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Drivers' Knowledge, Attitude and Practices Towards Traffic Rules and Regulations

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Abstract

Research frequently reports that the majority of crashes (up to 80%), are the fault of drivers. Further, the WHO reports that most fatal crashes occur in low- and middle-income countries (LMIC). In LMIC, including Pakistan, most drivers have low levels of knowledge about traffic rules and regulations, have negative attitudes towards rules and regulations and often violate road safety rules. This study used a structured survey of drivers in Karachi, Pakistan (n=260). Most respondents were aware that helmet use for motorbike riders is compulsory (74.6%), agreed it was important to follow road signs (74.2%) and wear a seat belt (64.6%). However, over half did not know the speed limit in residential areas (54.6%) and almost half considered drug use when driving was not dangerous or were against the penalty or fine for violation of traffic laws (45.4%). In addition, 45.8% of all drivers thought driving licenses were unnecessary. This study suggests there may be low levels of driver knowledge of certain road rules (e.g. speed limit), negative attitudes about certain safe driving practices (drug driving), and low levels of value placed on driving license in Karachi, Pakistan. Analysis suggest that knowledge and attitude affect driver practices in Karachi, Pakistan. Strengthening enforcement and related public communication measures about traffic rules and greater penalties that are sufficiently deterring for the violators of the traffic rules is needed. There must also be a formal mechanism to issue the driving licence after a proper test of the knowledge of road rules and driving following those rules.

Key findings

- A structured survey was completed with 260 drivers in Karachi, Pakistan
- 74.6% of respondents were aware that helmet use for motorbike riders is compulsory.
- 74.2% agreed it was important to follow road signs 64.6% to wear a seat belt.
- 54.6% did not know the speed limit in residential areas and 45.4% considered drug use when driving was not dangerous or were against the penalty or fine for violation of traffic laws.
- 45.8% of drivers did not consider it necessary to have a driving licence.

Introduction

According to the World Health Organization (WHO), approximately 1.19 million people die every year in road crashes worldwide (WHO, 2023). Road crashes are a global issue, but in low- and middle-income countries the rate

of road crashes is higher compared to developed nations. The crash rate in Africa is 24.1 per 100,000 population and in South Asia 18.5 compared to 10.3 in Europe. The Eurostat statistics report that while the number of road crashes continually decreased since 2011 but have been increasing since 2021.

A report by PBS found that in Pakistan, around 30,310 people die in road crashes annually (Pakistan Bureau of Statistics, 2021). Additionally, in Pakistan, every five minutes, someone is either killed or injured in crashes, which positions Pakistan 67th in the global ranking for the highest number of road crashes. Similarly, Shabir et al. (2014) predicted that road crashes would be the 5th cause of death by the end of 2030 if serious measures are not put in place to overcome road crashes.

Moreover, Salman et al. (2006) and Shafiq et al. (2006) reported that globally 75-80 per cent of the total registered road crashes were associated with drivers' faults. Drivers' faults or negligence included speeding, illegal overtaking, nighttime driving of public transport on long routes, sleeplessness of drivers due to single driver on long and dangerous routes, drug driving, careless or dangerous driving, and driving unfit vehicles on elongated routes (Gopalakrishnan, 2012).

Similarly, the high number of road crashes in Pakistan is attributed to drivers' failure to follow the traffic standard protocols and violations of the traffic rules and regulations. Road crashes are comparatively higher in big cities of Pakistan, such as Karachi, Islamabad, Faisalabad, Lahore, Multan, Peshawar, and Rawalpindi (Ahmed, 2007). A study conducted by Imran and Nasir (2015) about road safety and drivers' knowledge found that the majority of drivers in Pakistan were either uneducated or had little education. They have limited driving knowledge, a more negative attitude towards traffic laws, and break traffic rules and regulations.

Studies in Pakistan suggest that the knowledge, attitude, and practices of drivers had significant effects on road crashes. In 2010, approximately 332 people died and 27,264 were injured in traffic crashes, which were attributed to speeding, illegal overtaking, drug driving, and illegal U-turns on speedy highways (Mirzaei et al., 2014). Another study found 49 per cent of drivers in Pakistan did not possess driving licences (Batoool et al., 2012). Unlike in high income countries, there is no appropriate mechanism for issuing a driving licence in Pakistan, especially for public vehicle drivers. A driving licence can be acquired through personal reference without undergoing any physical or driving test (Mehmood & Baig, 2019).

