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Helmet Attitudes and Practices among University Students of Dental and Medical Professional Courses in Vadodara, India

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Abstract

Background: Increasing motor-cycle accidents warrant strict adherence to helmet use regulations; however awareness and attitudes of people tend to largely govern helmet use.

Objectives: To assess the practices and attitudes towards helmet use by medical and dental students of sumandeep vidyapeeth, Vadodara.

Methods: A cross- sectional pre- tested questionnaire survey using modified bicycle helmet attitude scale was conducted among medical and dental college students of a University in Gujarat, India. Information on subjects' personal characteristics, the subjects' frequency of helmet use, situations determining the use of helmet, knowledge on consequences of road traffic accident, potential of helmet to prevent head injury or death from fatal accidents, attitudes towards helmet use and barriers to helmet use were assessed. Data was compiled and descriptive statistics was computed.

Results: Only 30% of the surveyed subjects reported of unconditional helmet use while driving two- wheelers. More than half of the study participants believed that if they did not wear helmets, they were at a risk of injury from road accidents. 50% believed that injury as a consequence of not wearing helmet could affect their functioning at school. 50% of the study subjects reported that media was the chief contributor in promotion of helmet use for safe driving.

Conclusion: Although the surveyed subjects knew about the importance of wearing helmets and had positive attitude towards helmet use, the same did not translate to greater helmet use. Hence, a need for strict regulatory approach is realized for implementation of helmet use among two-wheeler riders.

Keywords: Road traffic accidents; Helmet use; Motor vehicle regulation

Introduction

With the expansion in road network, motorization and urbanization in the country, the number of road accidents have surged. Road traffic injuries (RTIs) and fatalities have emerged as a major public health concern, with RTIs having become one of the leading causes of deaths, disabilities and hospitalizations which impose severe socio-economic costs across the world. World Health Statistics 2008 cited in Global Status Report on Road Safety states that RTIs in 2004 were the 9th leading cause of death and at current rates by 2030 are expected to be the 5th leading cause of death, overtaking diabetes and HIV/AIDS [1].

Motor vehicle population has grown at a compounded annual growth rate of 10% during 2000-2009, fuelled by a rising tide of motorization. Concomitantly, traffic risk and exposure have grown. During the year 2010, there were around 5 lakh road accidents, which resulted in deaths of 134,513 people and injured more than 5 lakh persons in India. These numbers translate to 1 road accident every minute and 1 road accident death every four minutes [2].

Two-wheelers can be extremely convenient when travelling a short distance with one or two people. Thanks to their light-weight mechanism and affordable price, two-wheelers have always been the preferred choice for many. In addition, if there is not much luggage or one is only travelling within the vicinities of a city, especially at peak hours, then two-wheelers tend to be the preferred mode of transport over four-wheelers. However, the alarming increase in the number of two-wheeler related accidents and deaths has caused a serious concern in India and globally.

Motorcycle crash victims form a high proportion of those killed or injured in road traffic crashes. Injuries to the maxillofacial region, following motorcycle crashes, are a common cause of severe morbidity and mortality. World-wide, road traffic injuries have been reported to be the leading causes of death among young people aged 15-29 years [3,4]. In India, 53.1% of road accident victims were in the age group of 25 to 65 years in 2010, with pedestrians, bicyclists and two-wheelers, who comprise the most unprotected road users, accounting for around 40% of all fatalities. Amongst the vehicle categories, two-wheelers accounted for the highest share in total road accidents (23.8%) in 2010 [2]. Road traffic accidents present an economic burden on the countries amounting to 1-3% of the gross domestic product (GDP) [3,4]. According to the WHO, India loses $20 billion on road accidents [5].

It seems intuitive that helmets should protect against head injuries but it is seen that many two wheeler users prefers not to use one. A review of sixty-one observational studies showed that motorcycle helmets were found to reduce the risk of death and head injury in motorcyclists who

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crashed [6]. From four higher quality studies helmets were estimated to reduce the risk of death by 42% (OR 0.58, 95% CI 0.50 to 0.68) and from six higher quality studies helmets were estimated to reduce the risk of head injury by 69% (OR 0.31, 95% CI 0.25 to 0.38) [6-9].

As per The Motor Vehicles Act (1988) of India 129 r/w177, every person driving or riding a two wheeled motorcycle shall, while in a public place, wear protective headgear [10].

Road accidents are an outcome of the interplay of various factors of which adherence/enforcement of road safety regulations is very important. Higher exposure to road accident risk may be mitigated by behavioural standards by adhering to road safety regulations and policy interventions.

