

## Original Research Article

# Sociodemographic profile of road traffic accident victims in Vijayapura, North Karnataka: a cross-sectional study

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### ABSTRACT

**Background:** Road traffic accidents (RTA) are defined by the World Health Organization (WHO) as injuries resulting from collisions on public roads, whether they are fatal or not. At least one moving vehicle must be involved in these occurrences. RTA is defined as any collision involving at least one moving vehicle that occurs on a roadway or throughfare that is open to public traffic and results in death or serious injury of one or more people. WHO estimates that the economic cost of traffic accidents is usually around 3% of a nation's GDP. Every year, traffic accidents claim the lives of almost 1.19 million individuals.

**Methods:** After obtaining Institutional ethical committee clearance, patients admitted with RTAs in BLDE hospital were interviewed using a semi structured, pre tested questionnaire to assess their epidemiological profile; informed consent was obtained from the study participants. The acquired data was entered into a Microsoft Excel spreadsheet, and statistical analyses with SPSS.

**Results:** Out of the 206 participants, the majority of the participants were in the 18 to 30 age group, which accounted for 73 people (35%). Majority of the victims were males (89.8%) and remaining (10.2%) were females. Majority of the study participants had their residence in rural areas accounting for (88.3%) and the rest (11.7%) residing in urban areas of Vijayapura.

**Conclusions:** Sociodemographic data helps us to take preventive measures in relation to RTAs.

**Keywords:** Road traffic accidents, Accidents, India accidents, Vijayapura accidents

### INTRODUCTION

Road traffic accidents (RTA) and soaring deaths are becoming worse than any communicable diseases in the world. The fast-paced lifestyle and the need to reach their destination in record time is creating a man-made disaster that is RTAs. Globalization, industrialization and the adaptation of newer technologies has definitely increased the pace of work in these times. The pressure to reach their workplace on time is creating many unforeseen errors that can lead to these accidents. When the whole world is moving towards globalization, immediate

attention to the prevention and mitigation of road traffic accidents cannot remain an exception. Road traffic accidents are defined by the World Health Organization (WHO) as injuries resulting from collisions on public roads, whether they are fatal or not. At least one moving vehicle must be involved in these occurrences. Although pedestrians may be involved. RTA is defined as any collision involving at least one moving vehicle that occurs on a roadway or throughfare that is open to public traffic and results in death or serious injury of one or more people.<sup>1,2</sup> Road traffic accidents can include crashes between cars, collisions between cars and pedestrians, collision between cars and animals, and collision between

cars and other architectural or topographic barriers. This phenomenon is a serious but sometimes disregarded public health concern that calls for coordinated efforts to achieve practical and long-lasting preventive actions.<sup>1-3</sup> An accident is an unplanned incident that occurs under unforeseen circumstances.<sup>1-3</sup>

At the international transport forum (ITF) summit in Leipzig, Germany on May 22, 2025, transport ministers from 69 nations agreed to trail a new road safety assessment system for business and accepted a historic road safety policy recommendation for governments. Road collisions are the world's greatest cause of death for children and young people aged 5 to 29, accounting for about 1.2 million deaths annually.<sup>4</sup>

The WHO estimates that the economic cost of traffic accidents is usually around 3% of a nation's GDP.<sup>5</sup> Every year, traffic accidents claim the lives of almost 1.19 million individuals. Despite having over 60% of the world's cars, low- and middle-income nations account for 92% of the traffic deaths worldwide. Vulnerable road users, such as pedestrians, cyclists, and motor cycle users account for more than half of all traffic fatalities. By 2030, the United Nations General Assembly wants to cut the number of fatalities and injuries from traffic accidents worldwide in half.<sup>6</sup>

A road traffic accident is a multifaceted issue resulting from various factors, including road infrastructure (pavement quality, road signage), user behaviour (speeding), traffic congestions, vehicle issues like tire blowouts, brake malfunctions and environmental influences like adverse weather conditions, driver's behaviours, including speeding, breaking traffic laws, being distracted, and disobeying traffic control devices, account for almost 90% of fatal collisions.<sup>7</sup>

