Original Article

Seat Belt Usage and Distracted Driving Behaviors in Saudi Arabia: Health-care Providers versus Nonhealth-care Providers

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Abstract

Introduction: Motor vehicle accidents (MVAs) and noncompliance to seat belt have been a continuing safety issue in Saudi Arabia for decades. The aim of this study is to determine the prevalence of seat belt use and distracted driving behaviors among health-care providers in Saudi Arabia and its comparison with nonhealth-care providers. **Methods:** This is a cross-sectional survey. Data were collected through an online questionnaire distributed among Saudi health-care providers in Saudi Arabia through E-mails and social media using a snowball sampling approach. The data were statistically analyzed. **Results:** Of 695 respondents, 356 (51.2%) were health-care providers and 339 (48.8%) were nonhealth-care providers. Seat belt wearing rates were 43% among health-care providers and 13.3% among nonhealth-care providers. Most common distracting driving behavior was cell phone usage while driving in both groups (98.6% vs. 86.5%). **Conclusion:** The present study revealed a statistically significant difference in compliance to seat belt usage by health-care providers compared to nonhealth-care providers. We believe that this is due to a better exposure and knowledge about the consequences of the MVA cases, as well as a high awareness about traffic rules. No statistically significant difference was observed in regard to distracted driving behavior between both groups. We would like to strongly recommend the need of various levels of awareness campaigns regarding the importance of wearing seat belt and avoiding distractive driving behavior in Saudi Arabia.

Keywords: Distractive driving behavior; health-care providers; motor vehicle accident; safety; seat belt

Introduction

The rapid economic growth that Saudi Arabia experienced in the last 40 years led to a remarkable increase in motorization and road network construction. Motor vehicles are considered as the primary method of transportation in Saudi Arabia. Consequently, motor vehicle accidents (MVAs) and accident-related injuries and deaths have become a major health hazard in the country. For instance, in 1999 and later in 2010, studies have indicated that MVAs are responsible for killing one person and injuring four persons every hour.[1,2] In addition, the 2005 traffic data registry in Saudi Arabia showed that the number of MVAs was almost 290,000 with more than 5000 deaths and 34,000 injuries; half of these deaths and injuries occurred in young individuals below the age of 30 years.[3]

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Wearing seat belts has been proven to be very effective in reducing the number of MVA-related injuries and deaths.[4] The use of seat belts while driving was made mandatory by the law in Saudi Arabia as of December 5, 2000.[5,6] In the first few months after the enactment of this law, the percentages of seat belt usage among drivers and passengers in Riyadh were 60% and 22.7%, respectively, compared to a small percentage

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of 2.9% seat belt use by drivers before the law enactment.[5] These percentages decreased to 27.8% and 14.7%, respectively, after the first few years of enforcing the law, in other words, after the "honeymoon" period. However, the positive impact of enacting the law was still significant.[6] This positive impact was evident through the drop in the number of monthly adjusted MVA-related injuries after the enactment of the law.[5]

Distracted driving behaviors (DDBs) such as talking on the cell phone, texting massage, eating, drinking, adjusting the car's radio, and interacting with passengers in the car while driving may create a potential traffic safety concern.[7,8] Despite the potential harm associated with DDBs, as far as we know, there were no studies conducted to determine the prevalence and consequences of these behaviors in Saudi Arabia.

Health-care providers (HCPs) such as physicians, nurses, and emergency medical service providers are exposed to the consequences of MVAs often in their career. They play a major role in the management and prevention of MVAs by providing acute care, long-term care, and communicating a credible traffic safety message to the community. Therefore, we assume that Saudi HCPs should be more committed to seat belt wearing and abstaining from DDBs while driving compared to Saudi non-HCPs. However, it is unclear about the percentage of HCPs who follow the law pertinent to wearing seat belt and abstaining from DDBs while driving. To our knowledge, there were no published studies discussing the attitude of Saudi HCPs toward seat belt usage and practice of DDBs. The objective of this study was to determine the prevalence of seat belt usage and DDBs among Saudi HCPs in Saudi Arabia and to explore factors associated with seat belt under-utilization among HCPs compared to none-HCPs.

