# Drivers Perspective on Wearing Seat Belt and Use of Mobile Phone While Driving in Metropolitan City


**Ballem Praveen, Adepu Ramesh, and Molugaram Kumar**

**Abstract** Motorbikes and cars share a highest proportion (33.9 and 24.5%) of total crashes. Most of these crashes result in crash tragedy which increases the severity and is a result of not wearing seat belt or use of mobile. The study aims in analyzing the perspective of drivers toward wearing seat belt and use of mobile phone. Online and field survey was conducted along with observational survey. A logistic regression analysis is carried to find the risky factors influencing not to wear seat belt and use of mobile. It is observed that nearly 50% of drivers are not wearing seat belt, and 94.1% of passengers in rear end were also not wearing seat belts. Wearing seat belt by yellow plate drivers is 10% less that of white plate drivers. The use of mobile phone was noticed during morning hours of the day in the age group of 26–35 years. The highest risk of not wearing seat belt and use of mobile phone was observed on minor roads among the age group of 36–50 years and on weekends. The factors influencing are type of car, road type, time of day, and day of the week which are found to be significant for wearing seat belt and use of mobile phone. The results from this study will be useful for reducing the crash severity rates by implementing appropriate awareness and enforcement programs in and around the metropolitan cities.

**Keywords** Driver's characteristics · Perspective · Seat belt · Mobile phone · Risk factors

B. Praveen (✉) · A. Ramesh
Department of Civil Engineering, VNR Vignana Jyothi Institute of Engineering and Technology, Hyderabad, Telangana, India
e-mail: praveenballem216@gmail.com

A. Ramesh
e-mail: aramesh28@gmail.com

M. Kumar
Department of Civil Engineering, University College of Engineering, Osmania University, Hyderabad, Telangana, India
e-mail: kumartrans@gmail.com



R. M. Singh et al. (eds.), *Advances in Civil Engineering*, Lecture Notes in Civil Engineering 83, https://doi.org/10.1007/978-981-15-5644-9_31

# 1 Introductions

India has 2nd highest crash rate among the 22 developed and developing countries [8]. Motorbikes and cars have the highest proportion in total road crashes in India, i.e., 33.9% and 24.5%, respectively. Mostly the increase in crash severity is due to the use of mobile phone and not wearing seat belts while driving [7]. The statistics as summarized by Ministry of Road Transport and Highway (MORTH [7]) show that 64% of drivers and 72% of passengers were met with fatality due to not wearing seat belt in the year 2017 and around 2.1% of total crashes are due to use of a mobile phone [8]. In this context, the crash rate and crash severity rate shall be addressed to reduce the crashes, while the attitude and knowledge of drivers vary based on sociodemographic variables of driver and topographic conditions of road network [11]. This can be achieved either by providing strict enforcement or awareness programs. Police enforcement toward not wearing seat belt and using mobile phone while driving was observed to be difficult in particular with metropolitan cities, awareness programs will be supplemented in reducing the crash severity.

To meet the above requirements, the following objective was framed: (i) to observe the driver's and passenger's characteristics and analyze the driver's attitude and knowledge toward wearing seat belt and using mobile phone while driving, and (ii) to identify the risk factors associated with the driver's decisions for not wearing seat belt and use of mobile phone while driving.

## *1.1 Literature Review*

Many studies have explained the perspective of road users in their respective countries toward the road safety, very few studies were carried in India for explaining road user's perspective toward wearing seat belt and using mobile phone. Drivers prefer to wear a seat belt while driving on highways than minor roads and for long distances than short distances [4]. The preference of wearing a seat belt and mobile use will also vary with the age of driver and passenger [4, 6]. Jermakian et al. [5] found that the fatality rate is higher among four-wheeler back seaters since most of the back seaters do not wear seat belt thinking that they were safer than front seaters. The effective use of seat belt can decrease the severity of the injury, prevents chest injury by restraining the driver/passenger chest hitting any object in front [1, 13]. Authors recommended a strategic awareness program and strict enforcement to increase the rate of seat belt wearing and to reduce the use of mobile phone while driving [6, 9, 11]. The drivers who wear seat belt sometimes were expecting a remainder system to buckle their seat belt [5], because most of the drivers forget to put on seat belt or habituated for not to wear seat belt seeks for someone to alert them to wear seat belt [2]. Most of the authors considered sociodemographic variables such as gender and age for analyzing the attitude and behavior of driver like reasons for not wearing seat belt, comfort, vehicle type, location, road type, time of day, etc. [3, 5, 11, 12] and used roadside

interview [6], web-based and telephone survey [5, 10] and field observational survey for collecting drivers characteristics and perspective data [1, 4, 6].