In a majority of both industrialized and developing nations, developing nations, traffic-related injuries represent a serious public health concern. RTAs are rising daily, resulting in fatalities, injuries, and disability. The most prevalent risk factors for RTA include speeding, driving while intoxicated, failing to use safety devices like seatbelts, helmets, and child restraints, poorly built roads, an increase in poorly maintained vehicles, unplanned urbanization, industrialization, motorization, overcrowding and lax traffic laws.<sup>8</sup>

There were 412,432 road traffic accidents in India in 2021 with 153,972 fatalities and 384,448 injuries. This showed a fatality rate of 37.7 deaths per 100 accidents. With 69,240 fatalities, two-wheeler riders had the highest number of accidental deaths. RTAs are common in state and national highways. National highways and expressways accounted for 36 percentage of road deaths. The fatality rate of 0.42 deaths per kilometre was recorded, although making up only 2 percentage of India's road network. Every year there are 2 to 3 million hospitalization cases and many injuries go unreported.<sup>9</sup>

According to a report recently released by the Union Ministry of Transport and Highways, there was a rise in road accidents in Karnataka in 2022, especially in Bengaluru, the state capital. The number of road incidents in Karnataka increased from 34,647 in 2021 to 39,762 in 2022.

The state reported over 40,000 incidents in 2018 and 2019, however even in those years, these rates were lower. Karnataka accounted for 8.6% of all accidents in the nation in 2022, down from fourth to fifth place in terms of accident frequency despite the increase in incidents. Of these occurrences, 13,384 took place on the national highways of Karnataka.<sup>10</sup>

Despite this, 2022 has seen the highest number of fatal traffic accidents in the state, compared to 2018 or 2019. There were 11,702 fatalities in 2022 compared to approximately 11,000 in 2018 and 2019, when there were 1,000 fewer deaths annually. 4,164 of these occurrences happened on public roads. Furthermore, the findings indicate that approximately 8,000 fatalities occurred in rural areas in 2022.<sup>9</sup>

In the meantime, accidents in Bengaluru increased from 3,213 in 2021 to 3,822 in 2022. When it comes to road accident deaths in 2022, the city (772 deaths) is only second to Delhi (1,461 deaths).<sup>9</sup> Bengaluru saw a rise in accidents from 3,213 in 2021 to 3,822 in 2022 during this time. In terms of road accident fatalities in 2022, the city ranks second only to Delhi (1,461 deaths) with 772 deaths.<sup>10</sup>

The number of vehicles is increasing in Vijayapura and this leads to more accidents. Sufficient data is not available on road traffic accidents and the relation to increase in urbanization, and increasing vehicles. This warrants a study to address this problem.

One of the most important factors for both development and emerging nations to maintain economic growth is transportation. The United Nations Sustainable Development Goals (SDGs) recognized the significance of the transportation system and included indicator 9.1.2, "Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human wellbeing with a focus on affordable and equitable access for all" "Build resilient infrastructure, promote inclusive and sustainable industrialization, foster innovation are objectives of SDG 9. By incorporating the required metrics into its approach, the SDGs have acknowledged the significance of preventing road traffic accidents. According to current estimates, road traffic injuries rank as the ninth most common cause of mortality worldwide for all age categories. SDG 3, which aims to "ensure healthy lives and promote wellbeing for all ages," recognizes the deadly consequences of traffic accidents and includes a target "By 2030, to halve the number of global deaths and injuries from road traffic accidents."<sup>11</sup>

## METHODS

### Study area

The study area is BLDE (DU), Shri B. M. Patil Medical College and Research Centre, located in Vijayapura city, Karnataka, India.

### Study period

The period of study was from July 2024 to June 2025.

### Study design and participants

This study is part of a mixed method study. Data regarding the cross-sectional part of this study is published in this article. Questionnaire based survey of road traffic accident victims. Key informant interview technique. After obtaining Institutional ethical committee clearance, patients admitted with road traffic accidents in BLDE hospital was interviewed using a semi structured, pre tested questionnaire to assess their epidemiological profile, after explaining the nature of the study, informed consent was obtained from the study participants.