Moreover, Riaz and Shahid (2018), researched the knowledge, attitude, and practices of professional drivers in Multan, Pakistan. It found that most professional drivers had inadequate knowledge about traffic signboards, and lack awareness about road safety measures. Drivers were also involved in risky practices and showed aberrant behaviour towards traffic rules and regulations. The study concluded that heavy financial penalties, the temporary bans on vehicle use, publication of facts and figures, and road safety awareness sessions may overcome road crashes in Multan, Punjab.

According to the Karachi Chamber of Commerce and Industry (KCCI, 2017), Detho et al. (2018), Martin et al. (2012), Gulzar et al. (2012), Hassan and Raza (2015), and Rao and Grenoble (1991), most of the road crashes in Karachi are attributed as drivers' fault – drivers hardly

bother about the traffic rules and just try to sneak through the smallest space available on roads to reach their destination.

Hassan and Raza (2015) stated that, in Karachi, more than 300 private vehicles were registered daily. Furthermore, a higher percentage of road crashes in Karachi is linked to poor road design, lack of road maintenance system, non-availability of traffic signs, bad maintenance of roads, and lack of financial investment in road repair. While the Government of Sindh has allotted the money it is not translating to work on the roads.

On the other hand, Neelima et al. (2013), stated that driving experience and level of education have a strong positive correlation with road crashes. Driving experience influences the drivers' behaviour, where professional drivers are more likely to drive vehicles safely compared to less experienced drivers. Similarly, Issa (2016) observed that personal characteristics, such as the socio-economic background of drivers, their level of education, driving experience, qualifications, and monthly income influence road crashes in Saudi Arabia and other developing countries, including countries in South Asia. The rise in awareness and the education level enhances the drivers' aptitude to follow traffic rules and avoid risky driving behaviour.

Method

A structured questionnaire with close-ended questions were designed as a data collection tool which was divided into different sections. The first section collected the socio-demographic profiles of respondents: age, gender, qualification, marital status, driving experience and driving time, and age when they learned to drive. The second section included knowledge about road safety. The third section included questions about the driver's attitude and practices of drivers towards road safety. The questionnaire was pre-tested with 20 drivers. A total of 260 drivers from different districts of Karachi were interviewed by the research team using the structured questionnaire between February 2023 and March 2023.

Results

[Table 1](#) summarises the socio-demographic profile of respondents, where the majority of the respondents, were male (75%, female, 25%). The average age was between 18-33 years (55%) with 20 percent of respondents older than 33 years. The monthly income for 13.8 per cent of respondents was below 15,000 rupee (AUD 81), and 16.5 per cent of respondents' earning range was between 16k-25k (AUD 86-135). Furthermore, 30 percent of respondents had a monthly income between 26k-35k (AUD 140-189), and only 22 percent of respondents had a monthly income above 45k (AUD 243). The majority of respondents lived in joint and extended families (75%). Only 5 percent of respondents learned to drive through driving schools, 12.7 percent of respondents learned from police coaching centres, and 6.9 percent learned to drive from another driver, called 'the conductor system'. However, the rest of the re-

Table 1. Participants' socio-demographic profile (N=260)

Variables		n	%
Gender			
	Male	195	75.0%
	Female	65	25.0%
Age-Years			
	<18	65	25.0%
	18-25	91	35.0%
	26-33	52	20.0%
	34-41	26	10.0%
	41>	26	10.0%
Family Type			
	Nuclear	65	25.0%
	Joint	117	45.0%
	Extended	78	30.0%
Monthly Income			
	<15000	36	13.8%
	16000-25000	43	16.5%
	26000-35000	78	30.0%
	36000-45000	37	14.2%
	45000>	57	21.9%
	None	9	3.5%
Learned Driving			
	Driving School	13	5.0%
	Friend/family members	58	22.3%
	Traffic Police	33	12.7%
	Self-Learned	125	48.1%
	Conductor	18	6.9%
	Any Other	13	5.0%
Driving Experience			
	>1 year	30	11.5%
	2-5-Years	67	25.8%
	6-9-Years	51	19.6%
	10-13-Years	40	15.4%
	14-17-Years	41	15.8%
	<17 Years	31	11.9%
Driving Time			
	Day	112	43.1%
	Night	78	30.0%
	Day and Night	70	26.9%

spondents, approximately 70 percent learned to drive from friends or were self-taught. Furthermore, 44.2 percent of respondents had an above-graduation level education. In addition, 11.7 percent of respondents had less than one year of driving experience, 25.7 percent of respondents had 2-5 years of experience and 30 percent had above 17 years of driving experience. Finally, most of the drivers were driving in the daytime and 27 percent drove vehicles both day and nighttime.