Dental and medical students are exposed to the grave consequences of road traffic accidents, head injuries and the complexities of rehabilitation of those who survived such accidents. As most of them commute by two wheelers wearing doctors aprons they set an example to the present day youth on safety regulations. Hence this study was conducted with the aim of determining the practices and attitudes towards helmet use by medical and dental students of Sumandeep Vidyapeeth, Vadodara.

The objectives of the study were:

i. To assess the prevalence of helmet usage among dental and medical students.

ii. To find out the practices related to helmet usage by these students.

iii. To find out the attitude towards helmet usage with the help of a modified Bicycle helmet attitudes scale [8].

iv. To find out the barriers to helmet usage while riding two wheelers.

Methodology

A cross sectional questionnaire survey was conducted among dental and medical students of Sumandeep Vidyapeeth, Vadodara. Prior to the commencement of the study, ethical approval was obtained from the Ethics Committee of Sumandeep Vidyapeeth (Ref No. SVIEC/ON/DENT/RP/1265). The participants were provided with a participant information sheet that explained the purpose and scope of the study. Informed consent was obtained from all the students from medical and dental college of the University before their recruitment in the study. The questionnaires were filled by the participants anonymously to ensure prevention of disclosure of identity of the participants.

All the students who rode motorized two wheelers were included in the study. Students who knew to ride two wheelers but currently do not have a two wheeler (own/ rented/ borrowed) for use were excluded from the study.

A self-administered pre-tested questionnaire consisting of two parts was used for the data collection. First part of the questionnaire consisted of questions related to frequency and purpose of motorcycle usage while the second part consisted of questions which were modified from the bicycle helmet attitudes scale constructed by Thomas Ross et al. [11] to make it relevant for the present setting and circumstance. The questionnaire was distributed to the eligible participants and collected back on the same day.

The collected raw data was compiled, tabulated and descriptive statistics was computed.

Results

70 dental students and 22 medical students were included in the study as they satisfied the inclusion criteria of reported riding of two-wheelers. All the students submitted completely filled questionnaires, yielding a response rate of 100%. The mean age recorded for the total sample of 92 students was 20.5 ± 1.5 years. 39.1% of the students were males and 60.9% were females. 57.6% of the students used their bikes daily while 13% used it 4-6 times a week and 10.9% only 1-3 times a week. 41.3% of the participants used their bikes to visit friends whereas 25% used it only when they have to. 21.7% of the students used it for commuting to and from college. 35.9% of the respondents never wore a helmet while riding whereas 30.4% wore it always. 21.7% of the students used it only while riding on highways (Table 1).

While answering questions related to personal vulnerability, 75% of the riders agreed that helmets are more important only for those who ride bikes long distances and 18.5% felt that they don't go fast enough to need head protection. Among factors related to perceived danger, 29.3% of the students felt that they could get hurt while riding a bike and 33.7% of them strongly believed that they are likely to suffer from brain damage if met with an accident (Figure 1). 51% of the riders felt that head injury could seriously affect their ability to function at work (Figure 2). Among the perceived emotional benefits, 59% felt less anxious and 54% felt safer while riding a bike with a helmet. Safety and responsibility (42.4%), effectiveness of reducing risk of injury (47.8%), protection to head (51.1%) and avoiding expensive medical treatment (33.7%) were the factors perceived as safety benefits by the respondents. 18.5% of the students reported heat and 10.9% "looking stupid" as discomfort barriers which prevent them from wearing a helmet. 14.7% of the riders felt that helmets are just not worth the cost.

Among the various cues to action 22.8% of the respondents strongly

Variables	Number (Percentage)
Sex	
Males	36 (39.1)
Females	56 (60.9)
Professional course	
Medicine	22 (23.9)
Dentistry	70 (76.1)
Use of helmets	
Daily	53 (57.6) 12(13)
4-6 days per week	10 (10.9)
1-3 days per week	08 (8.7)
Less than once a week	09 (9.8)
Less than once a month	
Purpose of bike riding	
To and from college	20 (21.7)
To visit friends	38 (41.3)
For fun	10 (10.9)
Only when has to	23 (25.0)
Don't know	01 (1.1)
Situations when helmet is worn	
On highways	20 (21.7)
In city	08 (8.7)
To and from college	03 (3.3)
Always	28 (30.4)
Never	33 (35.9)

Table 1: Distribution of study participants (n=92) by sex, professional course and helmet use variables.