Permission from the authorities was obtained and In-depth interview was conducted for key informants like Police personnel, Health workers, road traffic officers, ambulance drivers, and emergency response team members, regarding the role of digital technology, and its benefit and challenges in terms of preventing the road traffic accidents. The time taken for the victim to reach a hospital was also ascertained

### Inclusion criteria

The inclusion criteria were road traffic accident victims admitted to BLDE (DU), Vijayapura.

### Exclusion criteria

The exclusion criteria included participants or caregivers who were not willing to participate in the study.

### Sampling

All RTA patients at BLDE Hospital admitted during the study period was included in the study till the sample size was reached. Convenience sampling method was employed in this study. A total of 206 road traffic accident victims were part of this study.

### Sample size

According to Neeraj Sharma and colleagues' study, At the time of admission, 90.3% of patients had been injured in conscious traffic incidents.<sup>12</sup> Assuming a 98% confidence limit, a 2% significance threshold, and a 0.05 margin of error for these investigations.

The formula used to calculate the sample size is as follows:

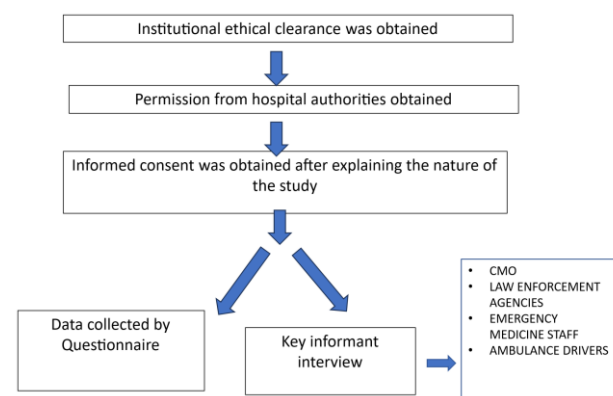
$$n = \frac{Z^2 \cdot p(1-p)}{d^2}$$

In this case, n is the population size, p is the population proportion,  $\alpha$  is the threshold of significance, and z is the z-score, which is equal to 2.326. After accounting for a 10% dropout rate, the anticipated sample size for the study is 190. Thus, the final sample size is 206.

### Ethical consideration

Institutional ethical clearance was obtained from the Institutional Review Board of BLDE (DU), Shri B. M. Patil Medical College, under reference number BLDE (DU)/IEC-SBMPMC/101/2023-24 dated 10/02/2024. Written informed consent was obtained from all participants prior to their participation in the study. Privacy and confidentiality of all participants were strictly maintained throughout the study.

### Data collection



**Figure 1: Data collection scheme.**

### Data analysis

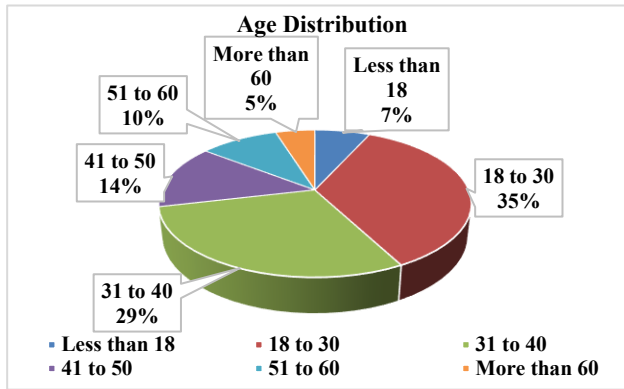
The acquired data was entered into a Microsoft Excel spreadsheet, and statistical analyses was carried out with the help of SPSS (Version 26). The findings are represented in graphs, counts and percentages, mean, and standard deviation. The Chi-square test was used to compare categorical variables between the two groups. A p value of less than 0.05 is considered statistically significant.