Education was the factor for assessing the driving practices and criteria set for the drivers by the Government of

Pakistan. As [Table 2](#) indicates, female drivers had higher level of education than male drivers. It was further assessed that the female drivers were following the road safety laws such as wearing seat belts but had less knowledge of basic rules and regulations. Well-educated drivers, both male and female, followed the driving rules and regulations, while the uneducated and less educated were not following the rules and were open to paying financial charges rather than following the driving rules.

[Table 3](#) presents driver's knowledge of road safety. Actions that were considered important included: motorbike

Table 2. Education levels across age and gender

Education levels	Age (years)	Gender				Total
		Male		Female		
		n	%	n	%	
Uneducated	18-50	19	7.3%	11	4.2%	30
Primary	18-60	29	11.2%	13	5.0%	42
Secondary	18-45	28	10.8%	10	3.8%	38
Matric	18-60	23	8.8%	9	3.5%	32
Intermediate	18-60	10	3.8%	18	6.9%	28
Graduation	18-60	13	5.0%	30	11.5%	43
Master	18-60	5	1.9%	31	11.9%	36
M.Phil. and above	18-60	2	0.8%	9	3.5%	11

Table 3. Knowledge of drivers towards Road Safety (KNRS)

Categories	Yes		No		Total
	n	%	n	%	
A driving licence is important	151	58.3%	108	41.7%	259
It is important to fasten the seat belt	168	64.6%	92	35.4%	260
It is compulsory to wear a helmet	193	74.5%	66	25.5%	259
It is important to follow the road sign	192	74.1%	67	25.9%	259
Takeover from the right is dangerous	184	70.8%	76	29.2%	260
Usage of drugs is dangerous	142	54.6%	118	45.4%	260
Penalty for violating traffic laws	144	55.4%	116	44.6%	260
Driving speed near residential areas	106	42.7%	142	57.3%	248

rider wearing a helmet (74.6%), following traffic signs (74.2%), wearing a seat belt (64.6%) and having a driver's licence (58%). Most respondents (70.8%) knew that dangerous driving was a threat to pedestrians. Furthermore, almost half of respondents did not consider drugs dangerous for driving (45.5%) and were against penalties or fines being imposed by the police in violation of traffic laws (44.6%). Finally, the majority of respondents did not even know the speed limit of the vehicles near residential areas and school surroundings (54.6%).

[Table 4](#) indicates drivers' attitudes towards road safety. Almost half of drivers did not consider it necessary to have a driving licence (45.8%), felt discomfort with a seat belt (47%) and did not like to wear a helmet on a motorbike (45.8%). Moreover, 40.8 percent of respondents were not following the traffic rules and regulations, and a third of respondents were not giving prime importance to pedestrians' safety (36.5%) and said that drug drivers do not cause road crashes (35.4%). Furthermore, 30.8 percent of respondents have not considered road signs helpful to reduce road crashes and over half (58.8%) of respondents were fined by police when they violated traffic rules and regulations. In addition, 44.6 percent of respondents did not slow their vehicles near residential areas, while 49.6 percent of respondents did not maintain a safe distance between two

vehicles, and finally, 69.2 percent of respondents did not consider eating and drinking dangerous while driving.

[Table 5](#) shows the drivers' practices. The majority of respondents stopped or slowed when pedestrians were crossing the road (75%), obeyed traffic rules and regulations (61.9%). Half of respondents wore a helmet on a motorbike (55%), used indicators when overtaking another vehicle (55%). While 40 percent willingly wore a seat belt.

However, the majority of respondents reported eating or drinking while driving (66.9%), illegally used mobile phones (65%), drove very fast when they were in a hurry (62.3%) and did not slow near residential areas (60%). Over half the respondents did not care about the fine imposed in violation of traffic rules and regulations (58.5%) or did not possess a driver's licence (51.2%). In addition, 40.8 percent of respondents had been involved in crashes and over a third had driven when impaired by drugs (36.5%). Further, the correlation between driving experience and monthly income was significant ([Table 6](#)).