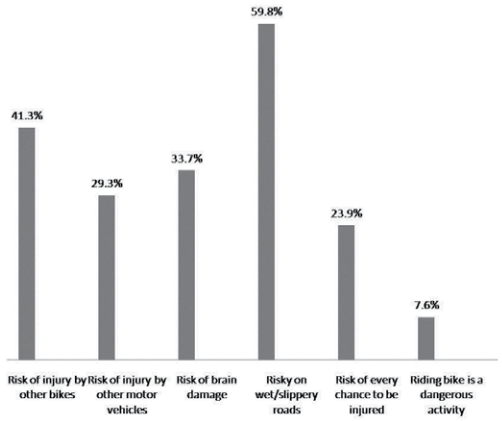
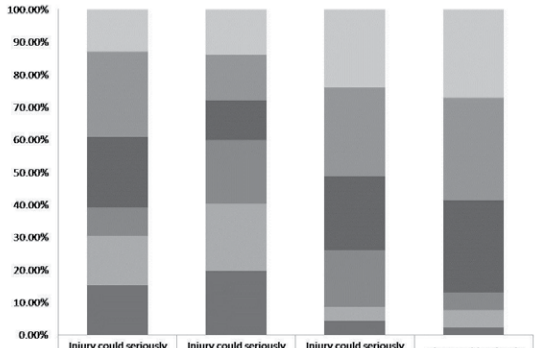


Figure 1: Frequency of "Strongly Agreed" perceptions of risk of injury when helmet is not worn.



	Injury could seriously affect social life with friends	Injury could seriously affect relationships with family	Injury could seriously affect functioning at school	Injury could seriously affect functioning at
Strongly Agree	13%	14.10%	23.90%	27.20%
Agree	26.10%	14.10%	27.20%	31.50%
Partly Agree	21.70%	12%	22.80%	28.30%
Partly Disagree	8.70%	19.60%	17.40%	5.40%
Disagree	15.20%	20.70%	4.30%	5.40%
Strongly Disagree	15.20%	19.60%	4.30%	2.20%

Figure 2: Perceived consequences of injury resulting from not wearing helmet while riding bikes.

agreed that they will feel bad if they don't wear a helmet because their parents wants them to wear. 30.4% of the respondents recall seeing TV commercials. Advertisements of posters about the importance of wearing a helmet and 37% of the respondents agreed that they received advice from their dentist or doctor about wearing one (Figure 3).

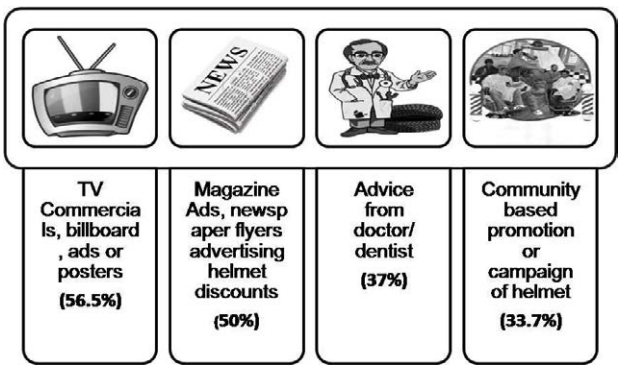


Figure 3: Most influential cues to wearing helmet reported by participants in the present study.

Discussion

India, like many other Asian countries takes pride in the domination of two- wheeler traffic on its roads. However, WHO data on mortality distribution of road traffic deaths by type of road user presents a grey picture of 32% deaths occurring in persons driving two- wheelers in this country [12].

Similar to many Indian cities, Vadodara has been witnessing mushrooming fleet of two wheelers. Owing to the growing student populations in this city, - an educational hub, two-wheelers are more popularly used for convenience and affordability reasons. With the overall vehicular traffic in Vadodara having crossed 1.5 million [13], there is a growing concern regarding motor vehicle accidents. According to WHO [14], young adults account for 59% of global road traffic deaths. Speed, drunken driving and not trained to cope up with traffic and driving without license have been linked to increased road traffic accidents among the youth.

It is important to realize that there exists strong evidence of correlation between motor- cycle related injury and head injury. It has been reported that wearing a motorcycle helmet correctly reduces risk of death by 40% and risk of severe injury by over 70% [15]. Health outcome research has revealed that helmet use can save 5 Quality-Adjusted Life Years (QALYs) [16]. Medical and dental college students represent a health- aware section of young adults and their attitudes and practices can influence the rest of the youth community. Hence, the present study on the helmet attitudes and practices of a university undergraduate student group enrolled in Medicine /Dentistry, in Vadodara, India, is justified to its need.

Among the medical and dental students surveyed in this study, 36% reported of never having worn a helmet while riding a motorcycle and 30% always wore a helmet irrespective of the place they were going to. The majority of the remaining students wore helmets only when they were riding on the highways. In a study by Bachani et al. [17], 60% of subjects had reported that their use or non- use of helmets depended on where they were driving.