## RESULTS

In our study we interviewed 206 road traffic accident victims who were admitted in our tertiary care hospital during a one-year period. The purpose was to explore the epidemiological profile of road traffic accident victims. A qualitative study was also done to explore the role of

digital technology in the prevention of road traffic accidents.

These are victims of road traffic accidents in Vijayapura. This figure enumerates the age group of the victims, gender, residence, educational status, religion. also gives us the relevant information about the employment status, marital status, type of family they hail from, socioeconomic class and number of family members.



**Figure 2: Age distribution of the road traffic accident victims.**

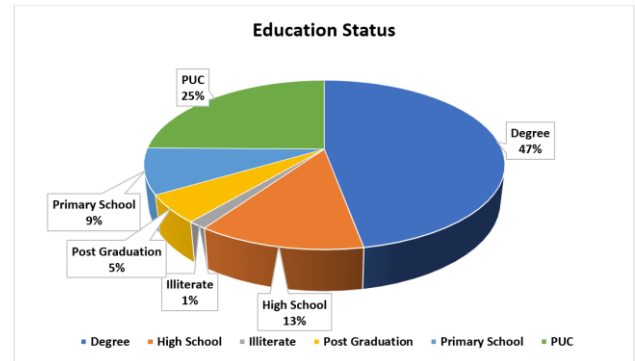
Out of the 206 participants, the majority of the participants were in the 18 to 30 age group, which accounted for 73 people (35%). The 31 to 40 age group participants comprised of (29.1%), while (14.1%) were from the 41 to 50 age group and (9.7%) were from the age group of 51 to 60 years. When we look at the extremes of age, (6.8%) were less than 18 years old, whereas (4.9%) were above 60 years. Here we find that people between 18 to 50 years contribute to the bulk of road traffic accident victims. Awareness programs should target the age group that is most vulnerable for road traffic accidents. We note that (6.8%) of the victims were less than 18 years old (Figure 2).

Gender wise breakup of the 206 participants was done as part of this study and revealed that, that there were 185 males and 21 females. Majority of the victims were males (89.8%) and remaining (10.2%) were females.

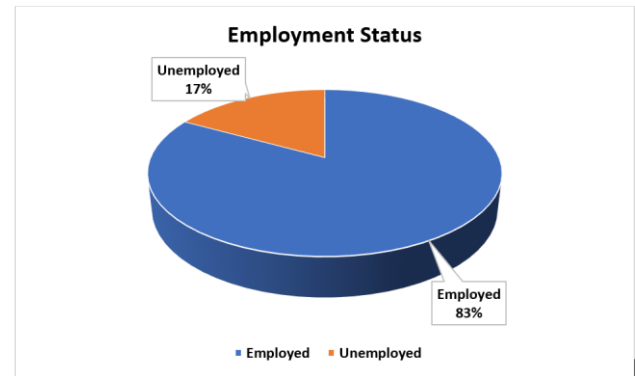
Majority of the study participants had their residence in rural areas accounting for (88.3%) and the rest (11.7%) residing in urban areas of Vijayapura. 182 people were from rural areas compared to 24 people from urban areas.

Educational status of the participants revealed that the majority of 97 participants which account for (47.1%) had completed their degree course. Almost half of the study participants have obtained a degree. A quarter of the participants 51 (24.8%) have done their PUC. Followed by participants who completed high school, 26 numbers (12.6%), Post graduates 11 (5.3%) and primary school education completed by 18 (8.7%). 3 participants reported that they were illiterate, which accounts to (1.5%) of the

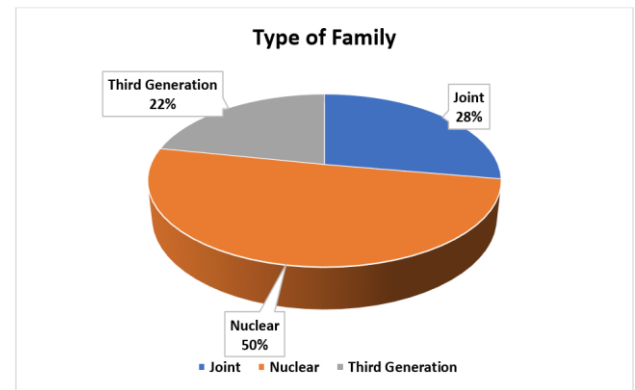
total participants (Figure 3). The majority of the study participants belonged to Hindu religion 176 (85.4), followed by Muslims 29 (14.1%) and 1 Christian (0.5%).



