%)	88 (69.3%)	651 (70.4%)	0.083	0.773
Female	235 (29.4%)	39 (30.7%)	274 (29.6%)		
Total	798 (100%)	127 (100%)	925 (100%)		
Marital status					
Single	432 (54.1%)	56 (43.8%)	488 (52.7%)	6.86	0.032
Married	314 (39.3%)	66 (51.6%)	380 (41.0%)		
Divorced / Widowed	52 (6.5%)	6 (4.7%)	58 (6.3%)		
Total	798 (100%)	128 (100%)	926 (100%)		
Education					
No formal	13 (1.6%)	6 (4.7%)	19 (2.1%)	5.195	.158
Primary	82 (10.3%)	12 (9.3%)	94 (10.2%)		
Secondary	368 (46.2%)	60 (46.5%)	428 (46.2%)		
Tertiary	334 (41.9%)	51 (39.5%)	385 (41.6%)		
Total	797 (100%)	129 (100%)	926 (100%)		
Driving licence (years)					
0 - 9	361 (43.5%)	58 (44.6%)	419 (43.7%)	6.566	.038
10 - 19	210 (25.3%)	44 (33.8%)	254 (26.5%)		
>/ 20	258 (31.1%)	28 (21.5%)	286 (29.8%)		
Total	829 (100%)	130 (100%)	959 (100%)		

Table 2. Mobile phone experience and use by drivers.

Mobile phone use (years)	Hand-held	Hands-free	Total	X2	p value
Less than 3	63 (7.6%)	17 (13.1%)	80 (8.3%)	4.409	0.036
3 or more	766 (92.4%)	113 (86.9%)	879 (91.7%)		
Total	829 (100%)	130 (100%)	959 (100%)		
Frequency of phone use					
Never	79 (9.5%)	5 (3.8%)	84 (8.8%)	4.542	0.103
Sometimes	576 (69.5%)	96 (73.8%)	672 (70.1%)		
Always	174 (21.0%)	29 (22.3%)	203 (21.2%)		
Total	829 (100%)	130 (100%)	959 (100%)		
Nature of calls					
Work-related	128 (17.1%)	34 (27.0%)	162 (18.5%)	7.041	0.030
Family matters	177 (23.6%)	26 (20.6%)	203 (23.2%)		
General	445 (59.3%)	66 (52.4%)	511 (58.3%)		
Total	750 (100%)	126 (100%)	876 (100%)		
Type of calls					
Emergency	214 (29.8%)	35 (28.9%)	249 (29.6%)	0.035	0.852
Routine	505 (70.2%)	86 (71.1%)	591 (70.4%)		
Total	719 (100%)	121 (100%)	840 (100%)		

Table 3. Perception of hazard and driving behaviour when using phone.

Perception of hazard	Hand-held	Hands-free	Total	X2	p value
No danger	26 (3.1%)	7 (5.4%)	33 (3.4%)	8.161	0.043
A little dangerous	148 (17.9%)	13 (10.0%)	161 (16.8%)		
Moderately dangerous	259 (31.2%)	36 (27.7%)	295 (30.8%)		
Extremely dangerous	396 (47.8%)	74 (56.9%)	470 (49.0%)		
Total	829 (100%)	130 (100%)	959 (100%)		
Driving behavior when using phone					
No change	189 (25.2%)	34 (27.0%)	223 (25.5%)	7.095	0.131
Reduce speed	404 (53.9%)	61 (48.4%)	465 (53.1%)		
Drive in slow lane	73 (9.7%)	11 (8.7%)	84 (9.6%)		
Drive on the road shoulder	73 (9.7%)	14 (11.1%)	87 (9.9%)		
Stop the vehicle	11 (1.5%)	6 (4.8%)	17 (1.9%)		
Total	750 (100%)	126 (100%)	876 (100%)		

the drivers stopped their vehicles.

Multinomial logistic regression model for predicting the determinants of mobile phone use

Table 4 shows the result of the multinomial logistic regression model for the three categories of mobile phone use (never use mobile phone is the reference group). The table presents the logistic regression coefficients and odds ratios for the independent variables as they relate to the driver, sometimes and always, using a mobile phone while driving.

The variables that predicted if the driver was less likely to sometimes use a mobile phone, were being older than 34 years of age, male, no formal education, using hand-held mobile phones, and the perception by the driver that using a mobile phone while driving is a little or moderately dangerous. The variables that predicted if the driver was less likely to always use a mobile phone were being older than 24 years of age, male driver, having secondary education, and the perception by the driver that using a mobile phone while driving is not dangerous, a little or moderately dangerous.

DISCUSSION

The results show that there is a very high level of mobile phone use by the drivers while driving. Overall, about 91% of the drivers use their mobile phones while driving. This is higher than other reports on the use of mobile phones by drivers while driving, such as in London (2.5%), Spain (60.1%), Australia (72%) and Finland (81%). (Pöysti et al., 2005; Gras et al., 2007; Walker et al., 2006). This result could be due to the fact that there is currently no law or regulation that prohibits the use of mobile phones by drivers while driving in Trinidad and Tobago (Trinidad Express, 2010a,b).