## 2 Methodology

The methodology adopted in this study includes a roadside observational survey, driver's perspective survey, and statistical analysis which are detailed in this section and diagrammatically briefed in Fig. 1.

### *2.1 Roadside Observational Survey*

Roadside observation was performed at selected study locations (three arterial and three sub-arterial roads) of Hyderabad city. Each road section was observed for three times in a day, i.e., morning (8:00 am to 10:00 am), afternoon (12:00 pm to 2:00 pm), and evening (4:30 pm to 6:30 pm) on weekdays and also at the same time on weekends, i.e., on Saturday and Sunday. The four-wheelers and motorbikes are randomly observed which were passing through the selected point of the road. The variables recorded from each observed four-wheeler included seat belt use (by driver and passengers), gender, predicted age group (<25, 26–35, 36–50 and >50 years), car type (white plate and yellow plate), road type, time of day and day of the week, and mobile phone use and from motorbikes, variables recorded include the use of mobile phone, gender, age group, road type, time of day, and day of the week.

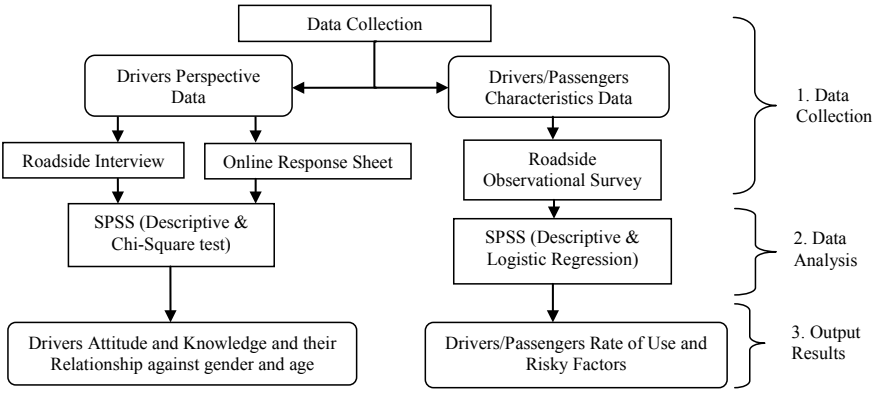


**Fig. 1** Diagrammatic representation of methodology adopted for this study

### 2.2 Attitude and Knowledge Survey

A questionnaire was developed with the predominant questions adopted from literature [4, 5]. Two different questionnaire sheets were developed one for seat belt wearing and another for use of mobile phone while driving. Survey was carried through two approaches; one online response sheet and another roadside interview. Roadside interview was carried at locations, for the driver's parked vehicle at supermarkets, service centers, asked opportunistically to answer the questionnaire. Another side an online response sheet link [(i) seat belt: https://goo.gl/forms/xH6Ke7ImCOZ23y0R2, (ii) mobile phone: https://goo.gl/forms/COM1ZTgP0PftMSd72] was circulated through social networks and requested to fill the response sheet. The questionnaire consists of attitude and knowledge related questions along with sociodemographic questions (gender and age group) as shown in Tables 4 and 7.

### 2.3 Data Analysis

A descriptive analysis and chi-square test were performed using SPSS statistical module to identify the relationship between sociodemographic (gender and age) variables and attitude, knowledge of driver's toward wearing seat belt, and using a mobile phone while driving. Logistic regression was also performed to identify the risk factors associated with the decisions not to wear a seat belt and to use a mobile phone while on driving.

## 3 Data Analysis Results

This section gives the details of the results for seat belt and mobile phone. The results of seat belt analysis are discussed and later the use of mobile phone in subsequent sections.

### 3.1 Wearing Seat Belt

**Roadside observations**. Tables 1 and 2 provide the results of roadside observations. Overall 2230 drivers and 1762 passengers were observed at all study locations. The wearing the seat belt was observed to be more in male drivers (49.6%) than female drivers (35.5%). Around 50% of drivers were not wearing a seat belt in all aspects. It was observed that white plate drivers (type of car) were nearly 10% more than yellow plate drivers for not wearing a seat belt. The rate of wearing a seat belt on

