



Research article

Knowledge, Attitude, and Practice of Auto Bike Drivers towards Traffic Laws: A Cross-Sectional Study in Khulna City Corporation (KCC) Area of Bangladesh

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ABSTRACT

The rapid increase in unregulated, battery-powered auto bikes, commonly known as “easy bikes,” has reshaped urban mobility in many Bangladeshi cities, particularly Khulna. While these vehicles offer affordable transport, they also contribute to significant traffic safety challenges due to lack of regulation, insufficient driver training, and poor adherence to traffic laws. This study assessed the knowledge, attitudes, and practices (KAP) of auto bike drivers regarding traffic laws in the Khulna City Corporation (KCC) area and explored the relationship between KAP levels and drivers’ socio-demographic and work-related characteristics. A cross-sectional study was conducted among 460 auto bike drivers in the KCC area using a semi-structured interview schedule. Data were analyzed using descriptive statistics and Pearson’s chi-square tests to examine associations between KAP levels and variables such as age, education, residence, driving experience, and license status. Drivers under 30 years of age and those with secondary education showed significantly higher knowledge of traffic laws ($p < 0.01$). Positive attitudes were more prevalent among educated and urban participants ($p < 0.10$). Good traffic practices were significantly associated with religion, residence, and number of working days ($p < 0.05$). The overall KAP score was higher among younger, urban drivers with daily driving experience and formal education ($p < 0.01$). The findings highlight critical gaps in traffic law knowledge and safe driving practices among certain subgroups of auto bike drivers. Targeted educational campaigns, stricter regulatory oversight, and mandatory licensing could significantly improve road safety in Khulna and other urban areas in Bangladesh.

Introduction

Urban transport systems in developing countries are undergoing rapid transformations due to increased demand for affordable, accessible, and flexible modes of transportation (Abbas et al., 2024). In Bangladesh, one of the most visible outcomes of this transformation is the widespread adoption of auto bikes, locally known as “easy bikes.” These three-wheeled electric vehicles have become a dominant form of intra-city transport in urban centers such as Khulna, offering an inexpensive and energy efficient alternative to traditional buses and rickshaws (Miah et al., 2024). However, while these vehicles offer benefits in terms of mobility, their rapid and largely unregulated proliferation has raised critical concerns regarding road safety, traffic management, and legal compliance (Abbas et al., 2024; Hashem et al., 2024).

Khulna, the third-largest metropolitan city in Bangladesh, is currently experiencing a surge in the number of easy bikes operating without proper registration or regulation. According to local transport authorities, over 25,000 auto bikes are in use across the city, yet only a small fraction is officially registered with the Khulna City Corporation (KCC) (Mondal, 2018). An estimated 13,000 illegal easy bikes operate on busy city roads daily, contributing to traffic congestion, environmental concerns, and most alarmingly a growing number of road traffic accidents (Das, Tamannur, Nesa, Al Noman, et al., 2023). The lack of a proper licensing framework for battery-powered vehicles further complicates the issue, as many drivers operate without formal training or awareness of basic traffic laws (Abbas et al., 2024; Das, Tamannur, Nesa, Al Noman, et al., 2023).

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Road traffic injuries are a significant global public health concern, with the World Health Organization recognizing them as a leading cause of death and disability, especially in low- and middle-income countries (Olakulehin et al., 2019). In Bangladesh, road accidents are one of the major causes of premature deaths and economic loss, disproportionately affecting urban centers with poor traffic governance (Miah & Rahman). Research has consistently shown that inadequate driver knowledge, poor attitudes towards traffic regulations, and unsafe driving practices are among the leading contributors to these accidents (Das, Tamannur, Nesa, Noman, et al., 2023).

The issue is particularly urgent in Khulna, where the easy bike sector remains largely informal and unregulated. Many auto bike drivers lack basic training and have not obtained valid driving licenses (Tajvar et al., 2015). Moreover, informal vehicle lending practices and a lack of accountability further exacerbate the risks (Phuyal et al., 2024). Despite these challenges, there is a lack of empirical studies exploring the behavioral patterns of auto bike drivers in this region. Understanding their level of knowledge, their attitudes towards traffic rules, and their day-to-day practices is essential for devising effective policy interventions aimed at reducing road accidents and improving public safety (Hossain, 2021; Olakulehin et al., 2019).

