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A qualitative study to explore traffic police personnel perceptions towards road safety behaviour among young riders in Manipal, India

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Abstract

Road crash injuries are significant public health issues in many low-and middle-income countries. Every year more than 1.35 million people lose their lives due to road crashes, making it one of the leading causes of death worldwide. In 2021, 1.19 million road traffic deaths occurred worldwide. Globally, India accounts for the second-largest number of fatal road traffic crashes. Riders in the age range of 18–25 years contribute to 41.4% of India's total road crash victims. An in-depth understanding of the current traffic density, violations, and behaviours of young riders is essential for enforcement agencies, in particular, the traffic police personnel. Their perspective is relevant as they have a unique position to judge and evaluate the riding behaviours and the efficiency of the existing intervention programmes. Furthermore, their suggestions can be highly effective in developing evidence-based risk reduction programmes. The present study was conducted in Manipal, which is a locality of Udupi district in Karnataka province of Southwestern India. Seventeen in-depth interviews were conducted from October 2018 to January 2019 among traffic police personnel. Thematic analysis was done using ATLAS.ti 8 software to identify, analyse, and report themes within the data. Respondents revealed that in recent times Manipal roads have become unsafe for young riders. Factors such as speeding, using a mobile phone while riding, reckless riding, and overtaking from the wrong side were the main reasons for road traffic crashes. Interventions like the installation of traffic barricades, closed-circuit television cameras, speed breakers, and signboards at the crash hotspots, together with strict enforcement of traffic laws, were suggested by the respondents to reduce crashes. The study findings highlight the importance of traffic police personnel's views in understanding the various determinants for road crashes observed among young riders. Future research can be taken up in other settings with broader age group involvement for the target population. There is a need to establish a coordination committee that can locally organize awareness programmes involving all the stakeholders on road safety to increase the level of risk perception and reduce crashes.

Keywords In-depth interviews, Manipal, risky riding, road crashes, traffic police personnel, young riders

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Introduction

Road crash injuries are significant public health issues in many low-and middle-income countries (LMICs). Every year more than 1.35 million people lose their lives due to road crashes, making it one of the leading causes of death worldwide. In 2021, 1.19 million road traffic deaths occurred worldwide [1]. Globally, India accounts for the second-largest number of fatal road traffic crashes. Riders in the age range of 18–25 years contribute to 41.4% of India's total road crash victims [2]. Road crashes have become the eighth leading cause of death worldwide for all age groups and the first leading cause of death among children and young adults aged 5–29. Globally, LMICs account for 92% of the road traffic injuries (RTIs) associated with mortality [1]. The impact of RTIs on the economic development of a nation is substantial. An increasing number of deaths and disabilities among the young-aged population have emerged as the latest global public health challenge [2, 3]. The economic productivity of crash victims is disturbed, thereby affecting the overall quality of life. Long-term healthcare is required for the crash victims if they have to recover [3]. India being the most populous country in the world, presently faces serious road safety issues more than ever due to a combination of increased use of motorized transportation and poor road conditions. There has been an upward swing in the number of crashes in India over the past three decades [4]. Every hour there are 15 fatalities and 53 injuries associated with crashes in India. Road crashes in India kill almost 1,50,000 people annually, and they account for almost 11% of the crash-related deaths in the world. It is expected that the total number of deaths related to RTIs will cross the 2,50,000 mark by 2025 [5]. It is estimated that the current fatality rate in India is around 100 per million people, which is 2.5 times more than the average fatality rate in high-income countries [6].

The issues related to road safety in India are very diverse, including personal, environmental, infrastructural, legislation, and geographical conditions [7, 8]. Young motorists in the age range of 18–25 are more vulnerable to RTIs in India than any other road users. They constitute 50% of the total deaths due to road crashes in India [1, 8]. Riders in the age range of 18–25 years contribute to 41.4% of India's total road crash victims [8]. Previous studies [4, 7] have reported the vulnerability of young riders to road crashes. The instances of crash risk are higher among young riders, primarily due to a lack of experience in understanding, assessing, and reacting to hazards [9]. In addition, age-related risky riding behaviour amongst young riders can be theoretically explained by neurocognitive evidence, which suggests an imbalance between the development of the social-affective brain and the cognitive control system during the transition period from child to adult [10].