**Table 1** Characteristics of seat belt wearing among four-wheeler drivers in Hyderabad

| | Seat belt wearing | | Total |
|---|---|---|---|
| | Not wearing (%) | Wearing (%) | |
| Driver characteristics | 48.3 | 51.7 | 2230 |
| *Gender* | | | |
| Male | 49.6 | 50.4 | 2106 (94.4%) |
| Female | 35.5 | 64.5 | 124 (5.6%) |
| *Age group* | | | |
| <26 years | 42.6 | 57.4 | 94 (4.2%) |
| 26–35 | 51.5 | 48.5 | 812 (36.4%) |
| 36–50 | 48.9 | 51.1 | 892 (40%) |
| >50 years | 50.9 | 49.1 | 432 (19.4%) |
| *Type of car* | | | |
| White plate | 47.3 | 52.7 | 1690 (75.8%) |
| Yellow plate | 58.1 | 41.9 | 540 (24.2%) |
| *Road type* | | | |
| Major road | 48.0 | 52.0 | 1538 (69%) |
| Minor road | 60.7 | 39.3 | 692 (31%) |
| *Time of day* | | | |
| Morning | 45.0 | 55.0 | 706 (31.7%) |
| Afternoon | 52.8 | 47.2 | 906 (40.6%) |
| Evening | 51.5 | 48.5 | 618 (27.7%) |
| *Day of week* | | | |
| Weekday | 44.6 | 55.4 | 1507 (67.6%) |
| Weekend | 50.3 | 49.7 | 723 (32.4%) |

minor roads (39.3%), at afternoons (47.2%), and weekends (49.7%) observed to be low.

A few percentage (5.9%) of passengers were observed wearing a seat belt, most of them were front seaters. The rate of wearing seat belt among passengers was observed to be low in females (5.6%), on minor roads (5.4%), at evenings (4.2%), and on weekends (2.3%), and passengers on white plate cars were 3.5% more wearing a seat belt than on yellow plate cars.

Logistic regression analysis (shown in Table 3) showed that the variables, type of car (white plate), road type, and time of day (morning) were significantly influencing the driver's and passenger's decisions toward wearing a seat belt. The highest risk of not wearing a seat belt was observed among male gender, age group 36–50 years, white plate passengers, on weekdays and in the afternoons for both drivers and passengers.

**Table 2** Characteristics of seat belt wearing among four-wheeler passengers in Hyderabad

| | Seat belt wearing | | Total |
|---|---|---|---|
| | Not wearing (%) | Wearing (%) | |
| Passengers characteristics | 94.1 | 5.9 | 1762 |
| *Gender* | | | |
| Male | 93.8 | 6.2 | 1008 (57.2%) |
| Female | 94.4 | 5.6 | 754 (42.8%) |
| *Age group* | | | |
| <26 years | 96.7 | 3.3 | 180 (10.2%) |
| 26–35 | 94.7 | 5.3 | 416 (23.6%) |
| 36–50 | 93.2 | 6.8 | 500 (28.4%) |
| >50 years | 93.7 | 6.3 | 666 (37.8%) |
| *Type of car* | | | |
| White plate | 93.2 | 6.8 | 1314 (74.6%) |
| Yellow plate | 96.9 | 3.1 | 448 (25.4%) |
| *Road type* | | | |
| Major road | 92.0 | 8.0 | 1436 (81.6%) |
| Minor road | 94.6 | 5.4 | 324 (18.4%) |
| *Time of day* | | | |
| Morning | 93.3 | 6.7 | 520 (29.5%) |
| Afternoon | 93.5 | 6.5 | 642 (36.4%) |
| Evening | 95.8 | 4.2 | 598 (33.9%) |
| *Day of week* | | | |
| Weekday | 93.7 | 6.3 | 1588 (77.1%) |
| Weekend | 97.7 | 2.3 | 405 (22.9%) |

**Attitude and Knowledge Survey**. Overall, 956 drivers were interviewed toward wearing a seat belt (shown in Table 4), and male (85.6%) respondents were more than females (14.4%). The female drivers (42%) were more uncomfortable for seat belt wearing than male drivers (37.7%). Around 50% of male and 40% of female drivers were reported that they do not prefer to wear a seat belt for shorter trips, and this factor is significantly affected by the age category. Almost 95% of the respondents agreed that wearing a seat belt is necessary at all times, and it is significantly affected by gender and age category also.

Nearly 75% of drivers said that wearing a seat belt is necessary even for rear seaters and about 85% said that they will ask if someone in their car forgets to put a seat belt on. Almost 95% of respondents supported for seat belt mandatory systems in the car and this support is significantly affected by age category. When we asked to suggest some initiative to increase the rate of seat belt wearing, most of them suggested to increase awareness (36%) and to provide strict enforcement (25%).

