



# A Study to Assess the Awareness and Practices of Helmet Use among Two-Wheeler Riders in Delhi

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## Abstract

**Objectives** To assess the awareness and practice of two-wheeler riders regarding the helmet use, and to determine the association of awareness and practices with selected variables.

**Setting and Design** This article is a descriptive survey, which was completed at All India Institute of Medical Sciences (AIIMS) premises, New Delhi, India.

**Materials and Methods** The pretested and validated tools developed by researcher consisted of demographic sheet (8 items) along with structured awareness and practice questionnaire.

**Results and Conclusions** Maximum participants were male (71.06%) with majority riding for 8 years. As much as 48% of the sample population had accidents while driving. Only 2.9% of them reported to have sustained severe injury during these accidents. The mean awareness and practice score related to helmet use were  $49.58 \pm 6.01$  and  $9.75 \pm 5.56$ . There was weak correlation between awareness and practice. Association of awareness and practices with selected variables could not be observed ( $p$ -value=0.4870). Although public awareness is present, but law needs to be more stringent. Accidents are fatal and it can happen anywhere and anytime, irrespective of long or short distance, and wearing of helmet can save a person from major injuries.

## Keywords

- ▶ Awareness
- ▶ helmet use
- ▶ pillion riders
- ▶ practices
- ▶ two-wheeler riders

## Introduction

Road traffic accidents (RTAs) are never invited by an individual; they are accidental, as the terminology suggests, and the consequences are hazardous for the affected, their family members and significant others that include the health care workers.<sup>1</sup> A total of 1214 road crashes occur every day in India.<sup>1</sup> Two wheelers account for 25% of total road crash deaths. Statistics show that 85% of bike-related injuries and 75% of fatalities are preventable if riders wear a helmet.<sup>2</sup> Despite these staggering statistics, people still choose to not wear helmets. It is of prime

importance that the general public be aware of the causes and consequences of not wearing a helmet while driving a two wheeler.<sup>3</sup> About 28 two-wheeler riders died daily on Indian roads in 2016 for not wearing helmets, according to an analysis of data shared by states with the transport ministry. The year 2016 was the deadliest with 31 people dying in every 100 RTAs. It has steadily increased from 21.6 deaths per 100 accidents in 2005 to 29.1 in 2015. A total of 98 two-wheeler users without helmet died per day in 2017. A news report based on data provided by state police and transport departments suggests that 98 two-wheeler users without helmets lost their lives in RTAs

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every day in 2017. Motorcycles account for a large proportion RTAs.<sup>4</sup> One-fourth of the road traffic deaths involve motorcyclists.<sup>5</sup>

## Background

Before the Motor Vehicle Act of 1988, which required mandatory helmet use for motorized two-wheeler (MTW) riders, a study found 0.6% of all MTW pillion (backseat passengers) were helmeted.<sup>6</sup> In the event of a RTA in India, helmets reduce the risk and severity of injuries resulting from motorcycle accidents by 72%. Motorized accidents continues to be a global epidemic, and there is progressive increase in two-wheeler use, injuries, and associated fatalities in several countries (World Health Organization, 2004). Similarly, In India, approximately 140,000 are injured or killed in RTAs. One serious road accident in the country occurs every minute, and 16 die on Indian roads every hour. In accidents which involve two-wheeled vehicles, the helmet plays a life-saving role, but very little is known about the motorcycle rider's perception of the helmet. The most recommended and guaranteed gear to protect motorcycle users in the event of crash is a helmet (Liu et al; Orsi et al). The effectiveness of helmets has been acknowledged to reduce motorcyclist risk of death or fatal injury when involved in road traffic crashes.

It has long been established that wearing a helmet while riding reduces the incidence of head injuries, according to Wilson. Not only is wearing a helmet important but the quality of the helmet worn plays a role in the incidence and severity of head injury

## Need of the Study

Statistics show that 85% of bike-related injuries and 75% of fatalities are preventable if riders wear a helmet.<sup>7</sup> With these staggering statistics, people still choose to not wear helmets. We encourage riders to wear helmets with the goal of preventing traumatic brain injuries (TBIs) from motorcycle, biking, skateboarding, and other recreational and work activities.<sup>8</sup>

Macleod et al found that motorcycles are a significant cause of injury-related fatality and disability. In particular, head injury is a common associated cause of death and long-term disability after a motorcycle crash. Despite these facts, there remains an ongoing controversy as to the survival and disability advantages for riders who wear motorcycle helmets.<sup>9</sup> Knowledge of the lifesaving potential of helmets was high, especially among those who indicated that they always wore a helmet. Almost 90% of those respondents who reported that they "always" wore a helmet indicated that they did so because it can "save lives."<sup>7</sup>

Hence, it is of prime importance to generate awareness and practice of the general population regarding helmet use. The data would reveal findings, which would lead to the delivery of an educational venture in the institute.