Important to note is that several physical and social-environmental factors, along with behavioural- and vehicle-related factors, have been found to contribute to a significant share of road crashes and injuries in LMICs. A considerable fraction of road users is not equally protected because of the contextual effects of physical and socio-economic environmental disadvantage, which are experienced differently as a variety of "vulnerabilities" in the road traffic system [11, 12]. Vulnerable road users are those who are physically less protected than operators of closed vehicles and include pedestrians, cyclists, and motorcyclists. Vulnerable road users have been prioritized within global health and development agendas. For instance, within the United Nations Sustainable Development Goals (SDGs). SDG target 11.2 addresses access to "safe, affordable, accessible and sustainable transport systems with special attention to the needs of those in vulnerable situations, women, children, people with disabilities, and older people" [13].

Manipal, belonging to the state of Karnataka in India and an international university town, is one of the fastest-growing cities in India. Around 60% of the population of Manipal are young students. With an unprecedented increase in road traffic volume over the last five years and minimal growth of the infrastructure associated with it, the roads of Manipal are now more vulnerable to crashes than ever before. As reported by a senior officer of the regional transport office (RTO) personal communication, (29 Mar 2019) of the district, 80 and 40 new two-wheelers and cars are given clearance by the RTO office daily. As per the police reports, there were 787 crashes in the first half of 2015, among which 41 were school and college-going students. Nearly 33% of crash victims are motorized two-wheelers' (MTWs) users and are in the age range of 18–30 years [14].

Improvisation of road safety in India with the overall goal of preventing road crashes requires the participation of all stakeholders, including road users. In India, research on RTIs has focused more on risk factors and disease burden, mainly using the epidemiological approach [15]. Qualitative studies broaden the outcome scope beyond the risk factors and severity of injuries and shed light on stakeholder perceptions, which can provide evidence for behaviour change and better coordination. The perspective of the traffic police personnel is undoubtedly relevant as they have a unique position to judge and evaluate the riding behaviours and the efficiency of the existing interventions. Furthermore, their suggestions can be highly effective in developing evidence-based risk reduction programmes [16]. The present study therefore aimed to explore the opinions of traffic police personnel regarding road safety among young riders in Manipal,

India. The findings from the current study will provide a broader insight into the existing road safety issues to design well-informed targeted intervention programmes among young riders to reduce road traffic crashes. Finally, for the novelty of this study, to the best of our knowledge, no study has been conducted in India, which has explored the perspective of traffic police personnel towards road safety amongst young riders.

Literature review

In the Indian setting, concerning age and gender, people in the age group 18–45 years contribute to more than half of the total crash victims [8]. Several studies have indicated that youths are most vulnerable to road crashes in India [7, 17]. As for gender, previous studies have highlighted the increased risk of males for fatal road crashes as compared to females [5, 17]. Noteworthy to mention, men contributed to 85.6% of total fatal crashes in India in 2019 [8]. One of the probable reasons is that male riders more than females prioritize the benefits of risk-taking over the cost associated with it [18].

In India, overspeeding is the leading cause of road crashes, contributing to 71.1% of the total crashes [8]. Previous literature has also observed speeding to be the main cause of road crashes in India [7, 15, 19]. Speeding can be either riding beyond the lawful limit or adopting a speed that is inappropriate for the traffic conditions present, with both manifestations of speeding posing a significant risk for fatal crashes [19]. Mobile phone usage while riding is another common behaviour observed among young riders. For instance, in a study conducted in Mysore, India by Setty et al. [20] it was observed that 50% of the observed riders use mobile phones while riding. A multi-city nationwide survey conducted to understand the utilization patterns, its effects, as well as the perception of mobile phone usage among road users across India, mentioned that 94% of the respondents believe that the use of a mobile phone while riding is risky, although 47% of them receive calls while riding, and 60% do not stop riding before answering calls [21]. Furthermore, some studies in India have reported that predominantly due to humid climatic conditions, helmet usage is lower in several parts of coastal India [22, 23].

Riding under the influence of alcohol is also one of the major causes of road crashes observed among young riders in India [22]. Gopalakrishnan [17] mentioned that in LMICs like India, between 33 and 69% of fatally injured riders and between 8 and 29% of non-fatally injured riders were under the influence of alcohol before their crash. Moreover, crashes with young riders involved are more common during weekends due to riding under the influence of alcohol [8]. It is essential to know the traffic police personnel's perceptions towards road safety among young riders as they have a unique position to judge and evaluate their riding behaviours. They are the most suited group to judge the efficiency of the existing interventions and their suggestions can be highly relevant in developing evidence-based risk reduction programmes [16]. Furthermore, a study conducted by Fanai et al. [24] suggested that since enforcement authorities deal with road crashes and have contact with RTIs victims daily, they possess an excellent perspective on preventing road crashes.