**Table 3** Logistic regression examining parameters associated with not wearing seat belt

| | Sig. | Odds ratio | 95% confidence interval | |
|---|---|---|---|---|
| | | | Lower bound | Upper bound |
| **Drivers characteristics** | | | | |
| *Gender* | | | | |
| Male | 0.171 | 1.453 | 0.851 | 2.483 |
| *Age group* | | | | |
| <26 years | 0.076 | 0.659 | 0.415 | 1.045 |
| 26–35 years | 0.189 | 0.848 | 0.663 | 1.084 |
| 36–50 years | 0.114 | 0.827 | 0.653 | 1.046 |
| *Type of car* | | | | |
| White plate | 0.000 | 0.663 | 0.539 | 0.816 |
| *Road type* | | | | |
| Major road | 0.000 | 0.503 | 0.392 | 0.647 |
| *Time of day* | | | | |
| Morning | 0.003 | 0.711 | 0.566 | 0.894 |
| Afternoon | 0.718 | 1.039 | 0.843 | 1.281 |
| *Day of week* | | | | |
| Weekday | 0.227 | 1.266 | 0.864 | 1.855 |
| **Passengers characteristics** | | | | |
| *Gender* | | | | |
| Male | 0.407 | 1.152 | 0.824 | 1.611 |
| *Age group* | | | | |
| <26 years | 0.195 | 0.621 | 0.302 | 1.276 |
| 26–35 years | 0.908 | 0.974 | 0.625 | 1.518 |
| 36–50 years | 0.490 | 1.147 | 0.776 | 1.697 |
| *Type of car* | | | | |
| White plate | 0.001 | 2.299 | 1.428 | 3.700 |
| *Type of road* | | | | |
| Major road | 0.000 | 0.477 | 0.315 | 0.723 |
| *Time of day* | | | | |
| Morning | 0.004 | 0.499 | 0.311 | 0.801 |
| Afternoon | 0.481 | 0.875 | 0.602 | 1.270 |
| *Day of week* | | | | |
| Weekday | 0.011 | 3.035 | 1.295 | 7.113 |

**Table 4** Attitude and knowledge of driver toward wearing seat belt

| | Gender | | Sig. | Age group (years) | | | | |
|---|---|---|---|---|---|---|---|---|
| | Male (%) | Female (%) | | <26 (%) | 26–35 (%) | 36–50 (%) | >50 (%) | Sig. |
| *It is uncomfortable* | | | | | | | | |
| Yes | 37.7 | 42.0 | 0.328 | 38.0 | 40.0 | 27.3 | 50.0 | 0.560 |
| No | 62.3 | 58.0 | | 62.0 | 60.0 | 72.7 | 50.0 | |
| *I will forget to put it on* | | | | | | | | |
| Yes | 29.8 | 27.5 | 0.585 | 31.1 | 28.2 | 0.0 | 0.0 | 0.585 |
| No | 70.2 | 72.5 | | 68.9 | 71.8 | 100 | 100.0 | |
| *I won't prefer while driving for a short trip* | | | | | | | | |
| Yes | 48.4 | 40.6 | 0.088 | 47.9 | 49.4 | 9.1 | 50.0 | 0.004 |
| No | 51.6 | 59.4 | | 52.1 | 50.6 | 90.9 | 50.0 | |
| *I won't prefer when I was in a rush* | | | | | | | | |
| Yes | 24.2 | 29.0 | 0.230 | 26.1 | 23.5 | 9.1 | 0.0 | 0.054 |
| No | 75.8 | 71.0 | | 73.9 | 76.5 | 90.9 | 100 | |
| *I won't prefer if I was well experienced in driving* | | | | | | | | |
| Yes | 11.2 | 11.6 | 0.905 | 11.7 | 11.8 | 0.0 | 0.0 | 0.213 |
| No | 88.8 | 88.4 | | 88.3 | 88.2 | 100 | 100 | |
| *Other reasons for not wearing seat belt* | | | | | | | | |
| Yes | 17.1 | 14.5 | 0.445 | 16.5 | 20.0 | 9.1 | 0.0 | 0.198 |
| No | 82.9 | 85.5 | | 83.5 | 80.0 | 90.9 | 100 | |
| *It is necessary to wear a seat belt at all times?* | | | | | | | | |
| Yes | 91.4 | 97.1 | 0.021 | 91.0 | 96.5 | 100 | 100.0 | 0.031 |
| No | 8.6 | 2.9 | | 9.0 | 3.5 | 0.0 | 0.0 | |
| *It is necessary for rear seaters to wear seat belt?* | | | | | | | | |
| Yes | 76.3 | 75.4 | 0.814 | 76.9 | 77.6 | 54.5 | 50.0 | 0.014 |
| No | 23.7 | 24.6 | | 23.1 | 22.4 | 45.5 | 50.0 | |
| *Do you know anyone seriously injured because of not wearing seat belt?* | | | | | | | | |
| Yes | 56.5 | 65.2 | 0.055 | 58.0 | 58.8 | 63.6 | 16.7 | 0.033 |
| No | 43.5 | 34.8 | | 42.0 | 41.2 | 36.4 | 83.3 | |
| *If anyone in your car forgets to wear seat belt, will you ask him/her to wear it?* | | | | | | | | |
| Yes | 82.9 | 89.9 | 0.039 | 84.3 | 82.4 | 81.8 | 83.3 | 0.926 |
| No | 17.1 | 10.1 | | 15.7 | 17.6 | 18.2 | 16.7 | |
| *What can be done to increase seat belt wearing?* | | | | | | | | |
| Strict enforcement | 21.0 | 26.1 | 0.296 | 21.3 | 23.5 | 27.3 | 16.7 | 0.039 |
| High penalty | 21.8 | 23.2 | | 21.5 | 22.4 | 45.5 | 0.0 | |