## Review of Literature

Khan et al conducted a study on helmet use among two-wheeler female riders. Helmet use is very poor among women (both drivers and pillion riders), despite working in the hospital environment and owning helmets. Stricter enforcement of helmet law is needed, as education and knowledge per se may not instill helmet use.<sup>10</sup>

Hofmann et al conducted a study on fact and fiction regarding motorcycle helmet use, associated injuries, and related costs in the United States. It was concluded that North American trauma surgeons wear helmets when they ride motorcycles and believe that these devices are highly protective, leading to a reduction in brain injury and subsequent health care costs. There appears to be ample data to address many of the areas of controversy surrounding the risks and benefits of motorcycle helmet use.<sup>11</sup>

Mathur et al conducted a study on a baseline study on pattern of helmet use in the state of Rajasthan, India. The findings of the study were as follows: even though correct helmet use during the crash reduces the severity of head and neck injury, observed helmet use in Rajasthan was low. Two-pronged strategy needs to be used by government—first, increased provision for awareness generation among community for helmet use by drivers and passengers through print media, electronic media, folk media, and social media. Second, there must be provision of enforcement of the road traffic law by traffic police of Rajasthan. It would be required that the government organizations, corporate groups, and NGOs should come together and start helmet use in mission mode.<sup>12</sup> Saeed et al conducted a study named "Perceptions regarding helmet use: a cross-sectional survey of female pillion in Karachi, Pakistan." The data showed that media outlets such as television can be used as a platform to educate the public about helmet usage, which may lead to improved helmet compliance among female MTW pillion in Pakistan. Furthermore, investigations into improved helmet comfort and appearance by collaborating with helmet manufacturers may have a positive impact on helmet use in Pakistan.<sup>13,14</sup>

Jaiswal et al conducted a study on awareness of the helmet use, using cell phones and alcohol consumption while driving and impact of helmet use on severity of head injury in motorcyclists in northern India, Lucknow, Uttar Pradesh. The study findings were that patients who wore helmets had less serious injury compared to patients not wearing helmets. The ratio of severity of injury also increased in patients (8.41%) who were not wearing helmets compared to patients (2.42%) who were wearing helmets, so use of helmet by two-wheeler riders alone can reduce accidental severe injury by about 29 percent. Female riders of north India are more aware in following road traffic rules and wearing helmet during driving than male counterparts, as our study suggests. Also, people of middle and old age are more aware than younger generation, which shows that government of India will have to take immense action to educate the younger generation about good traffic sense through programs, and some strict law-abiding punishment should be implemented.<sup>15</sup>

Wadhvaniya et al conducted a study on the validity of self-reported helmet use among motorcyclists in India. The study concluded that observed helmet use is low in Hyderabad, yet a larger proportion of motorcyclists claim to always wear a helmet, which suggests that observational studies can provide more valid estimates of helmet use. Interview findings suggest that a combination of increased enforcement targeted social marketing and increased supply of standard helmets could be a strategy to increase helmet use in Hyderabad.<sup>16</sup>

Ahmed et al conducted a study on helmet use among adolescents in rural roads with the help of the extended theory of planned behaviour. In conclusion, attitude, subjective norm, and intention remained a significant predictor of behaviour. However, perceived behaviour control and descriptive norm were not significant in predicting such behaviour (safety helmet use).<sup>17</sup>

Yu et al conducted a study on effectiveness of different types of motorcycle helmets and effects of their improper use on head injuries. The study concluded that of the three helmet types, half-coverage helmets provided motorcyclists the least protection from head injuries. Furthermore, wearing a loosely fastened helmet may compromise any potential protection.<sup>18</sup>

Liu et al conducted a study on helmets for preventing injury in motorcycle riders. Motorcycle helmets reduce the risk of death and head injury in motorcycle riders who crash. Further well-conducted research is required to determine the effects of helmets and different helmet types on mortality and head, neck and facial injuries. However, the findings suggest that global efforts to reduce road traffic injuries may be facilitated by increasing helmet use by motorcyclists.<sup>19</sup>

Offner Pj, Rivara Fp, Maier Rv conducted a study on the impact of motorcycle helmet use. The study investigated the impact of helmet use on the morbidity and cost of motorcycle trauma after controlling for nonhead injuries. A retrospective review of all patients admitted to Harborview Medical Centre with motorcycle trauma from January 1, 1985, to January 1, 1990 was performed. Stratified analysis showed that helmet use decreased the need for and duration of mechanical ventilation, the length of ICU stay and the need for rehabilitation and prevented head injury. Costs Of acute care were significantly less in helmeted patients. Regression Analysis, controlling for age, gender, and blood alcohol level (as well as nonhead injury severity), confirmed that acute costs were 40% less with helmet use.

## **Aim of the Study**

To assess the awareness and practice of two-wheeler riders regarding helmet use.

## **Objectives**

### **Primary**

- To assess the awareness of two-wheeler riders regarding helmet use.

- To assess the practice of two-wheeler riders regarding helmet use.