Materials and methods

Study design

A qualitative explorative study design was used for conducting individual interviews with traffic police personnel in the Manipal region of Udupi district, Karnataka. Qualitative research is a type of research that explores and provides deeper insights into real-world problems [25]. Unlike a quantitative study, where the approach is collecting numerical data points, qualitative research assists in generating hypotheses for further investigation. Furthermore, qualitative research captures participant's perceptions, experiences, and behaviour. Additionally, one of the strengths of qualitative research is its ability to narrate a story from the participants perspectives in the study [26]. Considering the above-mentioned points, it can be well argued that a qualitative approach was the most feasible approach for our study, where we were looking to have an in-depth understanding of the current traffic density, violations, and behaviours of young riders from the perspective of traffic police personnel in Manipal, India.

Setting

The present study was conducted in Manipal, which is a locality of Udupi district in Karnataka province of Southwestern India. It is a coastal place nestled between the Western Mountain range and the Arabian Sea. With an area of 29.71 km^2, the population of Manipal is close to 50,000. It is also home to the Manipal Academy of Higher education, which hosts 30,000 students from all corners of India and 60 countries across the world. Manipal is one of the fastest-growing cosmopolitan cities in India; with 60% of the population of Manipal being young students.

Sampling methods and data collection

Using an in-depth interview guide, seventeen in-depth interviews were conducted among the traffic police personnel, from October 2018 to January 2019. Contact details of traffic police personnel were obtained from the district superintendent's police office. They were contacted and an interview was fixed for those who consented to participate in the study. Before data collection, the researcher briefed the participating traffic police

personnel about the study. The names of the participants were not asked to maintain confidentiality and anonymity. The study was approved by the institutional ethical committee of Kasturba Medical College at Manipal Academy of Higher Education (KMC IEC-09/2018). The respondents were then contacted via telephone, and the purpose of the study was explained. The interviews were either conducted in the police station or at the researcher's office; none of the interviews were conducted on the road during duty hours. The interviews were recorded using audacity recording software. On average, the time for each interview was from 32 to 50 min.

The in-depth interview guide consisted of questions under six domains, namely current traffic scenarios, acts of traffic violations, behavioural aspects of the young riders, protective equipment, nature of crashes, and suggestions/recommendations to tackle the situation. The questionnaire was designed based on deductive reasoning theory [27]. This theory works on a top-down approach. Deductive reasoning theory (Fig. 1) starts by stating a hypothesis and then narrows down to prove the hypothesis by mere observations and experiences. It then declares the confirmation of the hypothesis considering particular instances from a general principle to particular instances [28]. An in-depth interview guide was developed for the study, with key areas of interest deduced from our previous research on road safety issues concerning young riders in the study setting [29].

Data analysis

Transcripts were prepared by listening to the recorded interviews, and translation of the transcripts was done from Kannada to the English language. Thematic analysis was conducted following the process outlined by Braun

Fig. 1 Map of Manipal. Source- Created on Photoshop

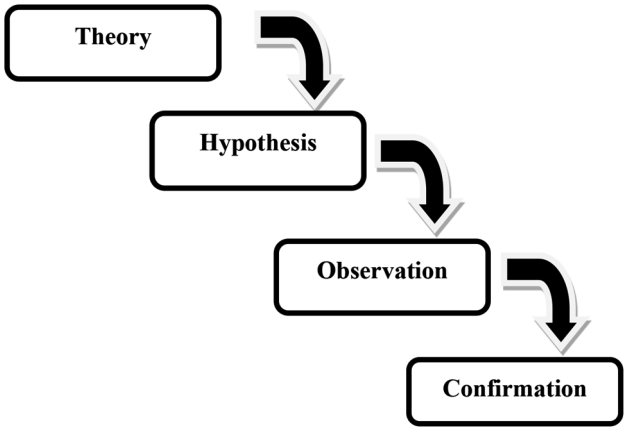

Fig. 2 Deductive reasoning

and Clarke [27] to identify, analyse, and report themes within the data (Fig. 2).