(continued)

**Table 4** (continued)

| | Gender | | Sig. | Age group (years) | | | | |
|---|---|---|---|---|---|---|---|---|
| | Male (%) | Female (%) | | <26 (%) | 26–35 (%) | 36–50 (%) | >50 (%) | Sig. |
| Increase awareness | 36.7 | 36.2 | | 36.4 | 36.5 | 27.3 | 66.7 | |
| Friends and Family should take care | 20.5 | 14.5 | | 20.7 | 17.6 | 0.0 | 16.7 | |
| *How often you wear a seat belt?* | | | | | | | | |
| Every time | 46.7 | 43.5 | 0.470 | 44.7 | 51.8 | 54.5 | 50.0 | 0.153 |
| Most of the times | 28.6 | 26.1 | | 27.7 | 30.6 | 27.3 | 33.3 | |
| Sometimes | 16.4 | 21.7 | | 18.4 | 12.9 | 18.2 | 0.0 | |
| Rarely | 8.3 | 8.7 | | 9.3 | 4.7 | 0.0 | 16.7 | |
| *Will you support seat belt mandatory system?* | | | | | | | | |
| Yes | 95.6 | 97.1 | 0.415 | 95.7 | 98.8 | 72.7 | 100 | 0.000 |
| No | 4.4 | 2.9 | | 4.3 | 1.2 | 27.3 | 0.0 | |

## *3.2 Using Mobile Phone While Driving*

**Roadside Observations**. Overall, 3813 drivers of both four-wheelers and two-wheelers were observed to identify the characteristics on using mobile phone while driving (shown in Table 5), in which 6.7% of drivers observed while using mobile phone, most of them were male (9.7%) and of age group 26–35 years (18.2%), 36–50 years (15.3%). The use of mobile phone was observed to be more on four-wheeler drivers (9.7%) than the two-wheeler drivers (4.3%). The rate of mobile phone usage while driving is more in the afternoons (9.3%) and on weekdays (7.0%).

Logistic regression analysis (shown in Table 6) showed that the variables age group (26–35 and 36–50 years), type of vehicle (four-wheeler), and weekdays were significantly influencing the decision of using a mobile phone while driving. The highest risk of using a mobile phone was observed among the age group 26–50 years, in the afternoons and on weekdays.

**Attitude and Knowledge survey**. Overall, 560 drivers were interviewed, in which nearly 70% of respondents reported that they use two-wheeler, and 20% use both two-wheeler as well as four-wheeler vehicles (shown in Table 7). 80% of male and 52.6% of female drivers said that they use a mobile phone for the purpose of calls while driving, and the purpose of using a mobile phone is significantly affected by the gender as well as age category. More than half of the drivers said that they use mobile phone rarely while driving and agreed that it will divert their concentration from driving. Almost 89% of drivers said that they will slow down their vehicle while using a mobile phone and this attitude is significantly affected by age category.