### **Secondary**

- To find out association of awareness and practices with selected variables

## **Materials and Methods**

A descriptive survey was done at All India Institute of Medical Sciences (AIIMS), New Delhi, among the two-wheeler riders in and around AIIMS campus. The total number of participants in the study was 349. The inclusion criteria was as follows: subjects above > 18 years of age, who give consent for participation in the study, and who can understand either Hindi or English. While those excluded ones were those learning to drive and not driving two wheelers for the past 2 years.

The tools comprised a sociodemographic profile along with a rating scale on awareness and practice regarding helmet use. A pilot study was conducted on 100 subjects for assessing the feasibility of the study, and the study was found to be feasible. Ethical clearance was obtained from the ethical committee of AIIMS. The data was collected from subjects during the period September 2019 to September 2020. Patients who met the inclusion criteria were enrolled in the study. Informed consent was obtained from subjects. Appropriate descriptive and inferential statistics were used for data analysis. About 50% of data collection was done via online mode due to the Coronavirus pandemic.

Results: They are further divided into the following sections:

Section I: Sociodemographic characteristics of two-wheeler riders. There was no significant association of socioeconomic with attitude and perception. No significant result was found in Section I.

Section II: Awareness of two-wheeler riders regarding helmet use.

Section III: To assess the practice of two-wheeler riders regarding helmet use.

Section IV: To find out association of awareness and practices with selected variables.

## **Discussion**

Motorcycles are a common and integral means of transportation, making up 81% of the total vehicle population. In accidents which involve two-wheeled vehicles, the helmet plays a life-saving role, but very little is known about the motorcycle rider's perception of the helmet.

An observational survey in Luang Prabang was conducted in February 2015 to measure the prevalence of motorcycle helmet use among drivers and passengers. Additionally, nonhelmet-wearing riders were surveyed to identify the reasons for helmet nonuse. The results showed that of 1632 riders observed, only 16.2% wore helmets. When surveyed about attitudes toward helmet use, the majority

of adult drivers indicated that they did not like how adult helmets feel or made them look. Additionally, almost half of motorcyclists who did not own child helmets reported that their children were too young to wear helmets. Similar findings were observed in the present study as well. As much as 84% of the sample population strongly agreed that wearing helmet is mandatory, 32.1% strongly disagreed that wearing helmet is not compulsory for pillion riders, and 62.5% of them strongly agreed that children should wear helmets.

Nearly 90% reported the use of any helmet after the introduction of helmet law in California, Taiwan, and Italy. Another study reported 88% helmet use in the states with universal helmet law.<sup>13</sup> On similar lines, there is a positive tendency of wearing any helmets, as seen in 84% of the motorcyclists observed in this study.

Discomfort<sup>20</sup> and overconfidence or unrealistic optimism<sup>21</sup> of motorcyclists are other factors that can affect effective helmet use. However, unrealistic optimism was not examined in this study. Few studies have reported age and education of motorcyclists as significant factors for proper helmet use.<sup>16,22,23</sup> However, such association was not found in the present study.

The study is limited to AIIMS premises and cannot be generalized to a larger population. The effective helmet use might be much lower in other areas, which are not so monitored. Since some of the data was collected via online mode, the result can be based on more acceptable behaviors.

## Implications to Emergency Clinical Care

Emergency nurses are the heart of the department. Their qualities of observing and spontaneity make them unique. The knowledge and skills that is updated is helpful in the fast and smooth functioning of the department. Rider education coupled with a rigorous licensing routine can significantly reduce motorcycle accidents. In 2018, 5,115 motorcyclists were killed in crashes on United States roads. This figure of motorcyclists account for around 14 percent of traffic fatalities. If the general public is aware of their responsibilities in terms of riding two wheelers, most of the accidents can be prevented. The pattern of accidents or taking precaution to avoid roadside injury or trauma is universally similar. Motorcycle accidents continue to be a global epidemic and preventative measures continue to be underutilized, according to the World Health Organization.<sup>2</sup>

## Conclusion

Our study indicates that there is effective helmet use in New Delhi, the capital city of India. About 84% of subjects were aware that wearing of helmet is mandatory, while the majority felt even the pillion riders should be wearing helmets. As much as 70.5% of subjects believed that wearing helmets in India, generally, is on account of fear of law and traffic police. Helmets are truly protective, as it protects from head injury, with 30.4% strongly disagreeing to this statement.

Hence, irrespective of purpose and distance travelled, most of them (45.7%) were taking out their vehicles from home were wearing helmets. It was only sometimes that the subjects asked the pillion rider to wear helmet (37%) and ensured children also wore helmets (37.2%), although 78.5% were of the opinion that they were bothered about the harm caused due to not wearing helmet. As much as 90% of them preferred wearing helmets during winters and summers.

It is also recommended to strengthen enforcement and increase accessibility to low-cost, high-quality, and comfortable standard full-face helmets, in order to enhance effective helmet use. The law is already stringent but majority of the subjects seemed unaware of the updated policies.

### Conflict of Interest

None declared.

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