Transcripts were thoroughly read to gain familiarity with the data content and to detect meaningful topics across the transcripts. Proper grammar and spell-check of the transcripts were done before subjecting the transcript to the ATLAS.ti 8 software for analysis. Thematic analysis is based on the identification of patterns through careful reading of the data and thematic structuring into categories [26, 27]. In thematic analysis, patterns were identified in a bottom-up procedure. The method was data-driven and goes beyond semantic content, focusing on the latent level information, i.e., underlying ideas and concepts. The method is based on the researcher's judgement rather than on quantifiable measures [27]. Themes consist of patterned responses related to the research questions and are not subject to a prevalence threshold. ATLAS.ti 8 software was used to prepare and maintain the codes and categories. Patterned responses accounted for the creation of codes which were then grouped into categories to decide on the size of the theme. The responses were marked with a few words (code) and notes were added in the margin. Subsequently, categories were created with a few codes that have specific qualities in common. Finally, categories and coding matrix were analysed and summarized into groups, and five main themes were derived from it [30]. Important to mention, that the principal researcher himself (the first author) was the coder and he first familiarized himself with the thematic analysis protocol proposed by Braun & Clarke [27] and he got acquainted himself with the ATLAS.ti 8 [31] software to do the coding (See Fig. 3).

Results

Seventeen traffic police personnel who were working in the Udupi-Manipal region were interviewed for the study. The work experience of the respondents ranged between 2 and 30 years (m=13.82; SD=±7.7). All the participants were men, half of them aged between 25 and 40 years. The transcripts prepared from the recorded interview were analysed for making codes and categories. Five themes were derived from the transcripts; (1) Current traffic situation in the city, (2) Common practices observed among the young riders, (3) Determinants of crashes observed among the young riders, (4) Strategies to improve road safety in the city, and (5) Proposals suggested by the traffic police personnel. The themes which emerged in the current study sought to identify the factors involving risking riding behaviour among young riders, traffic scenarios in the city, and the suggestions by the traffic police personnel in understanding the various determinants for road crashes observed among young riders and subsequently generating informed evidence to design localized interventions.

Theme 1: Current traffic situation in the city

Diversity of the city

Most of the respondents felt that there had been an upswing in population as well as the number of vehicles in the city over the past ten years. As the city is known for its educational institutions and hospitals, many people from other states of India tend to migrate here and settle for better occupation possibilities or to seek quality medical treatment causing an increase in the existing traffic volume.

> *"The township is growing. Here, there are several colleges and hospitals. Kasturba Medical College Hospital, Manipal, is very famous. People from different parts of the state and also from out of the state come here for treatment. So, it is normally crowded. Due to better job opportunities here, many people have migrated, and the city has become crowded. The traffic load has increased in the last few years (Respondent 1)."*

> *"People from other states have migrated here due to*

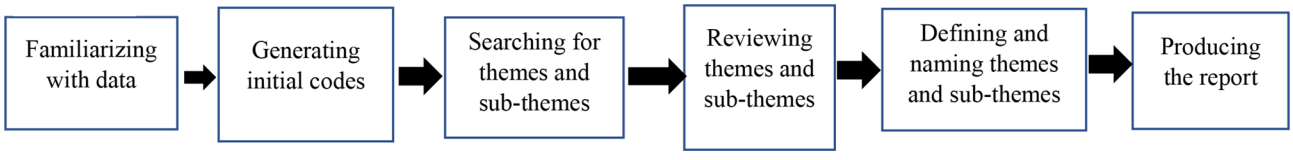

Fig. 3 Stepwise data analysis protocol. Source-Braun & Clarke (2006)

the availability of jobs. Because of the population increase and more vehicle ownership of each person, the traffic has increased substantially over the past ten years (Respondent 13)."

Respondents have identified specific areas in the study setting with heavy traffic load: Syndicate Circle, Tiger Circle, MIT junction, Post office road, and Coin Circle. Pilgrimage seasons and school trips further add to the city traffic volume. The respondents observed the morning and evening hours as peak hours for traffic in the city. During the office/school opening and closing hours, the traffic is relatively heavier. People also use their private vehicles to reach their destinations, further adding to the traffic congestion and making road use riskier.

"The area with heavy traffic is Syndicate Circle, Coin Circle, Tiger Circle, post office road, and MIT junction (Respondent 8)."

"From 8.30 to 11.00 AM, the traffic is heavy near the school and post office area and in the evening hours from 5.00 PM onwards, it becomes much heavier. Furthermore, the other main reason for an increase in traffic congestion during evening hours is the people who are returning to their homes with their private vehicles (Respondent 16)."

Causes for road crashes

Respondents observed that most of the crashes happen predominantly in the urban areas of the city. The railway bridges used for road transportation connecting the cities were identified as hotspots for crashes by the respondents. Often referred to as "black areas" by the respondents, the number of crashes is higher at these hotspots due to poor construction, lack of maintenance, and steepness (See Figs. 4 and 5).

"At Perampalli, Syndicate circle road crashes are quite common. The roads are not properly planned and constructed (Respondent 9)."