The Knowledge-Attitude-Practice (KAP) model provides a useful framework for investigating human behavior in public health and safety contexts. By applying this model, researchers can assess the extent to which drivers are aware of traffic laws (knowledge), how they feel about adhering to those laws (attitude), and whether their actual behavior aligns with safe driving practices (practice). Previous studies in similar contexts have demonstrated the utility of KAP-based assessments in identifying educational gaps and behavioral risks among drivers and transport workers (Hasanat-E-Rabbi et al., 2021).

To systematically understand the factors influencing traffic law compliance among auto-bike drivers, this study is grounded in the Knowledge, Attitude, and Practice (KAP) Model, integrated with key concepts from the Theory of Planned Behavior (TPB) and the Health Belief Model (HBM). The fundamental premise of the KAP framework assumes a linear progression: acquisition of accurate Knowledge regarding traffic rules, speed limits, and road signs forms the foundation for developing positive Attitudes toward safety regulations (Susilo et al., 2015). These attitudes, in turn, govern safe driving Practices on public roads. However, human behavior in informal transport sectors is rarely strictly linear (Nordfjærn et al., 2011). Integrating TPB allows the framework to account for external socio-economic influences, where a driver's compliance (Practice) is not only dictated by personal knowledge and attitudes, but also by subjective norms (peer behavior among auto-bikers) and perceived behavioral control (economic pressure, lack of formal training, and traffic congestion) (Abbas et al., 2024). Furthermore, HBM principles explain how a driver's perceived susceptibility to road crashes or legal penalties acts as a critical cue to action. In the context of Khulna City Corporation (KCC), where auto-bike operations are largely informal and drivers often lack

standardized driving education, this combined theoretical framework provides a comprehensive lens to evaluate how gaps in traffic knowledge and negative attitudes translate into unsafe driving practices.

Given the critical need to improve traffic safety in Khulna and the absence of localized data on the subject, this study aims to assess the knowledge, attitudes, and practices of auto bike drivers towards traffic laws in the KCC area. By identifying key deficiencies and behavioral patterns, the findings of this study will help inform local policymakers, transport authorities, and stakeholders in designing evidence-based interventions, such as awareness campaigns, training programs, and stricter regulatory measures.

Objectives of the Study

- Assess the level of knowledge, attitudes, and practices (KAP) of auto bike drivers towards traffic laws in the Khulna City Corporation (KCC) area of Bangladesh.
- Examine the association between socio-demographic and work-related characteristics (e.g., age, education, residence, license status, work experience) and the KAP of auto bike drivers regarding traffic regulations.

Materials and Methods

Study Settings and Participants

This study was carried out in the Khulna city corporation (KCC) area of Khulna district – the third-largest city corporation in Bangladesh, with an area of 50.6 Km² (Bangladesh Bureau of Statistics, 2014). Accommodating over half a million people, KCC is one of the fastest-growing city areas of Bangladesh (Bangladesh Bureau of Statistics, 2014) that requires vehicles of different types to facilitate the transportation of people from one place to another, and the auto bike is one their means of transportation in KCC area. In this study, the auto bike drivers were selected based on some specifications: (i) the participants must be auto bike drivers, and (ii) driving within the KCC areas over two years. Considering the criteria, a total of 460 auto bike drivers were interviewed following convenience sampling.

Ethical Issues

This research was ethically approved by the Khulna University Ethical Clearance Committee. The semi-structured interview schedule contained a consent form detailing the rights of the participants, i.e., the anonymity and confidentiality of the participants and their responses, respectively, and a right to withdraw without justification within a stipulated timeframe. The participants did not receive any form of incentive as compensation for their time.