Materials and Methods

This study was carried out in Saudi Arabia from January 1, 2015, to June 30, 2015, after the approval of King Abdullah's International Medical Research Centre Ethics Committee. In this study, consent was deemed unnecessary by the Ethics Committee considering that identifying information were not collected from the participants.

Study population and sample collection

Using snowball sampling approach, a cross-sectional online questionnaire (that the team developed) in both English and Arabic was distributed among various Saudi HCPs and non-HCPs in Saudi Arabia through E-mails and social media outlets (e.g., Twitter, Facebook, and WhatsApp). The sample was collected through sending the links to the questionnaire to group administrators who send it to their group members in social media such as WhatsApp. In addition, through targeting individuals with a large number of the followers on Twitter, the questionnaire was sent to more individuals. This method of snowball sampling is a nonrandom and prone to sample selection bias, but known to be cost-efficient and fast.

All Saudi HCPs and non-HCPs aged 18 years and above who live in Saudi Arabia were included in the study. Incomplete data and individuals who do not live in Saudi Arabia were excluded from the study. It needs to be stated that based on the legislature of Saudi Arabia, women are not allowed to drive in the country. Therefore, female participants were excluded from the analysis for this study.

Questionnaire translation and distribution

The questionnaire included demographics (age, gender, marital status, and current job), questions about compliance to seat belt usage, and questions about DDBs (i.e., texting massage, talking on the cell phone, drinking, eating). The process of translation started with a translation of the questionnaire from English to Arabic by two investigators independently followed by sending both translations to a certified translator who created a modified version then was discussed among the authors to come up with a final version that was disseminated to individuals. Linguistic validation to ensure the equivalence of the questions in terms of conception and thoughts was carried out throughout the process of translation and by consensus in the final version. In addition, cultural validity to ensure the appropriateness of the concepts to Saudi culture was also done during team meetings to discuss final translation version.

Statistical analysis

For this descriptive paper, categorical variables were described using frequencies and percentages. To study the association between seat belt usage, DDBs, and study's variables, bivariate analysis using Chi-squared test was used. Odds ratio and 95% confidence interval (95% CI) were calculated using simple logistic regression. Statistical significance was defined as $P < 0.05$. The data were analyzed using Statistical Package for the Social Sciences tool Version 21 (IBM corporation, Chicago, IL, USA).

Results

A total of 695 participants responded to the online questionnaire and were included in the analysis. The sample included 356 (51.2%) HCPs and 339 (48.8%) non-HCPs. Of all respondents, 49.6% were male. The average age of all responders was between 18 and 25 years (HCPs = 75.8% vs. non-HCPs = 59%, $P = 0.001$). Compared to non-HCPs, HCPs were the majority of our respondents (HCPs = 63.5% vs. non-HCPs = 35.1%, $P = 0.001$). History of involvement in a car accident was more prevalent in HCPs (31.4%) compared to non-HCPs (13.3%) ($\chi^2 = 32.84$, $P = 0.001$).

After excluding females and nondrivers, a total of 345 male drivers from both HCP and non-HCP groups were asked about wearing seat belt while driving in the city; 52.2% of HCPs group reported wearing seat belt always, 36.4% reported wearing it sometimes, and 11.4% do not wear it at all. As for non-HCPs group, 37.3% reported wearing seat belt always, 39.8% reported wearing it sometimes, and 22.9% do not wear it at all. When both groups were asked about wearing seat belt while driving in the highways, 65.9% of HCPs group reported wearing seat belt always, 24.5% reported wearing it sometimes, and 9.5% do not wear it at all. As for non-HCPs group, 48.3%

Table 1: Respondents' demographic characteristics and information about seat belt use (*n*=695)