"Road crashes are more in the urban areas, and railway bridges are meant for road transportation such as the Kadiyali to Indrali railway bridge, Perampalli and Doddanagudde railway bridges which connect the city of Manipal with Udupi. These areas are considered black areas. The bridge roads are steep down, and the riders from all directions come at higher speeds, and they often lose control when any other vehicles come from the opposite side (Respondent 2)."

Respondents reported that overspeeding, riding with more than one pillion rider, not using a helmet while riding, using mobile phones while riding, riding under the influence of alcohol, and vehicle's poor maintenance are the main reasons for road crashes among young riders. Many of the respondents identified overspeeding as the most common cause of road crashes among youths. In addition, weekend parties are a popular social activity observed among the youth population. Several respondents mentioned that riding under the influence of alcohol after parties leads to road crashes as they cannot adequately control their vehicles. In addition, young riders are often seen using mobile phones while riding. Almost all the respondents pointed out this risk factor as a major contributory factor for crashes. Finally, some respondents reported that poor maintenance of the vehicles by young riders can cause crashes due to headlight and brake failures.

"Overspeeding, riding with more than one pillion rider, riding without a helmet, drinking and driving after weekend parties are the reasons for crashes. Youngsters usually go on weekends for the party. They often indulge in riding under the influence of alcohol, and they are not able to control their vehicle properly while riding (Respondent 8)."

"Riding using mobile phones/listening to music or with an empty mind is not at all a safe practice. Sometimes, because of the vehicles bad headlight, the vision is not clear, and hence crash occurs (Respondent 4)."

Best traffic practices observed in the city

Few respondents felt that some youths are obedient to traffic rules and regulations, and not all of them can be branded as violators. They reported that some youths maintain necessary vehicle records and use personal protective equipment (PPE) such as helmets and protective clothing. College students sometimes also participate in activities at the local level to spread awareness regarding road safety and traffic safety rules.

"Some students are obedient and follow the traffic rules, use a helmet, and install rear mirrors to their vehicle. They also participate in road safety activities organized by the police (Respondent 2)."

"Some maintain proper vehicle records and do cooperate with us during regular checking (Respondent 10)."

Fig. 4 Map of Manipal with details on the high traffic density locations

"Some students voluntarily come forward and provide awareness to other students regarding road safety. There are examples of a few students who called us to conduct awareness for their classmates (Respondent 12)."

Many of the respondents were of the view that the majority of the females belonging to any age group are following the traffic rules in the city as compared to men, and they also opined that the majority of the men, in particular, the youths, do not follow the traffic rules.

"Females always wear a helmet while riding, which includes college-going students and elderly females as well. We also feel that 100% of them follow traffic rules completely, and over 50 to 60% of men only follow the traffic rules (Respondent 6)."

Theme 2: Common practices observed among the young riders

Escape tactics from traffic police

Most of the respondents reported that youths often try various excuses to escape from regular checks or to pay fines for any violations. The riders who do not possess the essential documents or do not wear helmets try to escape from them. Financial difficulties are the common excuse given by youths when they are penalized by the authorities. Some of them use their influential contacts in the bureaucracy to get away with fines for violating the traffic rules. Additionally, a few respondents reported that some youths would pretend to be innocent and try to convince and negotiate with the traffic police for a second chance.

"When we catch the young riders who either do not have a driving licence or ride without a helmet, they

