KNOWLEDGE, ATTITUDE AND PRACTICE ON MOTORIZED TWO-WHEELER SAFETY AMONG UNIVERSITY STUDENTS IN LAHORE, PAKISTAN

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Abstract- Road traffic injuries are a major public health concern in Pakistan, particularly among young motorized two-wheeler users who account for a substantial proportion of road trauma. Despite existing road safety laws, risky behaviors and low compliance with safety measures remain common among university-aged riders. Understanding their knowledge, attitudes, and practices is essential for designing targeted interventions to reduce preventable injuries. A cross-sectional descriptive study was conducted at the University of Lahore from April to June 2022 among 393 students, who used motorized two-wheelers, to assess knowledge, attitudes, and self-reported practices regarding motorized two-wheeler safety among university students in Lahore, Pakistan. Participants were selected through non-probability convenience sampling. Data were collected using a structured, self-administered questionnaire. Descriptive statistics were applied for data analysis. While overall awareness of road safety regulations was high, behavioral gaps were evident. Only 36.4% cited comfort as the main reason for helmet non-use, followed by laziness (25.9%) and perceived safety on short trips (24.8%). A vast majority (93.9%) admitted using mobile phones while driving. Although 97.5% reported following road signs and 98.3% knew the correct lane position for motorcyclists, only 26.2% correctly identified the legal speed limit (80 km/h), and 38.8% knew the penalty for driving without a license. Risky behaviors such as inconsistent helmet use and mobile phone use while driving persist among university students. There is need for behavior-focused interventions.

Keywords- knowledge attitude practice, motorcycle riders, road safety, university students

I. INTRODUCTION

Motorized two-wheeler use has increased substantially among young adults in Pakistan, particularly university students who rely on motorcycles as an affordable and convenient mode of transport. As a consequence of this growing trend, the burden of motorcycle-related injuries continues to rise, largely due to preventable factors such as poor road safety awareness, risky riding behaviors, and inconsistent helmet use. Understanding the level of safety-related knowledge, attitudes, and practices among young motorcycle users is essential for designing targeted interventions and policy measures. Therefore, the present study aims to assess the knowledge, attitudes, and self-reported practices regarding motorcycle safety among university students in Lahore, Pakistan.

Motorized two-wheeler accidents are associated with significant human suffering due to multiple serious injuries. Their socioeconomic cost is markedly high due to untimely deaths, long-term disabilities, and the fact that many riders belong to lower socioeconomic groups[1]. In developing countries such as Pakistan and India, the number of people using motorized two-wheelers is alarmingly high [1], increasing their exposure to road traffic hazards. Weak road safety legislation and limited enforcement further exacerbate the situation.

A study conducted among medical students in India reported that 84% of students drove motorized two-wheelers, but only 38.7% possessed a driving license. About 20% had experienced a road traffic accident at least once, while only 18.7% had adequate knowledge of road safety rules. Helmet non-use (36%) and mobile phone use while driving (32.7%) were also common [2].

Motorcycle helmets can prevent approximately 40% of fatal injuries and 13% of nonfatal injuries. Despite this, helmet non-compliance remains widespread. Helmet legislation has demonstrated a significant impact on helmet use and injury outcomes; however, evidence regarding its effect on maxillofacial trauma remains incomplete. Facial injuries are more than twice as likely among motorcyclists not wearing helmets [3].

Motorized two-wheeler riders, including drivers and pillion riders are at significant risk of severe or fatal injuries, particularly in regions with poorly regulated traffic systems such as Pakistan. Poor motorcycle conspicuity has also been identified as a major contributor to crash risk[5]. An accident analysis in China demonstrated that riders aged 40–49 years were particularly vulnerable to severe injuries [4].

Road traffic accidents are preventable; therefore, awareness and adherence to safety regulations are essential. The Motor Vehicle Act emphasizes the need for public awareness and strict implementation of preventive measures to reduce traffic-related injuries. Young college students often engage in risky behaviors, including unlicensed driving and speeding, which increases accident risk [5,6,7]. Even among healthcare professionals, gaps between knowledge and practice have been observed [8].