Variable	Groups			χ^2	*P*
	HCPs, *n* (%)	NHCPs, *n* (%)	Total, *n* (%)		
Gender					
Male	226 (63.5)	119 (35.1)	345 (49.6)	55.95	0.001*
Female	130 (36.5)	220 (64.9)	350 (50.4)		
Total	356 (100)	339 (100)	695 (100)		
Age (years)					
18-25	270 (75.8)	200 (59)	470 (67.6)	23.5	0.001*
26-35	43 (12.1)	60 (17.7)	103 (14.8)		
36-45	23 (6.5)	44 (13)	67 (9.6)		
>45	20 (5.6)	35 (10.3)	55 (7.9)		
Total	356 (100)	339 (100)	695 (100)		
Drive (*n*=345)**					
Yes	220 (97.3)	118 (99.2)	338 (98)	1.20	0.256
No	6 (2.7)	1 (0.8)	7 (2)		
Total	226 (100)	119 (100)	345 (100)		
Seat belt usage as a driver in highway					
Always	145 (65.9)	57 (48.3)	202 (59.8)	12.66	0.002*
Sometimes	54 (24.5)	36 (30.5)	90 (26.6)		
Not at all	21 (9.5)	25 (21.2)	46 (13.6)		
Total	220 (100)	118 (100)	338 (100)		
Seat belt usage as a driver in city					
Always	115 (52.2)	44 (37.3)	159 (47)	10.53	0.005*
Sometimes	80 (36.4)	47 (39.8)	127 (37.6)		
Not at all	25 (11.4)	27 (22.9)	52 (15.4)		
Total	220 (100)	118 (100)	338 (100)		
Seat belt usage as a passenger in highway					
Always	117 (32.9)	67 (19.8)	184 (26.5)	21.80	0.001*
Sometimes	120 (33.7)	106 (31.3)	226 (32.5)		
Not at all	119 (33.4)	166 (49)	285 (41)		
Total	356 (100)	339 (100)	695 (100)		
Injury of not wearing seat belt					
Yes	112 (31.5)	45 (13.3)	157 (22.6)	32.84	0.001*
No	244 (68.5)	294 (86.7)	538 (77.4)		
Total	356 (100)	339 (100)	695 (100)		
Do you know anyone who had serious injury of not wearing seat belt					
Yes	206 (57.9)	197 (58.1)	403 (58)	0.004	0.947
No	150 (42.1)	142 (41.9)	292 (42)		
Total	356 (100)	339 (100)	695 (100)		
Difficulty in wearing seat belt					
Yes	238 (66.9)	290 (85.5)	528 (76)	33.23	0.001*
No	118 (33.1)	49 (14.5)	167 (24)		
Total	356 (100)	339 (100)	695 (100)		
Reasons for not wearing seat belt					
Movement restriction					
Yes	120 (36.5)	209 (63.5)	329 (47.3)	54.39	0.001*
No	236 (64.5)	130 (35.5)	366 (52.7)		
Total	356 (100)	339 (100)	695 (100)		
Fear					
Yes	12 (38.7)	19 (61.3)	31 (4.5)	2.03	0.154
No	344 (51.8)	320 (48.2)	664 (95.5)		
Total	356 (100)	339 (100)	695 (100)		
Forgetfulness					

Contd...

Table 1: Contd...

Variable	Groups			χ^2	*P*
	HCPs, *n* (%)	NHCPs, *n* (%)	Total, *n* (%)		
Yes	154 (48.3)	165 (48.3)	319 (45.9)	2.05	0.152
No	202 (53.7)	174 (53.7)	376 (54.1)		
Total	356 (100)	339 (100)	695 (100)		
Affects clothing					
Yes	56 (56.0)	44 (50.4)	100 (14.4)	1.07	0.302
No	300 (50.4)	295 (49.6)	595 (85.6)		
Total	356 (100)	339 (100)	695 (100)		

*The Chi-square is statistically significant at 0.01 levels, **Females were excluded from all questions that refer to driving. HCPs: Health-care providers, NHCPs: Nonhealth-care providers

reported wearing seat belt always, 40.5% reported wearing it sometimes, and 21.2% do not wear it at all [Table 1].

According to univariate analysis [Table 2], there was a significant association between seat belt usage and having a personal history of car accidents in HCPs ($\chi^2 = 9.88$, $P = 0.002$, OR = 4.22, 95% CI = 1.62–10.96). However, no significant association was found among non-HCPs. Furthermore, the association between seat belt usage and history of having a car accident in an acquaintance injury was statistically insignificant in both HCPs ($\chi^2 = 0.68$, $P = 0.410$) and non-HCPs ($\chi^2 = 1.83$, $P = 0.176$).