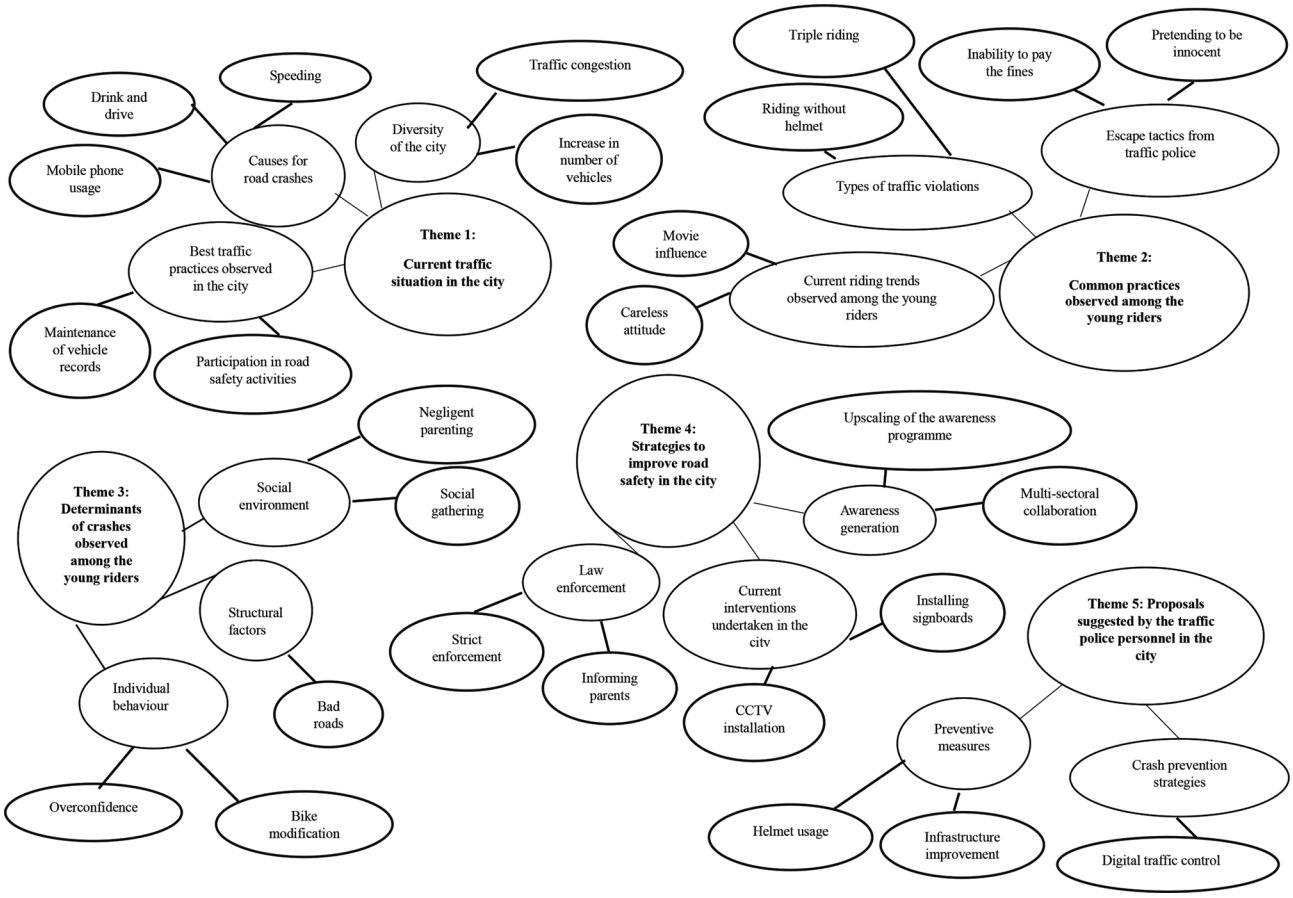

Fig. 5 Overview of themes, sub-themes, and codes

will try to influence us by telling us that they do not have money or they have contacts with the high-ranking officials of the department (Respondent 1)."

"Whenever we catch and charge them, they will try to convince us by pretending to be innocent, asking for a second chance (Respondent 5)."

Types of traffic violations

Most of the respondents reported that frequent traffic violations are observed among the young riders in the city. Common traffic violations include not using a helmet, riding with more than one pillion rider, overspeeding, and ignoring the traffic signals. Few riders will try to escape from the police checkpoints at high speed, making the other commuters on the road vulnerable to crashes.

"Not using helmets, riding with more than one pillion rider, riding on wrong sides, and breaking traffic signals are some of the common types of traffic violations observed among the young riders (Respondent 1)."

"Very often some of the riders who do not have any proper vehicle documentation records will try to escape from the police at checkpoints and will ride recklessly causing traffic jams and making the road unsafe for other commuters (Respondent 2)".

Respondents observed that young riders often modify their two-wheelers, which is against the traffic rules. Installing modified number plates, removing the rear-view mirror, altering the horns, revving up speed, and increasing the bikes' exhaust sound create a nuisance to other commuters on the road. Some respondents felt that modified number plates make it difficult to follow an offender as they neither can be seen, nor their number plates are readable.

"Some rider removes the rear-view mirror of their motorbikes, and therefore they are not able to see the vehicles behind them. Few of them alter their vehicles by revving up high and fixing up loud horns, increasing the exhaust sound of the engine creates disturbances for other people on the road. The youths with

modified vehicles tend to ride very fast, which is very risky (Respondent 7)."

The majority of the respondents reported having commonly observed mobile phones for texting and talking while riding among the young riders. Additionally, some of them have identified their habit of listening to music with earphones plugged in while riding. According to the respondents, such propensities are unsafe as the control of riding is not complete, and they cannot hear the honks from other vehicles.