Survey Instrument

A semi-structured interview schedule was developed after a careful review of relevant literature. The interview schedule was divided into five interrelated but distinct modules: module 1 contained the socio-demographic information (e.g., age, sex, religion, education, residence, and marital status); module 2 highlighted work experience-related information (i.e., ownership, license, working

experience, workdays) of the participants; while module 3, module 4 and module 5 included questions on knowledge (10 items), attitude (10 items) and practice (10 items), respectively. The knowledge module is concerned with different traffic signs, including speed breakers, rail crossings, school areas, etc. The attitude module emphasizes attitudinal issues, such as using signals and taillights, overtaking, and so on. The practice module had questions mainly on the practices maintained by the auto biker drivers. Each question had three-point Likert-scale items, i.e., “No response/comments/never,” “I do not know/sometimes” and “I know/always” options. It is important to note that the quartile term was followed to classify the score in which up to the 25th quartile was measured as a low score, 26th to 50th quartile was considered a moderate score, and greater than the 51st quartile was estimated as a high score.

Analysis

Data was analyzed in two consecutive stages using IBM SPSS Statistics (Version 25). In the first stage, descriptive statistics, i.e., frequency, mean, and standard deviation, were used to describe the socio-demographic information of the participants. In the second stage, the determinants were identified by executing Pearson's chi-square (χ^2) test for independence, by defining both independent and dependent variables categorically, firstly to evaluate the relationship between independent variables (socio-demographic factors) and dependent variable, in this case, KAP score, and finally to address the research questions. In addition to assessing the association through Pearson's chi-square, Cramer's V (ϕ_c) was executed to present the effect size of the association between independent variables and dependent variables (Cohen, 1988).

Results

Socio-demographic Information of the Participants

Table 1 shows the socio-demographic information of the participants. Among the participants, around 34% were in their twenties, and the average age was about 36 years (SD = 10.3). Only one in five persons (15.4%) were *Hindu*, while one in ten persons (12.8%) had completed higher secondary or above education. The participants were predominantly living in urban areas (77.5%), and most of them were the owners of the auto bike (68.3%) they drove. More than 90% of the participants had a license to drive the auto bike within the KCC area, and more than half of them had been driving an auto bike for around five years (53.9%) and drove the auto bike every day a week (63.9%).

Knowledge, Attitude, and Practice of Auto Bike Drivers Regarding Traffic Laws

Table 2 shows the association of different socio-demographic factors with knowledge, attitude, and practice of auto bikers regarding traffic laws. The findings show that knowledge about traffic laws was significantly associated with age, where auto bikers below 30 years of age relatively have a better knowledge about traffic laws

($\chi^2 = 15.324$, $p < 0.01$; $\phi_c = 0.129$). Regarding the attitude of the auto bikers, it is apparent that education and residence have positive association with attitude, where more educated ($\chi^2 = 7.857$, $p < 0.10$; $\phi_c = 0.092$) and urban ($\chi^2 = 4.668$, $p < 0.10$; $\phi_c = 0.101$) participants had higher or positive attitude towards traffic laws. About practicing existing laws, it is evident that religion, residence, and workdays were significantly associated with traffic laws. Muslim ($\chi^2 = 4.652$, $p < 0.10$; $\phi_c = 0.101$), urban residents ($\chi^2 = 11.774$, $p < 0.01$; $\phi_c = 0.160$) and those who drive auto bikes every day ($\chi^2 = 9.588$, $p < 0.01$; $\phi_c = 0.144$) were more inclined to follow traffic laws.

Table 1: Socio-demographic Information of the Participants

Variables		f (%)	M (SD)
Age (in Year)			
	≤ 29	154 (33.5)	35.6 (10.3)
	30-39	140 (30.4)	
	40 ≥	166 (36.1)	
Religion			
	Sanatan	71 (15.4)	
	Islam	389 (84.6)	
Education			
	Primary (≤ 5)	154 (33.5)	7.4 (3.7)
	Secondary (6-10)	247 (53.7)	
	Higher secondary and above (11 ≥)	59 (12.8)	
Residence			
	Rural & sub-urban	102 (22.2)	
	Urban	358 (77.8)	
Ownership of auto bike			
	Rent	146 (31.7)	
	Own	314 (68.3)	
License			
	No	29 (6.3)	
	Yes	431 (93.7)	
Driving experience (in Year)			
	≤ 5	248 (53.9)	5.8 (3.1)
	6-10	176 (38.3)	
	11 ≥	36 (7.8)	
Workdays (in Days)			
	≤ 6	166 (36.1)	
	7	294 (63.9)	