**Table 5** Characteristics of using mobile phone among drivers in Hyderabad

| | Usage of mobile phone | | Total |
|---|---|---|---|
| | Using (%) | Not using (%) | |
| Driver characteristics | 6.7 | 93.3 | 3813 |
| *Gender* | | | |
| Male | 9.7 | 90.3 | 3027 (94.4%) |
| Female | 7.4 | 92.6 | 786 (20.6%) |
| *Age group* | | | |
| <26 years | 3.7 | 96.3 | 458 (12%) |
| 26–35 | 18.2 | 81.8 | 1239 (32.5%) |
| 36–50 | 15.3 | 84.7 | 1377 (36.1%) |
| >50 years | 7.6 | 92.4 | 739 (19.4%) |
| *Type of vehicle* | | | |
| Four-wheeler | 9.7 | 90.3 | 1690 (44.3%) |
| Two-wheeler | 4.3 | 95.7 | 2123 (55.7%) |
| *Road type* | | | |
| Major road | 6.3 | 93.7 | 2440 (64%) |
| Minor road | 6.5 | 93.5 | 1373 (36%) |
| *Time of day* | | | |
| Morning | 5.7 | 94.3 | 1502 (39.4%) |
| Afternoon | 9.3 | 90.7 | 1323 (34.7%) |
| Evening | 5.9 | 94.1 | 988 (25.9%) |
| *Day of week* | | | |
| Weekday | 7.0 | 93 | 2551 (66.9%) |
| Weekend | 3.2 | 96.8 | 1262 (33.1%) |

The higher age groups were less preferred to slow down their vehicle while using a mobile phone. 50% of drivers and nearly a quarter of age group 26–35 years agreed that they feel comfortable to use a mobile phone while driving on minor roads.

## 4 Summary and Conclusions

### *4.1 Summary*

The rate of fatal crashes has been increasing on Indian roads; specifically observed on two-wheeler and four-wheeler vehicles [8]. One of the safety measures is to reduce crash severity rate through using safety tools and being alert while driving. The use of a seat belt in four-wheelers and avoiding mobile phone while driving will reduce the

**Table 6** Logistic regression examining parameters associated with using mobile phone while driving

| Drivers characteristics | Sig. | Odds ratio | 95% confidence interval | |
|---|---|---|---|---|
| | | | Lower bound | Upper bound |
| *Gender* | | | | |
| Male | 0.471 | 0.726 | 0.303 | 1.736 |
| *Age group* | | | | |
| <26 years | 0.149 | 0.339 | 0.078 | 1.476 |
| 26–35 years | 0.004 | 2.056 | 1.257 | 3.365 |
| 36–50 years | 0.008 | 1.931 | 1.188 | 3.138 |
| *Type of vehicle* | | | | |
| Four-wheeler | 0.000 | 0.502 | 0.369 | 0.683 |
| *Road type* | | | | |
| Major Road | 0.529 | 0.878 | 0.586 | 1.316 |
| *Time of day* | | | | |
| Morning | 0.967 | 0.992 | 0.665 | 1.478 |
| Afternoon | 0.159 | 1.284 | 0.906 | 1.820 |
| *Day of week* | | | | |
| Weekday | 0.044 | 2.141 | 0.902 | 5.081 |

crash severity at higher extent [1, 13]. The aim of this article is to observe the driver's and passenger's characteristics, risk factors and to analyze the driver's perspective on wearing seat belt and using a mobile phone while driving.

**Wearing seat belt**. It was found that nearly 50% of drivers were not wearing a seat belt in all aspects which shows the risk of drivers traveling in Hyderabad city. The rate of seat belt wearing was found to be low on weekdays, in the afternoons, and on minor roads. The white plate drivers (52.7%) were found to be more in wearing seat belt than the yellow plate drivers (41.9%), this would be due to the more number of trips in a day made by the yellow plate drivers, may make them feel uncomfortable to wear seat belt at all the trips. The higher risk was observed among drivers and passengers on weekdays, in the afternoons, and among the age group 36–50 years.

Though 95% of the respondents said that wearing seat belt is necessary at all times, only 50% were found wearing seat belt and nearly 75% said that seat belt wearing is necessary even for rear seaters, but only 5.9% of passengers were found wearing seat belt, in which most of them were front seaters. The reason behind this attitude would be that most of the passengers, especially the rear seaters thinks that they were much safer at back seats [5]. Around 40% of drivers reported that seat belts are uncomfortable to wear and this complaint was more with female drivers than the male drivers. Most of the drivers suggested increasing awareness (36%), followed by strict enforcement (20%) to increase the rate of seat belt wearing, and 95% of respondents supported for seat belt mandatory systems in every four-wheeler