In the present study, an equally split view among the respondents was observed regarding necessity of helmet for short rides; however 75% of the respondents believed that helmet use is important while driving long distances. No conclusive inference could however be made from this finding as what defined a short/ long distance could not be made clear through the closed ended nature of the questionnaire used in the study.

Over 60% of the respondents in the present study reported that wearing helmet was not dependent on frequency of riding or performance riding as in race or stunts. It is a favourable finding as helmet is not considered as a special appendage/accessory by the youth and this may be capitalized to promote helmet use as an acceptable routine use for safe driving always.

65% of the respondents believed that while driving bike, they were at risk of injury by other bikes and 50% believed that they could be injured by other vehicles. These are important findings as realizing that one-self is susceptible to risk is an important component of the Health

Belief Model and behaviour can be modified favourably.

In the present study, the responses reflected that head injury resulting from motorcycle accident would not seriously affect social relationships with family members and friends. This represents trust and social cohesion-a concept that shows a sense of belonging and absence of exclusion in a society. It may hence be expected that this cohesion is what will help build a social capital for preventing head injuries and promoting helmet use through co-operation.

Over 50% of the students agreed that head injury from bike accident would affect their functioning at school. Fear of losing term at school or authorities of school or fear of discontinuation of course on medical grounds could have been the possible reasons for the response. Furthermore, about 60% of the young adults surveyed in this study reported that they would want to be safe for the people who care about them and wearing helmet would be a means of obligation, which shows a great sense of familial and social responsibility. Both the above mentioned findings hint on school and family members/ close social circle being external loci of control for favourable helmet wearing behaviour. However, further studies are required to ascertain the same.

The finding that 54% of the respondents agreed that wearing helmet while riding made them feel safer and 59% feeling less anxious with helmets show that helmet wearing could be psychologically pacifying and could give better confidence. 50% respondents agreed that wearing a helmet makes them more likely to "take care", which is very important for better and safe driving.

Majority of the respondents in the present study agreed that helmets were effective to protect them from head injuries and also could save the exorbitant expenses on medical care following trauma. This belief can be positively exploited for promoting helmet use.

Among the barriers to helmet use, in the present study, respondents cited the following as the most important reasons-helmet strap impinging/irritation to skin, discomfort and causing too much of heat. In the study by Ross et al. [11], the most common reasons for not wearing helmet were reported to be- not owning one and being too uncomfortable. Hence, it may be inferred that helmet designs with better comfort features would increase its acceptability and use.

In the present study, only 26% of respondents reported of having friends who regularly wore helmets. In the study conducted by Kendrick et al. [8], it was found that best friends wearing helmets were associated with higher helmet wearing rates. Peer behaviour can influence the overall health behaviour of young adult community and it is important to lay emphasis on this aspect.

Among the cues to action, it was found that promotion of helmet through media was the greatest with more than 50% of the participants being aware of effectiveness of helmets through various media as compared to only 37% of the respondents reported to have received advice from dentist regarding helmet wear. This implies that dentists should assume greater responsibility in promotion of helmet use.

The merit of the present study is that a holistic approach was used to understand the practicalities in helmet use including awareness, attitudes and perceived barriers underpinning the psycho-social determinants of health behaviour. However, the study does suffer certain limitations such as over reporting or false reporting which is common to questionnaire method of data collection. It should also be noted that the questionnaire used in the present study was a modification of Bicycle Helmet Attitude attitude scale [11], although it was suitably modified and pre- tested for the two-wheeler scenario, validity and tone of the questionnaire could be expected to be better and tailor made if a two-wheeler helmet use questionnaire was developed and if the same was used. In spite of these limitations, the present study brought to light important results of adequate validity and answered the research questions appropriately.

Conclusion

From this study it can be concluded that overall, the participants had awareness on the effectiveness of helmet wear and had favourable helmet attitudes. However, favourable attitudes did not translate to helmet use. Similar conclusions have been drawn by Bachani et al. [17], in their study in Cambodia. Hence, there is need for strict implementation of laws and many may wear helmets if required by law. Bachani et al. reported that life-saving potential aside, people wore helmets for police fines or as legal duty. In India, according to the Central Motor Vehicle act (MVA) Section 129r/w 177 MVA, a maximum penalty of Rs.100 is levied for driving without helmet, which is very trivial as compared to the harm that it cause. Furthermore, due to various reasons viz. negligence of some traffic police personnel and bribery, the law has suffered poor implementation [18]. In Kerala, India, the Motor Vehicles Department has made helmets mandatory to register motorcycles from February 2013. According to the Central Motor Vehicles Rule, helmet is part of the vehicle and dealer should give it free of cost after which the registration would be done [19]. A similar model of implementation should be adopted in Gujarat and other states of India to reduce the mortality related to two- wheeler accidents.

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