Note. f. Frequency; M. Mean; SD. Standard deviation

Table 2: Factors Associated with Knowledge, Attitude, and Practice towards Traffic Laws

Variables	Knowledge			p value	Attitude			p value	Practice			p value
	Low	Medium	High		Low	Medium	High		Low	Medium	High	
Age												
≤ 29	43 (26.7)	39 (31.5)	72 (41.1)	0.004	49 (35.5)	34 (31.2)	71 (33.3)	0.298	49 (29.0)	30 (33.7)	75 (37.1)	0.365
30-39	65 (40.4)	33 (26.6)	42 (24.0)		41 (29.7)	27 (24.8)	72 (33.8)		50 (29.6)	27 (30.3)	63 (31.2)	
40 ≥	53 (32.9)	52 (41.9)	61 (34.9)		48 (34.8)	48 (44.0)	70 (32.9)		70 (41.4)	32 (36.0)	64 (31.7)	
Religion												
Santana	23 (14.3)	20 (16.1)	28 (16.0)	0.882	24 (17.4)	15 (13.8)	32 (15.0)	0.717	25 (14.8)	8 (9.0)	38 (18.8)	0.098
Islam	138 (85.7)	104 (83.9)	147 (84.0)		114 (82.6)	94 (82.2)	181 (85.0)		144 (25.2)	81 (51.0)	164 (81.2)	
Education												
Primary	63 (39.1)	39 (31.5)	52 (29.7)	0.232	57 (41.3)	39 (35.8)	58 (27.2)	0.097	65 (38.5)	33 (37.1)	56 (27.7)	0.191
Secondary	83 (51.6)	69 (55.6)	95 (54.3)		65 (47.1)	56 (51.4)	126 (59.2)		86 (50.9)	46 (51.7)	115 (56.9)	
Higher secondary and above	15 (9.3)	16 (12.9)	28 (16.0)		16 (11.6)	14 (12.8)	29 (13.6)		18 (10.7)	10 (11.2)	31 (15.3)	
Residence												
Rural & sub-urban	41 (25.5)	25 (20.2)	36 (20.6)	0.458	39 (28.3)	19 (17.4)	44 (20.7)	0.097	50 (29.6)	10 (11.2)	42 (20.8)	0.003
Urban	120 (74.5)	99 (79.8)	139 (79.4)		99 (71.7)	90 (82.6)	169 (79.3)		119 (70.4)	79 (88.8)	160 (79.2)	
Ownership												
Rent	46 (28.6)	41 (33.1)	59 (33.7)	0.560	45 (32.6)	34 (31.2)	67 (31.5)	0.965	49 (29.0)	30 (33.7)	67 (33.2)	0.626
Own	115 (71.4)	83 (66.9)	116 (66.3)		93 (97.4)	75 (68.8)	146 (68.5)		120 (71.0)	59 (66.3)	135 (66.8)	
License												
No	13(8.1)	8(6.5)	8(4.6)	0.417	6(4.3)	11(10.1)	12(5.6)	0.157	10(5.9)	3(3.4)	16(7.9)	0.327
Yes	148(91.9)	116(93.5)	167(95.4)		132(95.7)	98(89.9)	201(94.4)		159(94.1)	86(96.6)	186(92.1)	
Driving experience (in Year)												
≤5	93 (57.8)	61 (92.2)	94 (53.7)	0.396	78 (56.5)	58 (53.2)	112 (56.6)	0.876	87 (51.5)	51 (57.3)	110 (54.5)	0.314
6-10	60 (37.3)	50 (40.3)	66 (37.7)		49 (35.5)	41 (37.6)	86 (40.4)		67 (39.6)	28 (31.5)	81 (40.1)	
11≥	8 (5.0)	13 (10.5)	15 (8.6)		11 (8.0)	10 (9.2)	15 (7.0)		15 (8.9)	10 (11.2)	11 (5.4)	
Workdays (in Days)												
≤6	60 (37.3)	45 (36.3)	61 (34.9)		56 (40.6)	40 (36.7)	70 (32.9)		76 (45.0)	25 (28.1)	65 (32.2)	

KAP of Auto Bike Drivers Regarding Traffic Laws

Table 3 shows the association between the overall KAP scores with socio-demographic factors. The findings show that age, education, residence, and workdays are positively and significantly associated with the overall KAP score of the participants.