When surveyed about the factors preventing both groups from wearing seat belt while driving, HCPs reported that the main reason for not wearing seat belt is that it affects their clothing (56.0%), while non-HCPs reported movement restriction as the main reason (63.5%) [Table 1].

Practice of DDBs was very frequent in both HCPs and non-HCPs. The most practiced DDBs in both groups were answering the cell phone while driving (HCPs = 98.6% vs. non-HCPs = 98.3%, $\chi^2 = 0.06$, $P = 0.810$), and texting massages while driving (HCPs = 80.9% vs. non-HCPs = 61.9%, $\chi^2 = 14.57$, $P = 0.001$), the latter of which was found to be statistically significant [Table 3]. When asked about the method of answering the cell phone while driving, both HCPs (54.5%) and non-HCPs (61.9%) hold the phone in their hands when answering cell phone calls while driving. Finally, the association between cell phone usage while driving and history of having a car accident in both HCPs ($\chi^2 = 2.66$, $P = 0.103$, OR = 0.26, 95% CI = 0.05–1.46) and non-HCPs ($\chi^2 = 0.18$, $P = 0.670$, OR = 0.74, 95% CI = 0.19–2.90) was statistically insignificant [Table 2].

Discussion

MVAs are a major cause of morbidity and mortality in Saudi Arabia; almost one-third of Ministry of Health hospital beds are occupied by MVAs at any time.[9] One of the most important causes of this serious health endemic is noncompliance to seat belt use.[9] It was found that wearing seat belt is the sole passive preventive measure to reduce the risk of injury or death from MVAs.[10] This hazardous practice is abundant among the population of Saudi Arabia despite the implementation of strict laws on seat belt usage. We chose to focus on the behavior toward seat belt usage among the population of HCPs, and we found that they are more compliant to seat belt usage compared to non-HCPs. We believe that this higher rate of compliance among HCPs can be explained by the fact that they are more exposed to trauma victims and deaths due to MVAs than the rest of the non-HCPs population. The findings of this study can be compared to the findings of a similar study that discussed the prevalence of seat belt usage, conducted on HCPs in Turkey by Dede[10] which also reported high rates of compliance to seat belt usage in HCPs. This study also reported that there was no statistically significant difference between age groups in terms of compliance to seat belt usage. In our study, we found that compliance to seat belt usage was higher in the age group between 18 and 25 years. This finding is contrary to other studies discussing MVA prevalence in the Saudi population, where MVAs are more prevalent in younger individuals.[1,2,5] Other important hazardous practices that have not been studied before in Saudi Arabia are DDBs, such as talking on the cell phone while driving. Receiving phone calls while driving has been proven to have a negative effect on the quality of driving.[11] Some safety driving measures that could be affected are speed control and lane keeping.[11] Using cell phone while driving has also been proven to increase the risk of being involved in MVA by 4–6 times in the population of Oman which has a similar driving environment as Saudi Arabia.[12] We found that these practices are remarkably prevalent among both HCPs and non-HCPs, with no statistically significant difference ($P > 0.005$). In Qatar where the driving environment is very similar to Saudi Arabia, a study revealed that the incidence of MVAs was significantly higher among cell phone users.[8] Upon comparing our findings with the finding of an international survey on DDBs practice in the USA by Schroeder *et al*., we found that 98.6% of HCPs and 98.3% of non-HCPs answer their cell phones while driving and only 14% of total drivers in the USA answer their cell phones while driving.[7] Schroeder *et al*. also demonstrated that only 14.3% of the total USA drivers send text messages and E-mails while driving, while our study demonstrated that 80.9% of HCPs and 61.9% of non-HCPs texting message while driving.[7] We believe that this remarkable difference is due to the implementation

Table 2: Univariate analysis on the association between seat belt usage/cell phone usage and car accidents (*n*=338)**