"Young riders often talk and text with their mobile phones in one hand and ride from the other. Sometimes they also listen to music with earphones plugged in. If anyone honks them, they just cannot listen to it (Respondent 4)."

Some respondents felt that drinking and driving is the most typical behaviour observed among young riders during the weekends. Under the influence of alcohol, the youths ride carelessly in a zigzag manner, overtake from the wrong side, and do not use indicator signals properly, which exposes them to fatal road crashes.

"They drink and drive rashly on Saturday and Sunday nights and violate the traffic rules (Respondent 12)."

"Zigzag riding, not obeying signals, overtaking from the wrong side, not putting indicators while turning, going on the wrong side in a one-way road is commonly seen among the young riders during the weekends (Respondent 13)."

Current riding trends observed among the young riders

Most of the respondents opinioned that the movie scenes influence the current generation of young riders. They tend to follow all the riding behaviour from the movies, such as flaunting their expensive two-wheelers to attract attention and getting peer praise by racing them at a higher speed. Additionally, some respondents reported that young riders feel that their hairstyle will be spoilt by wearing a helmet. They modify their motorbikes and impersonate the movie scenes by removing the rear-view mirror and silencers.

"The youths who have expensive motorbikes worth up to one hundred thousand have very different thinking. They feel superior and copy movie scenes such as removing rear-view mirrors, and silencers, applying fancy stickers on their vehicles, and giving competition to others (Respondent 4)."

"They know that they have to use the helmet while riding, but still they neglect it. Some of them give reasons that their hair gets spoilt because of wearing a helmet. Nevertheless, hairs are not as important as our life (Respondent 17)."

Few of the respondents blamed the young rider's careless attitude for indulging in performing stunts on the city roads. Stunts like wheelie and cornering are observed among them, which are perceived as risk-taking behaviour by the respondents.

"The young riders perform stunts on the road, which is due to their careless attitude and it is very risky. They indulge in raising the front wheel and balancing their motorbikes on the rear wheel on the roads (Respondent 5)".

"I have seen the riders performing stunts like wheelies on several roads in Manipal (Respondent 9)."

Theme 3: Determinants of crashes observed among the young riders

Individual behaviour

All the respondents believed that young riders have irresponsible and careless behaviour towards the traffic rules. They are unaware of the consequences of overspeeding while riding. Additionally, they are overconfident in their riding skills and violate traffic rules by overspeeding and talking on mobile phones while riding, which increases the chances of road crashes.

"They are no longer afraid of their lives, and they ride very rashly. Overspeeding and reaching the destination within a short period give them confidence in themselves. Nevertheless, nothing will happen if they leave their home early and drive to their destination slowly. In addition, talking on mobile phones is seen among 90% of the young riders, making them prone to road crashes (Respondent 6)."

Many respondents felt that the personality of flaunting their possessions like buying expensive modified bikes and overspeeding is observed among the young riders. There is a tendency to gain attention from peers, along with a careless attitude. The young riders plug their earphones while riding, overtake from the wrong side, and do not use protective equipment.

"Usually, they purchase stylish motorbikes to show off to others. Then, they drive carelessly without any protective equipment (Respondent 14)."

"Instead of wearing a helmet, they plug in earphones. They purchase heavy cc motorcycles, which cost around two to three hundred thousand rupees because they want to show off when they go to their college. While entering college, they plug in their earphones, and they do not even wear a helmet, overtaking other vehicles to prove their riding skills (Respondent 4)."

Social environment

Most of the respondents highlighted social factors like lack of parental supervision, peer pressure, and the environment of educational institutions for risky riding behaviour among young riders. According to the respondents, the young generation of riders lacks basic moral values, and most of the parents do not teach them the risk of violating traffic rules and riding rashly. Educational institutions do not emphasize the importance of traffic rules and regulations, which are essential for the safety of the students. It results in communication gaps that contribute to road crashes.

"Their age is only like that. They do not care about the police. Even they do not have moral values. This is not taught by their parents or in educational institutions. This is one of the reasons for road traffic crashes among young riders (Respondent 16)."

"The current generation of youths do not know how to respect elders and have no moral values. Even their parents do not say anything to them or scold them. They do not even think of their parents and ride rashly on the roads (Respondent 12)."

Few of the respondents also observed that road crashes are more common on weekends during social gatherings. An increase in traffic due to different events results in violations of traffic rules as riders tend to ride fast to reach their destination. They also opined that the management of traffic in such scenarios is a challenging task.