Table 3: Factors Associated with KAP Score

Variables		Knowledge			p value
		Low	Medium	High	
Age					
	≤ 29	43 (30.7)	58 (29.4)	53 (43.1)	0.056
	30-39	41 (29.3)	70 (35.5)	29 (23.6)	
	40 ≥	56 (40.0)	69 (35.0)	41 (33.3)	
Religion					
	Santana	23 (16.4)	25 (14.7)	19 (15.4)	0.913
	Islam	117 (83.6)	168 (85.3)	104 (84.6)	
Education					
	Primary	60 (42.9)	68 (34.5)	26 (21.1)	0.001
	Secondary	66 (47.1)	109 (55.3)	72 (58.5)	
	Higher secondary and above	14 (10.0)	20 (10.2)	25 (20.3)	
Residence					
	Rural & sub-urban	41 (29.3)	41 (20.8)	20 (16.3)	0.033
	Urban	99 (70.7)	156 (79.2)	103 (83.7)	
Ownership					
	Rent	41 (2.3)	61 (31.0)	44 (35.8)	0.505
	Own	99 (70.7)	136 (69.0)	79 (64.2)	
License					
	No	7 (5.0)	14 (7.1)	8 (6.5)	0.731
	Yes	133 (95.0)	183 (92.9)	115 (93.5)	
Driving experience (in Year)					
	≤5	81 (57.9)	97 (49.2)	70 (56.9)	0.461
	6-10	50 (35.7)	81 (41.1)	45 (36.6)	
	11≥	9 (7.4)	19 (9.6)	8 (6.5)	
Workdays (in Days)					
	≤6	67 (47.9)	55 (27.9)	44 (35.8)	0.007
	7	73 (52.1)	142 (72.1)	79 (64.2)	

The auto bike drivers in their twenties ($\chi^2 = 9.230$, $p < 0.10$; $\phi_c = 0.100$) had better KAP score than other cohorts, while more educated ($\chi^2 = 18.454$, $p < 0.01$; $\phi_c = 0.142$) and urban ($\chi^2 = 6.808$, $p < 0.05$; $\phi_c = 0.122$) participants also scored higher than that of participants with low or no education and those living in rural or sub-urban areas. Likewise, participants who drove auto bike every day ($\chi^2 = 14.113$, $p < 0.01$; $\phi_c = 0.175$) in a week also scored higher KAP than those who took a day off every week.

Discussion

The objectives of the current study were to study the knowledge, attitudes, and practices of auto bike drivers towards traffic laws in Khulna city, Khulna, and to determine the relationships among personal information, work experience and knowledge, attitudes, and practices of drivers towards traffic laws.

Knowledge

The results obtained from the assessment of relationships with socio-demographic factors and drivers' knowledge indicated that drivers in less than 29 years age group had high knowledge of traffic laws. The chi-squared test showed a significant difference between drivers' knowledge and the age of auto drivers. This finding aligns with previous studies on commercial and non-motorized transport operators in developing regions, which suggest that younger drivers often possess higher literacy rates and greater exposure to digital media, traffic safety awareness campaigns, and basic road safety information. For instance, Ibrahim et al., (2022) and Hossain et al., (2023) reported that younger informal transit operators in urban Bangladesh showed superior recall of standard road signs and traffic signals relative to older drivers who relied primarily on informal, experiential learning. However, this result contrasts with findings from Jha & Singh, (2025) in Saudi Arabia, where older, experienced drivers demonstrated significantly higher traffic knowledge due to stricter licensing requirements and longer regulatory exposure. Regarding educational attainment, drivers with secondary education constituted the largest group displaying high traffic knowledge ($n = 95$, 54.3%). A clear descriptive trend emerged indicating that traffic law knowledge increased monotonically with higher levels of education. Education plays a pivotal role in cognitive comprehension, enabling drivers to better interpret written traffic regulations, road signages, and legal duties. Similar observations were made by Nambiza et al., (2026) among three-wheeler drivers in major urban hubs of Bangladesh, where formal schooling was strongly correlated with traffic law comprehension. Although the bivariate analysis in the present study did not yield a statistically significant difference between educational attainment and knowledge levels ($p > 0.05$), the high proportion (54.3) of knowledgeable drivers among those with higher education underscores education as an important enabling factor. This lack of statistical significance despite descriptive trends echoes the findings of Kumar et al., (2016), who noted that in informal transport sectors, operational experience and informal peer learning can sometimes obscure the independent statistical effect of formal education on basic traffic law awareness.