Group	Seat belt usage as a driver	History of car accident			χ^2	*P*
		Yes, *n* (%)	No, *n* (%)	Total, *n* (%)		
HCPs	Yes	64 (32.2)	135 (67.8)	199 (100)	9.88	0.002*
	No	14 (66.7)	7 (33.3)	21 (100)		
	Total	78 (35.5)	142 (64.5)	220 (100)		
NHCPs	Yes	21 (22.6)	72 (77.4)	93 (100)	2.67	0.102
	No	2 (8)	23 (92)	25 (100)		
	Total	23 (19.5)	95 (80.5)	118 (100)		
Group	**Seat belt usage as a driver**	**Acquaintance injury**			χ^2	*P*
		Yes, *n* (%)	No, *n* (%)	Total, *n* (%)		
HCPs	Yes	124 (62.3)	75 (37.7)	199 (100)	0.68	0.410
	No	15 (71.4)	6 (28.6)	21 (100)		
	Total	139 (63.2)	81 (36.8)	220 (100)		
NHCPs	Yes	62 (66.7)	31 (33.3)	93 (100)	1.83	0.176
	No	13 (52)	12 (48)	25 (100)		
	Total	75 (63.6)	42 (36.4)	118 (100)		

*The Chi-square is statistically significant at 0.01 levels, **Total number of participants after excluding females and nondrivers. HCPs: Health-care providers, NCHPs: Nonhealth-care providers

Table 3: Description of distracted driving behaviors among health-care providers and nonhealth-care providers (*n*=338)**

Variable	Group			χ^2	*P*
	HCPs, *n* (%)	NHCPs, *n* (%)	Total, *n* (%)		
Cell phone usage while driving					
Yes	218 (99.1)	106 (89.8)	324 (95.9)	14.13	0.001*
No	2 (0.9)	12 (10.2)	14 (4.1)		
Total	220 (100)	118 (100)	338 (100)		
Answers the cell phone while driving					
Yes	217 (98.6)	116 (98.3)	333 (98.5)	0.06	0.810
No	3 (1.4)	2 (1.7)	5 (1.5)		
Total	220 (100)	118 (100)	338 (100)		
Making cell phone calls while driving					
Yes	212 (96.4)	113 (95.8)	325 (96.2)	0.07	0.784
No	8 (3.6)	5 (4.2)	13 (3.8)		
Total	220 (100)	118 (100)	338 (100)		
Text messaging while driving					
Yes	178 (80.9)	73 (61.9)	251 (74.3)	14.57	0.001*
No	42 (19.1)	45 (38.1)	87 (25.7)		
Total	220 (100)	118 (100)	338 (100)		
Accident due to texting message					
Yes	52 (29.2)	20 (27.4)	72 (28.7)	0.08	0.773
No	126 (70.8)	53 (72.6)	179 (71.3)		
Total	178 (100)	73 (100)	251 (100)		
Eat or drink while driving					
Yes	200 (90.9)	94 (79.7)	294 (87)	8.58	0.003*
No	20 (9.1)	24 (20.3)	44 (13)		
Total	220 (100)	118 (100)	338 (100)		

*The Chi-square is statistically significant at 0.01 levels, **Total number of participants after excluding females and nondrivers. HCPs: Health-care providers, NHCPs: Nonhealth-care providers

of strict laws against cell phone use and text messaging while driving in the USA, the loosely implemented laws in Saudi Arabia. The practice of DDBs is remarkably prevalent in the population of Saudi Arabia, especially cell phone use, regardless of the implementation of a law that bans cell phone use while driving in recent years. This raises questions about law enforcement measures local to Saudi Arabia. We believe that this is both a legislative and a cultural problem. It needs to be addressed by enforcing the implementation of cell phone laws and by changing the people's mentality toward DDBs and

shedding more light on their serious and, sometimes, deadly consequences.

Conclusion

The HCPs are more compliance to seat belt compared to non-HCPs, while the practice of DDB among both groups is similar. We believe the need of more studies to dissect the reasons behind the higher rates of DDBs in Saudi Arabia. Furthermore, nationwide awareness campaigns are highly recommended to increase public awareness of the importance of using seat belt and avoiding DDBs in Saudi Arabia.

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Nil.

Conflicts of interest

There are no conflicts of interest.

Authors contributions

AHJ conceived and designed the study. LIA and TSA conducted research, provided research materials, and collected and organized data. WP and MHA analyzed and interpreted data. MAM and NAA wrote initial and final draft of the article and provided logistic support. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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