[Table 7](#) shows the relationship between gender with the knowledge, attitude, and practices of drivers towards road safety. The results showed that 150 males and 34 females have sufficient knowledge, while 75 males and 39 females have insufficient driving knowledge. There is a significant relationship between gender and driving knowledge, where χ^2 (1, N = 260), $p = .002$. Men were more knowledgeable

Table 4. Attitude of drivers towards Road Safety (ATRS)

Categories	Yes		No		Total
	n	%	n	%	
A driving licence is necessary	141	54.2%	119	45.8%	260
The seat belt may cause discomfort	138	53.1%	122	46.9%	260
I do not like wearing a helmet	141	54.2%	119	45.8%	260
Following traffic rules and regulations	154	59.2%	106	40.8%	260
The pedestrian must be given importance	165	63.5%	95	36.5%	260
Drugs are not caused road crashes	168	64.6%	92	35.4%	260
Road signs help to reduce crashes	180	69.2%	80	30.8%	260
You have been fined by the police	153	58.8%	107	41.2%	260
Keep speed slow near residential areas	144	55.4%	116	44.6%	260
Keeping a safe distance between vehicles	131	50.4%	129	49.6%	260
Eating and drinking are not dangerous	80	30.8%	180	69.2%	260

Table 5. Practices of drivers towards Road Safety (PRRS)

Categories	Yes		No		Total
	n	%	n	%	
Possessed driving licence	127	48.8%	133	51.2%	260
Always wear a seat belt when a drive	104	40.0%	156	60.0%	260
Always wear a helmet on a motorbike	143	55.0%	117	45.0%	260
Obey the road signs and signal	161	61.9%	99	38.1%	260
Stop vehicles when people cross the road	195	75.0%	65	25.0%	260
Using any type of drugs while driving	95	36.5%	165	63.5%	260
Do not care for fined	152	58.5%	108	41.5%	260
Ever been to road crashes	106	40.8%	154	59.2%	260
Driving speed < 40 near residential areas	104	40.0%	156	60.0%	164
Eating and drinking while driving	174	66.9%	86	33.1%	260
Overtake without indicators	143	62.4%	86	37.6%	229
Illegal mobile phone uses	169	65.0%	91	35.0%	260
Drive too fast when hurrying	162	62.3%	98	37.7%	260

Table 6. Correlation among Demographic Profile

P: Pearson Correlation		Age	Driving Experience	Income
Age	P	1		
	Sig. (2-tailed)			
Driving Experience	P	.014	1	
	Sig. (2-tailed)	.817		
Monthly Income	P	-.003	.293**	1
	Sig. (2-tailed)	.959	.000	

** . Correlation is significant at the 0.01 level (2-tailed).

compared to females. Moreover, 134 males and 32 females had a positive attitude towards road safety, and 90 males and 45 females had a negative attitude towards road safety. There is a significant relationship between gender and dri-

ving attitude, where χ^2 (1, N = 260), 7.727, $p = .004$. Men were more likely to possess a positive attitude compared to females. Finally, 133 males and 36 females have good practices, and 91 males and 39 females have bad practices

Table 7. Relationship Between Gender and Knowledge, Attitude and Practices

	Gender	Sufficient (frequencies)	Insufficient (frequencies)	Result of the Analysis			
				χ ²	Df	P	
Driving Knowledge	Male	150	75	9.419a	1	0.02	
	Female	34	39				
Driving Attitude	Male	134	90	7.727a	1	.004	
	Female	32	45				
Driving Practices	Male	133		91			
	Females	36	39	2.958a	1	.057	

towards road safety. This showed that fewer females have good road safety practices compared to males. There is a significant relationship between gender and driving practices, where χ^2 (1, N = 260), 2.958, $p = .057$. This showed that both males and females have the same practices, however, was slightly higher among males compared to females.

Table 7 provides the results of correlation and regression tests of the three variables: KNRS: Drivers' Knowledge of Road Safety; ATRS: Drivers' Attitude towards Road Safety; PRRS: Drivers' Practices towards Road Safety. KNRS is positively correlated to PRRS [$r = .341$, $p < 0.005$]. That is, those drivers who have driving knowledge regarding road safety have a positive relationship or association with the practices of drivers towards traffic rules and regulations. ATRS is also positively correlated to PRRS [$r = .441$, $p < 0.05$]. That is, drivers with a positive attitude have a strong positive correlation with their existing practices. Finally, PRRS is positively correlated with KNRS [$r = .341$, $p < 0.05$] and ATRS [$r = .441$, $p < 0.05$]. Hence, a model was developed with PRRS as the dependent variable and ATRS and KNRS as the predictors. The model was found significant (F (2, 257) = 50.782, $p < 0.05$) with both KNRS is .300 ($p < 0.005$) and ATRS .410 ($p < 0.005$) as significant predictors and 27.8 percent of variance explained. That is, knowledge and attitude seem to affect the practices of drivers in Karachi, Pakistan.