Attitude

The evaluation of drivers' attitudes revealed important insights regarding their perceptions and respect for traffic regulations. Bivariate analysis indicated significant associations between specific socio-demographic factors and drivers' attitude levels toward traffic laws. Notably, positive attitudes were more prevalent among mature drivers, with the highest proportion of positive attitudes (32.9%) recorded in the 30–39 age group. This finding suggests that driving maturity, extended road experience, and shifting personal responsibilities often foster a greater appreciation for traffic discipline and road safety. This aligns with findings by Amoadu et al., (2024) and Ali et al., (2026) among paratransit operators in South Asian cities, who observed that middle-aged drivers exhibit higher risk awareness and lower inclination toward aggressive driving compared to their younger counterparts, largely due to family commitments and financial risk aversion regarding traffic fines or vehicle damage. Conversely, younger drivers often display overconfidence and risk-tolerant attitudes, a trend widely documented in road user behavior literature (Ali et al., 2026). Regarding educational background and residential status, drivers with secondary education represented the majority (59.2%) of those demonstrating positive safety attitudes, and 68.5% of the respondents resided in urban areas. Higher educational attainment generally enhances a driver's capacity to comprehend the social and legal consequences of traffic non-compliance, thereby shaping more favorable attitudes toward road safety rules. Similar observations were reported by Priye & Manoj, (2020) in their study on urban three-wheeler operators in Bangladesh, where urban residence and basic secondary schooling were positively correlated with favorable safety perceptions and respect for traffic enforcement. Urban drivers often experience higher exposure to traffic signals, police presence, and public safety campaigns, which collectively reinforce positive law-abiding attitudes (Datta et al., 2022). Although certain socio-demographic sub-categories did not reach statistical significance across all attitude domains, the descriptive trend clearly indicates that age maturity, urban exposure, and formal schooling serve as critical determinants in shaping positive driving attitudes among informal transit operators.

Practices

The evaluation of self-reported driving practices demonstrated that a high proportion of respondents (81.2%) reported adhering to traffic laws during their daily operations. Bivariate analysis revealed significant associations between specific socio-demographic characteristics and compliance practices. Drivers residing in urban areas exhibited higher levels of compliance compared to their rural counterparts. This urban-rural variance in traffic compliance is widely supported in road safety literature. Datta et al., (2022) noted that paratransit operators in urban centers face higher density of traffic enforcement officers, active monitoring at key intersections, and severe congestion, which collectively enforce greater compliance with lane discipline and traffic signals. In contrast, rural or peri-urban corridors often lack regulatory oversight, leading to higher rates of non-compliance (Chonsalasin et al., 2025). Furthermore,

drivers who worked consistently daily demonstrated better traffic law adherence. Regular, daily driving experience fosters routine familiarity with route conditions, traffic flow patterns, and high-risk collision zones, which encourages defensive driving practices. Similar findings were reported by Chowdhury et al., (2026), who observed that full-time commercial operators tend to adopt more standardized safety practices than occasional or part-time drivers to protect their primary source of livelihood and avoid costly traffic fines. Although other demographic variables (such as age or income level) did not reach statistical significance in relation to driving practices ($p > 0.05$), the overall high rate of self-reported compliance should be interpreted with caution. In self-reported KAP surveys, respondents frequently demonstrate social desirability bias, over-reporting law-abiding behaviors compared to observational road studies. Future observational research is recommended to validate self-reported practices against actual on-road driving behavior among auto-bike operators.