**Table 7** Attitude and knowledge of driver toward wearing seat belt

| | Gender | | | Age group (years) | | | | |
|---|---|---|---|---|---|---|---|---|
| | Male (%) | Female (%) | Sig. | <26 (%) | 26–35 (%) | 36–50 (%) | >50 (%) | Sig. |
| *Which type of vehicle do you use more?* | | | | | | | | |
| Two-wheeler | 69.5 | 71.1 | 0.015 | 71.7 | 77.8 | 55.6 | 0.0 | 0.000 |
| Four-wheeler | 4.8 | 10.5 | | 5.3 | 0.0 | 22.2 | 33.3 | |
| Both | 25.7 | 18.4 | | 23.0 | 22.2 | 22.2 | 66.7 | |
| *What purpose you mostly use a phone while driving?* | | | | | | | | |
| Texting | 1.0 | 7.9 | 0.000 | 2.7 | 0.0 | 11.1 | 0.0 | 0.000 |
| Call | 80.0 | 52.6 | | 71.7 | 83.3 | 66.7 | 66.7 | |
| Multimedia | 9.5 | 13.2 | | 9.7 | 11.1 | 22.2 | 0.0 | |
| Route navigation | 9.5 | 26.3 | | 15.9 | 5.6 | 0.0 | 33.3 | |
| *How often you use a mobile phone while driving?* | | | | | | | | |
| Every time | 1.0 | 0.0 | 0.002 | 0.9 | 0.0 | 0.0 | 0.0 | 0.000 |
| Most of the times | 5.7 | 0.0 | | 3.5 | 0.0 | 22.2 | 0.0 | |
| Sometimes | 35.2 | 28.9 | | 33.6 | 33.3 | 22.2 | 66.7 | |
| Rarely | 58.1 | 71.1 | | 61.9 | 66.7 | 55.6 | 33.3 | |
| *Do you think that using mobile while driving will divert your concentration?* | | | | | | | | |
| Yes | 69.5 | 78.9 | 0.027 | 73.5 | 72.2 | 55.6 | 66.7 | 0.140 |
| No | 30.5 | 21.1 | | 26.5 | 27.8 | 44.4 | 33.3 | |
| *How will you answer your call?* | | | | | | | | |
| Hand-held | 39.0 | 23.7 | 0.000 | 33.6 | 27.8 | 44.4 | 100.0 | 0.000 |
| Earphones | 49.5 | 50.0 | | 50.4 | 50.0 | 55.6 | 0.0 | |
| Not applicable | 11.4 | 26.3 | | 15.9 | 22.2 | 0.0 | 0.0 | |
| *Will you slow down while using a mobile phone on the drive?* | | | | | | | | |
| Yes | 85.7 | 89.5 | 0.242 | 90.3 | 100 | 33.3 | 33.3 | 0.000 |
| No | 14.3 | 10.5 | | 9.7 | 0.0 | 66.7 | 66.7 | |
| *On which type of street you'll be comforted to use a mobile while driving?* | | | | | | | | |
| Minor road | 50.5 | 50.0 | 0.012 | 46.0 | 77.8 | 55.6 | 33.3 | 0.000 |
| Major road | 3.8 | 5.3 | | 3.5 | 0.0 | 22.2 | 0.0 | |
| On any road | 23.8 | 13.2 | | 21.2 | 11.1 | 22.2 | 66.7 | |
| On no road | 21.9 | 31.6 | | 29.2 | 11.1 | 0.0 | 0.0 | |
| *Have you ever involved in a crash due to using mobile while driving?* | | | | | | | | |
| Yes | 10.5 | 13.2 | 0.369 | 8.0 | 11.1 | 44.4 | 33.3 | 0.000 |
| No | 89.5 | 86.8 | | 92.0 | 88.9 | 55.6 | 66.7 | |
| *Which is riskier?* | | | | | | | | |

(continued)

**Table 7** (continued)

| | Gender | | | Age group (years) | | | | |
|---|---|---|---|---|---|---|---|---|
| | Male (%) | Female (%) | Sig. | <26 (%) | 26–35 (%) | 36–50 (%) | >50 (%) | Sig. |
| Using mobile | 3.8 | 7.9 | 0.000 | 4.4 | 5.6 | 11.1 | 0.0 | 0.021 |
| Drunk and drive | 26.7 | 7.9 | | 18.6 | 27.8 | 44.4 | 33.3 | |
| Wearing no seat belt | 1.0 | 0.0 | | 0.9 | 0.0 | 0.0 | 0.0 | |
| All the above | 66.7 | 84.2 | | 74.3 | 66.7 | 44.4 | 66.7 | |
| None of the above | 1.9 | 0.0 | | 1.8 | 0.0 | 0.0 | 0.0 | |
| *You can use mobile phone while driving if you are well experienced in driving skills* | | | | | | | | |
| Yes | 40.0 | 23.7 | 0.000 | 37.2 | 38.9 | 22.2 | 0.0 | 0.016 |
| No | 60.0 | 76.3 | | 62.8 | 61.1 | 77.8 | 100.0 | |

vehicle which may also increase the rate of seat belt wearing together with awareness programs and enforcement.