According to a survey reported by National Highway Traffic Safety Administration (NHTSA) amongst business users, 97% agreed that cellular phone use increases their flexibility, 80% make business calls while commuting to, or from work and 57% feel as if they can leave the office on time and make calls while travelling home. In addition, new owners use their phones for work-related or business calls 48% of the time and those who have had a mobile phone for at least 5 years use their phones for work or business 78% of the time (National Highway Traffic Safety Administration, 1997).

It should be noted that there were more male drivers compared to female drivers in this study. However, female drivers have been reported as being more careful than their male counterparts when driving (Pöysti et al., 2005). Male drivers have been reported as using their mobile phones while driving more than the female drivers in Perth, Australia by Horberry et al. (2001), Finland by Poysti et al. (2005) and New Zealand by Sullman and Baas (2004).

A majority of all the calls made or received by the drivers in this study (70%) were non-emergency or routine phone calls. But, the high proportion of phone calls (30%) reported as emergency calls is difficult to understand or explain. Unfortunately, the questionnaire did not include a definition of what constitutes an emergency. There is a position advanced about the safety benefits of having a mobile phone while travelling, especially on a highway. Such benefits being mentioned include the ability to report emergencies and congestion on highways. But, there is the problem of misuse and overburdening of emergency exchanges that has been documented (National Highway Traffic Safety Administration, 1997)

Most of the calls made or received by the drivers in this study (58%) were of general nature. Fewer calls were made about family matters (23%) and work-related issues (19%). This is in agreement with the report about cell phone use while driving in North Carolina where, 53% of the calls were personal and only 27% of the calls were work-related (Stutts et al., 2003, 2002)

Table 4. Multinomial logistic regression model for mobile phone use.

Parameter	Sometimes				Always			
	Odds ratio	95% CI		p	Odds ratio	95% CI		p
Intercept				.007				.924
Age (years)								
18-24	0.632	0.283	1.412	0.263	1.241	0.488	3.157	0.650
25-34	1.580	0.761	3.277	0.219	2.602	1.120	6.044	0.026
35-44	3.994	1.457	10.945	0.007	7.167	2.409	21.321	0.000
Sex								
Male	1.909	1.036	3.518	0.038	2.426	1.226	4.799	0.011
Marital status								
Single	1.335	0.478	3.732	0.581	1.111	0.341	3.618	0.862
Married	1.899	0.730	4.944	0.189	1.543	0.509	4.672	0.443
Education								
No formal education	0.180	0.033	0.982	0.048	0.399	0.068	2.361	0.311
Primary	0.625	0.239	1.632	0.337	0.387	0.130	1.153	0.088
Secondary	0.562	0.305	1.036	0.065	0.504	0.257	0.987	0.046
Type of mobile phone								
Hand-held	0.349	0.132	0.927	0.035	0.365	0.130	1.027	0.056
Perception of hazard								
No danger	0.478	0.137	1.669	0.247	3.684	1.133	11.982	0.030
A little dangerous	8.656	2.611	28.699	0.000	11.166	3.223	38.680	0.000
Moderately dangerous	4.821	2.365	9.825	0.000	5.691	2.640	12.269	0.000

Our findings also agree with the report by Leung and Wei. (2000) that people use phones more for social, rather than utilitarian purposes. The motivation or gratification for the use of telephones can be broadly categorized into two: intrinsic or social and instrumental or task-oriented (Leung and Wei, 2000). Between these two categories, there are sub-categories such as functional, relational, fun, entertainment, reassurance, fashion and status motivations or gratifications. The intrinsic or social motivation for the use of telephones refers to making phone calls mainly to socialize and includes, making phone calls to chat and keep in touch with family members. On the other hand, the instrumental or task-oriented motivation for the use of telephones looks at the utility derived from making phone calls, and includes using a phone to book appointments, seek information, order goods and services.

One of the negative consequences of the pervasive use of mobile phones, apart from the association with road traffic accidents, is that of dependence or addiction. Many people have now developed an obsession to carrying the mobile phone everywhere and feel incomplete without it. This is illustrated by the findings that, 73% of college students in Seoul, Korea, reported that they become “uncomfortable and irritated” if they do not have access to a mobile telephone (Park, 2005). This is a challenge to be addressed by all stakeholders including the telecom-munication industry, health and other government sectors.

In conclusion, there is a high level of mobile phone use by the drivers in Trinidad and Tobago with the attendant

challenges for road safety. Most of the phone calls were routine and general in nature. There is an urgent need for the government of Trinidad and Tobago to involve all relevant stakeholders in the efforts to address the widespread use of mobile phones by drivers while driving. These efforts should include public education on the risks associated with this practice and the enactment of appropriate legislation to curb the use of mobile phones by drivers while driving.

The results of this study have reinforced some of the findings of other researchers with respect to the various aspects explored about the use of mobile phones by drivers when driving. This study has contributed to the understanding of the hazardous practice of mobile phone use by motor vehicle drivers in Trinidad and Tobago, and globally by analysing the type and frequency of mobile phone use, the nature and type of phone calls made, the perception of hazards associated with mobile phone use while driving, the driving behaviour of drivers when they use mobile phones and the influence of the socio-demographic variables on mobile phone use by motor vehicle drivers in Trinidad and Tobago.

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