**Figure 3: Educational status of the study participants.**

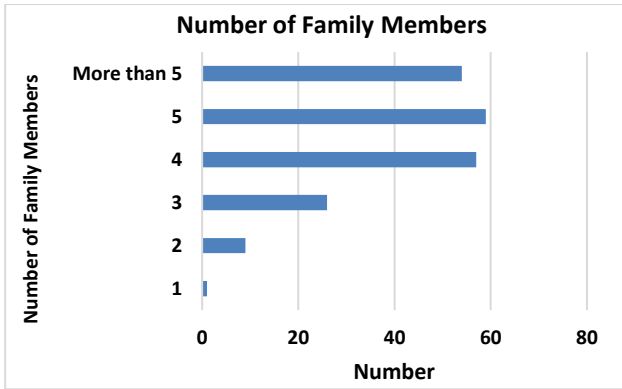


**Figure 4: Employment statistics of study participants.**

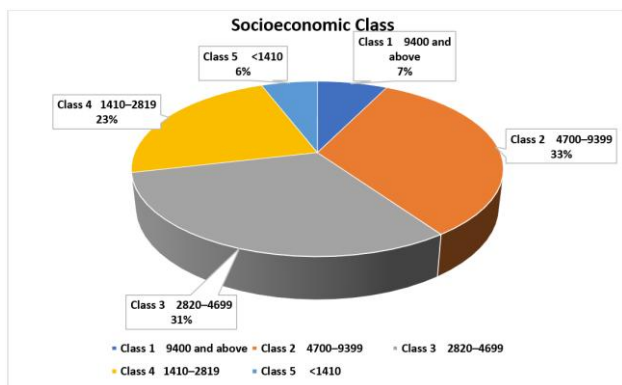


**Figure 5: Family type of study participants.**

More than one fifth of the participants were employed, which translates to 171 (83%) employed and 35 (17%) unemployed, out of a total of 206 study subjects (Figure 4). Marital status of the study participants shows that 138 (67%) were married, 67 (32.5%) were unmarried and 1 (0.5%) separated. Half of the study participants were from a nuclear family 104 (50.5%), more than one by third participants 57 (27.7%) were from a joint family, followed by 45 people (21.8%) were from a third-generation family (Figure 5).



**Figure 6: Number of family members in study participant's home.**



**Figure 7: Socioeconomic status of study participants.**

Most of the families had 5 family members which accounts to 59 (28.6%), followed by 4 family members in the homes of 57 (27.7%) participants, more than 5 family members in the homes of 54 participants (26.2%). We noted that there were 26 families with 3 members (12.6%), 9 homes with 2 family members (4.4%) and one home with only one occupant (Figure 6).

An analysis of the socioeconomic status of the road traffic accident victims in Vijayapura reveals that the majority 68 (33%) belonged to socio economic class 2, followed by 64 (31.1%) class 3, 47 (22.8%) class 4, 15 (7.3%) class 1 and 12 (5.8%) class 5 (Figure 7).

## DISCUSSION

In a study by Davtalab Esmacili et al, on the familial aggregation of traffic risky behaviours among pedestrians, a cross-sectional study in North Western Iran, Males made up 52.2% of the sample as a whole, and those between the ages of 41 and 50 made up 27.7%. The majority of responders (36.9%) belonged to the medium socioeconomic class. If at least one family member engaged in risky traffic behaviour, there was a greater chance that other members would follow suit.<sup>13</sup>

In a study by Blaise et al, done in Cameroon, the patients ranged in age from 1 to 99 years, with a mean age of 34+-