**Using mobile phone**. The four-wheeler drivers were found to be more (9.7%) in using mobile phone while driving than the two-wheeler drivers since four-wheeler drivers feel more comfortable in using mobile and in controlling the vehicle with one hand, which could be difficult with the two-wheeler drivers. The usage of mobile phone was more on weekdays (7%) and in the age group 26–50 years (18%), which needs to be reduced since they are well productive citizens and economically supporting their families. Nearly 75% of respondents agreed that using a mobile phone will divert the concentration from driving, even though 22% of age group 36–50 years agreed that they will use mobile for most of the times, 30% of the drivers agreed that they will use mobile for sometimes on their ride. The attitude of slowing down the vehicle while driving is found to be decreasing with increase in age of drivers, and 40% of male drivers attitudes that they can use a mobile phone if they are well experienced in driving skills, even though they agreed that it will divert the concentration from driving and creates unsafe travel.

## *4.2 Conclusions*

The higher risk was observed on minor roads among the age groups 26–50 years in the afternoons for both the seat belt use and mobile phone use, therefore strict enforcement is necessary even on minor roads and at afternoons and evenings. It is well known that providing enforcement alone cannot increase the rate of seat belt wearing, moreover identifying the driver who was not wearing a seat belt or using a mobile phone while driving is difficult for the traffic police in metropolitan cities

like Hyderabad. Thus effective awareness programs and seat belt or mobile avoiding mandatory systems are implemented together with police enforcement which can increase the rate of seat belt and can curtail the use of a mobile phone while driving.

### *4.3 Limitations*

This article mainly focused on wearing seat belt and using mobile phone while driving in Hyderabad metropolitan city, India. Few predominant questions of driver's attitude and knowledge are considered and the sociodemographic variables such as job type, marital status, income, etc. other than gender and age are not considered for this study.

## References

1. Abu-Zidan FM, Abbas AK, Hefny AF, Eid HO, Grivna M (2012). Effects of seat belt usage on injury pattern and outcome of vehicle occupants after road traffic collisions: prospective study. World J Surg36(2):255–259
2. Demeritte J (2018) Vehicle seat belt attachment apparatus for providing an automatic alert notification
3. Fernandes R, Hatfield J, Job RS (2010) A systematic investigation of the differential predictors for speeding, drink-driving, driving while fatigued, and not wearing a seat belt, among young drivers. Transp Res Part F: Traffic Psychol Behav 13(3):179–196
4. Huang Y-H, Zhang W, Murphy L, Shi G, Lin Y (2011) Attitudes and behavior of Chinese drivers regarding seatbelt use. Accid Anal Prev 43(3):889–897
5. Jermakian JS, Weast RA (2018) Passenger use of and attitudes toward rear seat belts. J Saf Res 64:113–119
6. Ma S, Tran N, Klyavin VE, Zambon F, Hatcher KW, Hyder AA (2012) Seat belt and child seat use in Lipetskaya Oblast, Russia: frequencies, attitudes, and perceptions. Traffic Injury Prevent 13(sup1):76–81
7. Mohammadi G (2011) Prevalence of seat belt and mobile phone use and road accident injuries amongst college students in Kerman, Iran. Chin J Traumatol (English Edition) 14(3):165–169
8. MORTH (2017) Road accidents in India-2017
9. Pickrell TM, Li H R (2016) Seat belt use in 2015—Overall results
10. Ranney ML, Mello MJ, Baird JB, Chai PR, Clark MA (2010) Correlates of motorcycle helmet use among recent graduates of a motorcycle training course. Accid Anal Prev 42(6):2057–2062
11. Strine TW, Beck LF, Bolen J, Okoro C, Dhingra S, Balluz L (2010) Geographic and sociodemographic variation in self-reported seat belt use in the United States. Accid Anal Prev 42(4):1066–1071
12. Tison, J., Williams, A. F., Chaudhary, N. K., & Preusser Research Group (2010) Daytime and night time seat belt use by fatally injured passenger vehicle occupants. United States, National Highway Traffic Safety Administration
13. Wang Z, Jiang J (2003) An overview of research advances in road traffic trauma in China