In Saudi Arabia, approximately 12 fatalities occur daily due to road traffic accidents. National expenditure on road crash-related losses is estimated at 26 billion riyals annually [9]. The United States also reports more than 30,000 annual road traffic deaths

despite reductions over recent years. Several states have adopted the Vision Zero policy to eliminate road traffic fatalities [10].

Helmet laws in the United States have led to substantial reductions in severe motorcycle-related injuries. Before such laws were enacted, 79% of riders involved in crashes were not wearing helmets [11]. Universal helmet laws have been shown to reduce mortality by 22–33%, while partial helmet laws produce smaller benefits. Public awareness and enforcement have improved helmet compliance over time [12].

A study among college students in Gujarat using pre- and post-intervention assessments demonstrated significant improvements in knowledge, attitudes, and practices following traffic safety education [13]. This underscores the importance of structured safety education programs.

II. MATERIALS AND METHODS

It was cross-sectional descriptive study. This study was carried out at University of Lahore, Pakistan among undergraduate and postgraduate students enrolled in the university during the study period. The study aimed to assess students' knowledge, attitudes and self-reported practices related to road safety regulations. Sampling was done by non-probability convenience sampling technique. This study was conducted during 3 months from April, 2022 to June 2022. All registered university students, using motorized two-wheeler, aged ≥18 years who were present on campus during the study period were eligible. Students who were not using the motorized two-wheeler were excluded. Sampling size was 393, motorized two-wheeler riders. Data were collected using a structured, self-administered questionnaire developed from validated KAP instruments used in previous road-safety studies and guidance from WHO road-safety resources. Ethical approval for this study was obtained from the Institutional Review Board of the University of Lahore, Pakistan, Approval No: IRB-UOL-FAHS/941/2021 dated 02-September-2021. Participation was voluntary, informed consent was obtained from all respondents, and confidentiality and anonymity of the data were strictly maintained. Participants were free to withdraw from the study at any point without any consequences.

III. RFESULTS

Table 1 presents the frequency distribution of reasons given by respondents for not wearing a helmet. The most common reason reported was discomfort, accounting for 36.4% of valid responses (n=132). Laziness was cited by 25.9% (n=94), followed by not anticipating danger due to short distance at 24.8% (n=90). A smaller proportion mentioned not having a helmet (10.2%, n=37) and decreased field of vision (2.8%, n=10). Out of the total 393 respondents, 30 (7.6%) had missing responses for this question.

Table 1: Frequency of Reasons for Not Wearing Helmet

Reason	Frequency	Percent (%)	Valid Percent (%)	Cumulative Percent (%)
Discomfort	132	33.6	36.4	36.4
Laziness	94	23.9	25.9	62.3
Less vision	10	2.5	2.8	65.0
No helmet	37	9.4	10.2	75.2
No danger	90	22.9	24.8	100.0
Total (Valid)	**363**	**92.4**	**100.0**	—
Missing	**30**	**7.6**	—	—
Grand Total	**393**	**100.0**	—	—

Table 2 shows that 93.9% of valid respondents reported using a mobile phone while driving, whereas 6.1% denied this behavior, with 7.6% missing responses. Table 3 indicates that 97.5% of valid respondents stated they follow mandatory road signs, with 2.5% reporting otherwise and the same 7.6% missing data. Table 4 reflects respondents' knowledge regarding the minimum age required to obtain a driving license; 75.8% correctly identified 18 years as the minimum age, while 24.2% gave incorrect responses. Missing data accounted for 7.6% of the total sample.