15 years. The majority were self-employed (35%), resided in cities (96%), and were men (78%). There were three categories of TBI. Mild (83.4%), moderate (11.3%), and severe (5.4%). Pedestrians (34%) and motorbike taxi (53%) were involved in road traffic accidents, which accounted for the majority of traumatic brain injuries (79%). Injuries were linked to alcohol use (14%) and vehicle overloading (22%). The severity of TBI was linked to inadequate safety precautions, such as not using seatbelts and helmets. Compared to light instances (0.4%) and moderate cases (1.1%), mortality was substantially higher in severe cases (2%).<sup>14</sup>

In a study by Kiliñç et al, traffic accidents were found to be the most common cause of death (51.1%), with males accounting for 72.7% of cases and an average age of 74.2 years. Additionally, it was discovered that 63.3% of deaths took place in metropolitan areas, and 41.9% of deaths were on streets or roads. Additionally, it was discovered that 83.9% of cases resided with their family. Heart and respiratory conditions were the most prevalent chronic illness (49.4%). There were found to be statistically significant correlation between current illnesses and mental problems and the causes of death.<sup>15</sup>

In a study by Makwaga et al, done in Kenya, there were 423 participants in all, of which 421 (99.5%) were men and only 2 (0.5%) were women. The cyclists were 32.9 years old on average 8.9, minimum- maximum=18-67). The majority of riders were either fully educated (145,34.3%) or only partially educated (126,29.8%), completed secondary education (70,16.6%), or incomplete secondary education (47,11.1%). Twenty-two cyclists (47,11.1%), twenty-two cyclists (5.2%) said they were uneducated. Luhya made up 267 (63.1%) of the riders, making them the largest ethnic group. Other notable ethnic groupings were Iteso (124,29.3%) and Luso (29.6.9%).<sup>16</sup>

In a study done by Sahu et al, in India, the study examined 170 drivers who had been hurt, 153 of them were men (90%) and 17 were women (10%). 3.53% of the participants were 60 years of age or older, with the majority (55.9%) being between the ages of 18 and 31. Approximately 94% of women and 54% of males resided in cities, in terms of education, 26.5% of people mostly women had a college degree, while 65.5% had only finished school. In terms of employment, 59% of women were unemployed, 59% of women were unemployed, 28.8% of people were unemployed, 28.8% of people (including housewives and students) were unemployed, 26.5% were self-employed, and just 20.6% worked in the public or private sectors. Compared to jobless people (36.7%) and workers (37.1%), commercial drivers (78.6%), self-employed people, including farmers (68.9%), and labourers (66.7%) had higher substance positive rates.<sup>17</sup>

In a study done by Pradhan et al, here out of 7654 patients, 734 (9.58%, 95% CI:8.49-10.66) were involved in road traffic accidents. The largest age group affected was 20-30 years, with 308 patients (41.96%), followed by

132 patients (17.98%) in the 30-40 years group. The mean age was 25.18± 4.85 years. Among these patients, 456 (62.13%) were males. Regarding education, 184 (25%) had completed higher secondary level. Most were students (242,32.97%), belonged to joint families (624, 85.01%), and were married (448. 61.04%).<sup>8</sup> The findings in different studies done in different parts of the world are showing similar results in some aspects while differing in some factors.

### Limitations

Sociodemographic profile of the study participants varies from study to study. Also, studies done in different parts of the world and among differing population groups can give varying results. Our study on road traffic accident victims was conducted in a tertiary care centre in Vijayapura, North Karnataka, India. This article mentions only the sociodemographic profile, while other facets of the study are covered in other articles.

### CONCLUSION

Sociodemographic profile of road traffic accident victims varies in different studies conducted in many parts of the world. It definitely has a bearing on the outcome of the road traffic accident, follow-up, treatment and prevention.

### Recommendations

Further studies need to be done to evaluate the significance of sociodemographic profile of road traffic accident victims. These would help in creating a database as well as pinpoint the correctable factors regarding road traffic accident victims. The education level, socioeconomic class, gender, all have an impact on the overall outcome.

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*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee BLDE (DU)/IEC-SBMPMC/101/2023-24*

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