Comprehensive Assessment of Knowledge, Attitudes, and Practices (KAP)

The assessment of traffic law knowledge among battery-powered auto-bike drivers revealed distinct patterns influenced by age, education, geography, and operational exposure. A prominent finding is that both young and mature drivers demonstrated a commendable understanding of fundamental traffic laws, albeit through fundamentally different mechanisms of learning and information acquisition. Younger drivers benefited significantly from high digital literacy and frequent engagement with social media platforms, where traffic safety campaigns, viral videos, and public information materials are regularly shared (Abbas et al., 2024). Conversely, adult drivers compensated for limited digital media exposure through accumulated years of practical driving experience, informal peer networks, and observational learning from long-standing road operators (Jha & Singh, 2025). This dual-pathway mechanism illustrates that while formal driver education remains virtually absent in the informal transport sector, informal channels both digital and experiential play a crucial role in knowledge dissemination (Chonsalasin et al., 2025). Educational attainment emerged as a strong structural determinant of traffic rule comprehension. Auto-bike drivers who attained secondary education consistently demonstrated higher knowledge levels compared to those with only primary education or no formal schooling. Higher literacy enables drivers to read written road signage, comprehend legal duties, and assimilate public safety advisories more effectively (Chowdhury et al., 2026). Geographically, drivers residing in urban areas displayed superior knowledge compared to their peri-urban or rural counterparts. This urban advantage is multifaceted: urban drivers generally possess higher educational levels, face continuous exposure to roadside safety advertisements and billboards, and operate under the active supervision of urban traffic police (Nordfjærn et al., 2011). The constant presence of law enforcement in municipal hubs creates a high-enforcement environment that compels drivers to learn and memorize traffic regulations to avoid penalties, fines, or impoundment.

(Ibrahim et al., 2022). Finally, operational frequency played a vital role in knowledge retention and practical awareness. The majority of respondents (64.2%) reported driving their auto-bikes daily. Daily operational exposure fosters routine familiarity with high-risk intersections, traffic light sequences, peak congestion patterns, and local enforcement hotspots. Through continuous, daily engagement on city roads, drivers actively refine their practical knowledge by observing traffic dynamics and sharing real-time experiences with fellow operators at transit stands.

Strengths and Limitations

This study is among the first to systematically examine the knowledge, attitudes, and practices (KAP) of auto bike drivers in the Khulna City Corporation area using a structured KAP model. A key strength is the robust sample size (n=460), which enhances the reliability of findings and allows for subgroup analysis across diverse socio-demographic variables. The use of a well-structured, literature-informed survey tool ensures content validity, and the ethical rigor applied throughout data collection supports the study's credibility. However, studying is not without limitations. The reliance on self-reported data introduces the possibility of social desirability and recall biases. The cross-sectional design also limits causal inference. Moreover, convenience sampling may affect the generalizability of findings beyond the study area. Future research employing longitudinal and mixed-method designs could provide deeper insights into behavioral trends and policy impacts.

Conclusion

The proliferation of auto bikes in urban Bangladesh, particularly in Khulna, presents both opportunities for mobility and risks to public safety. This study underscores the urgent need for systematic interventions aimed at

improving driver behavior through education, regulation, and enforcement. Key findings reveal that younger, urban, and educated drivers are more compliant with traffic laws, while others, particularly those from rural backgrounds or with lower education, exhibit knowledge and behavioral gaps. To address these issues, local authorities must enforce mandatory driver licensing, establish regulatory guidelines for easy bikes, and initiate targeted training programs. Public health campaigns focusing on traffic safety awareness should also be integrated into broader urban planning initiatives. By bridging the gap between knowledge and practice, such interventions can contribute significantly to reducing traffic-related morbidity and mortality in Bangladesh's growing cities.

Availability of Data and Materials

We declared that the collected data are original, and data were collected by the authors in accordance with the ethical standards. The data and materials used in this study are available upon the responsible request of the corresponding author.

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Conflict of Interest

The authors declares no conflict of interest.

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