Table 3,4 shows that 98.3% of valid respondents correctly reported that motorcyclists should use the extreme left side of the road, while 1.7% selected the center or extreme right incorrectly. Similarly, 98.6% of respondents correctly identified that pedestrians should use the extreme left side of the road, with 1.4% selecting the extreme right incorrectly. 98.1% correctly reported using the right side of the road while overtaking, compared to 1.9% who answered incorrectly. Only 26.2% correctly identified the speed limit for motorcyclists as 80 km/h, while the majority (73.8%) gave incorrect responses. 38.8% correctly stated the penalty for driving without a license as Rs 200, whereas 60.6% were incorrect, and 0.6% gave other answers. 96.7% of respondents correctly understood that the yellow signal indicates an impending change, while 3.3% were incorrect.

Table 2: Frequency of Mobile use in Driving

Response	Frequency	Percent (%)	Valid Percent (%)	Cumulative (%)
Yes, correct	341	86.8	93.9	93.9
No, incorrect	22	5.6	6.1	100.0
Total, Valid	**363**	**92.4**	**100.0**	—
Missing	**30**	**7.6**	—	—
G.Total	**393**	**100.0**	—	—

Table 3: Frequency of Following Road Signs Mandatory

	Frequency	Percent (%)	Valid Percent (%)	Cumulative (%)
Yes correct	354	90.1	97.5	97.5
No wrong	9	2.3	2.5	100.0
Total	**363**	**92.4**	**100.0**	—
Miss	**30**	**7.6**	—	—
Total	**393**	**100.0**	—	—

Table 4: Frequency of Minimum Age to get License

Response	Frequency	Percent (%)	Valid (%)	Cumulative (%)
18 years correct	275	70.0	75.8	75.8
Wrong	88	22.4	24.2	100.0
Total	**363**	**92.4**	**100.0**	—
Miss	**30**	**7.6**	—	—
G.Total	**393**	**100.0**	—	—

IV. DISCUSSION

This study provides key insights into the knowledge, attitudes, and practices related to motorcycle safety among university students. Despite high awareness of certain traffic regulations, significant gaps persist in practical safety behavior, particularly regarding helmet use and distracted driving.

Discomfort (36.4%) was the most frequently cited reason for not wearing a helmet, followed by laziness (25.9%) and perceived lack of danger when traveling short distances (24.8%). Similar findings have been documented in other low- and middle-income countries, where climate, convenience, and cultural norms lower helmet compliance. The belief that short-distance travel is safe is dangerous, as most crashes occur close to home [14].

Nearly all respondents claimed to follow road signs and avoid alcohol consumption; however, cultural and legal prohibitions in Pakistan may have influenced these responses. Although 89% reported that pillion riders use helmets, observational studies in Pakistan suggest much lower compliance, indicating probable over-reporting.

Significantly, 93.9% admitted using a mobile phone while driving, highlighting a major safety concern strongly associated with distraction-related crashes [15]. Targeted interventions addressing the dangers of distracted driving among young adults are urgently needed.

Knowledge of basic traffic regulations - lane use, overtaking rules, and pedestrian positioning was high. However, understanding of specific legal requirements such as speed limits (26.2% correct) and penalties for driving without a license (38.8% correct) was limited. This suggests that while general safety awareness is adequate, detailed knowledge of traffic laws is lacking.

These findings mirror results from previous research indicating that theoretical knowledge does not consistently translate into safe riding practices [16]. A study among higher secondary students in Chennai also found substantial gaps between awareness and road safety behavior.

Comprehensive strategies, including safety education within universities, public awareness campaigns, improved enforcement, and promoting comfortable helmet designs, are essential to bridge the knowledge–practice gap. Awareness programs emphasizing the dangers of distracted driving and the importance of helmet use even for short trips could significantly improve safety outcomes.

V. CONCLUSION

The present study underscores a critical gap between knowledge and practice regarding motorcycle safety among university students at Lahore, Pakistan. While participants exhibited commendable awareness of fundamental traffic regulations and safety principles, risky behaviors such as inconsistent helmet use, mobile phone use while driving, and speeding remain prevalent. The findings reveal that discomfort, convenience, and underestimation of crash risk during short-distance travel are key barriers to consistent helmet use. Moreover, limited awareness of specific penalties and speed limits highlights the need for greater emphasis on detailed traffic law education.

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