Discussion

In Pakistan, road crashes are very common in big cities, such as Rawalpindi, Faisalabad, and Multan, and the situation is worsening in Karachi, where the traffic crash rate is higher as compared to other cities. The results of this study showed that the majority of the drivers in Karachi are not following the traffic rules and regulations. Issa (2016) and Imran and Nasir (2015) have noted that in Karachi, most drivers lack updated driving knowledge, have negative attitudes, and violate traffic rules and regulations. Moreover, drivers in Karachi have poor socio-economic backgrounds, family pressure, and a lack of awareness and education about traffic laws. The study also discovered that drivers were self-taught and a third had driven when impaired by drugs. Although economically, drivers are not wealthy (a third of respondents earned less than 30,000 rupees per month (AUD 162)), over half of the respondents do not care about financial penalties.

There is no standard mechanism to obtaining a driver's licence in Pakistan. While public transport drivers can obtain a licence with a reference/source in government, a driver's licence does not require a driving test or evaluation of the vehicle's fitness condition (Mehmood & Baig, 2019). The current study showed that half of respondents do not possess a driving licence (51.2%), slightly higher than reported for Karachi drivers by Matia et al. in 2012 (43%). While almost half of the respondents in this study reported that they do not consider a licence is an essential document.

Shafiq et al. (2006) and Issa (2016) have conducted studies in Pakistan regarding driving knowledge, attitude, and practices towards road safety. The findings of the studies point out that the majority of drivers in the country belonged to poor socio-economic backgrounds. Thus, they have less updated knowledge regarding road safety, negative attitudes, and malpractices towards traffic rules and regulations. Similarly, the results of the current study also showed that respondents were behaving illegally while driving including using mobile phones (65%), not keeping a safe distance between vehicles (49%) and not following driving rules and regulations (40.8%). Further, 60 percent of respondents did not wear a seatbelt in the absence of traffic police.

Conclusion

In Pakistan, road crashes are high and, on average, fifteen people die every day. Several studies have shown that 75-80 percent of total road crashes were the outcome of drivers' faults. These faults included speeding, illegal overtaking, drug driving, poor maintenance of vehicles, U-turns with speed on highways, and the influence of poor economic family backgrounds. Most drivers in Pakistan, do not possess a driving licence and there is no proper mechanism to issue a driving licence. The majority of the drivers in Karachi, Pakistan have less updated driving knowledge, more negative attitudes, and malpractices towards road safety. Moreover, most drivers have less education, belong to poor socioeconomic backgrounds, and about a third drive when impaired by drugs. Driver's knowledge, attitude, and practices can be improved through education, awareness, strong formal control such as enforcement, and a centralised road safety police.

Table 8. Correlation and Regression Tests

Correlation test							
KNRS				KNRS	ATRS	PRRS	
	Pearson Correlation			1	.101	.341**	
ATRS	Pearson Correlation			.101	1	.441**	
PRRS	Pearson Correlation			.341**	.441**	1	
Regression model and ANOVA test							
	Un-standardized Coefficient		Standardized Coefficient	T	Sig.	95% C.I. for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	.864	.059		14.647	0.02	.748	.980
KNRS	.100	.018	.300	5.653	0.02	.065	.135
ATRS	.297	.038	.410	7.730	0.02	.221	.372
	R			R ²	Adjusted R ²	Standard Error of Estimates	
	.532			.283	.278	.10864	
		Squares Sum	DF	Mean Square	F	Sig.	
	Regression		1.199	2	.599	50.783	0.02
	Residual		3.033	257	.012		
	Total		4.232	259			

KNRS: Drivers' Knowledge of Road Safety; ATRS: Drivers' Attitude towards Road Safety; PRRS: Drivers' Practices towards Road Safety

** Significant at 0.01 level of 2-tailed tests

The Pakistani Government should ensure to follow the global standard regarding traffic rules and key signs. The systematic approach as provided by the World Bank, and the World Health Organization (WHO) should be followed and practised on the ground. There must be a formal mechanism to issue the driving licence, after a proper test of the knowledge of road rules and driving following those rules. Assessment of motor vehicles for roadworthiness is also required. Serious violation of traffic laws requires financial penalties that are a greater deterrent than the current fines. Finally, there is a need for a consistent approach with one centralised road policy and safety in the whole country, including Sindh, Baluchistan, and Gilgit Baltistan.

Author contributions

Abbas Sheer conducted the literature review and data compilation. Sidra Fatima managed the data. Azhar Sharif conducted data analysis. Sheikh Muhammad Adnan provided the references.

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Human Research Ethics Review

The study protocol was reviewed by the Research Review Committee, Institute of Southern Punjab, Multan. The committee granted a waiver for this study on 2 July 2024 (REC00002/07/24).

Data availability statement

Data, materials, and protocols associated with the study can be provided, on request.

Conflicts of interest

The authors declare that there are no conflicts of interest.

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