"On the weekends, many people go out to roam and spend time with their families and friends. Many social functions will also be held during weekends, which results in heavy traffic and violations of traffic rules. Young riders will be in a hurry to reach their destination as soon as possible. It becomes difficult for us to manage the traffic in such cases (Respondents 6)."

Structural factors

Most of the respondents felt that roads in the city are not well planned, which causes crashes. They were of the view that the national highways should not be passing through the city. Instead, it should pass from the outskirts of the city, to reduce the traffic volume. The other roads are narrow with open potholes. During the rainy season, the roads become slippery, which increases the chances of road crashes for the riders.

"The riders, including the young ones, are more vulnerable to crashes as the roads of the city are not well planned. National highways should not pass through the city. However, here, the highway passes inside the city. Also, the roads are not so broad. This leads to more crashes (Respondent 10)."

"The roads have open potholes, and if the riders go over them, there may be chances that the rider may fall on the road. Moreover, in the rainy season, some part of the road gets slippery making the commuters prone to road crashes (Respondent 6)."

Most respondents observed that the city roads' dilapidated condition leads to an increase in traffic volume, which causes more crashes. Narrow roads, congestion in the crossing areas, and parking of vehicles on roads disturb the running traffic, which causes road crashes. In addition, whenever young riders find an empty road, they tend to raise the vehicle speed and frequently meet with a crash.

"The reason for the increase in traffic is that there is no parking space for vehicles around the buildings, so the people tend to park their vehicles near the roadside, which leads to an increase in traffic (Respondent 15)."

"The road condition in the city is not proper. The bad roads lead to stagnation of traffic causing more crashes (Respondent 1)."

Financial reasons

Some respondents have identified young food delivery riders riding recklessly and violating traffic rules as they have to be on time to claim their reimbursement. The financial hardship of the delivery boys is the primary reason for them to indulge in reckless driving. On being reprimanded at the checkpoints, the argument is that they have to face scolding from the company manager, or else their incentives will be cancelled. Some young riders whose relatives are admitted to the University hospital, park their vehicles on the roads or in the no-parking area

to evade the parking charges. It further adds to the traffic on the road, making it vulnerable to road crashes.

"Nowadays, online food services boys ride recklessly as they have to deliver food on time. If they are late, they may not get incentives, or their company manager is informed about it. They have made themselves and others prone to crashes because of their riding behaviour (Respondent 13)."

"Few young riders, after admitting their relatives to the hospital, will park the vehicles on the road to escape from the parking charges as they are financially weak. At this time, we have to choose between humanity and law, and thereby, we don't fine them (Respondent 14)."

Theme 4: Strategies to improve road safety in the city

Awareness generation

The majority of the respondents reported that every year in January, they conduct the road safety week "Raste Surakasha Saptah" in schools and colleges to create awareness about road safety. They show videos and pictures of road crashes and explain their significance to the young riders to make them good traffic law abiders in the future. Furthermore, the department conducts "Raste Suraksha Abhiyan" twice every month to improve traffic safety and inculcate awareness regarding traffic rules among the youth and the general population.

"From our department, we take safety measures by conducting an awareness programme called "Raste Suraksha Saptah" at some schools and colleges from January for about a week. In this programme, we spread awareness regarding the traffic rules and guide them to ride their vehicles safely (Respondent 2)."

"We conduct Rasthe Suraksha Abhiyan twice each month to create awareness among the people (Respondent 5)."

Few of the respondents reported that their department has collaborated with the Lions Club and Human Rights Department to conduct awareness programmes on road safety measures in schools, colleges, and other parts of the city. The programme encourages young riders to obey road safety rules and to use protective equipment while riding. Additionally, it sensitizes them about the hazards of drinking and driving behaviour.

"Our personnel are giving the programme in schools, colleges, and other parts of the city to highlight the importance of traffic rules (Respondent 7)."

"Our department, along with the Lions Club and human rights department, has conducted awareness programmes in Manipal University and other colleges. The awareness programme focuses on the risk of drinking and driving and the importance of using protective equipment (Respondent 9)."

Law enforcement

Most of the respondents reported that they are properly enforcing the traffic laws. The Motor Vehicle Act (MVA), Sect. 183, imposes a penalty of 200 Indian rupees (INR) for those who cross the speed limit for the first time. If the same person crosses the speed limit for the second time, the fine imposed is 500 INR. As per the law, if the breath analyzer detects 30 mg of alcohol in 100 ml of blood, the rider is penalized for a drinking and driving offense. Additionally, in the case of repeated violations, the driving licence is confiscated for a quarter of a year.

"According to the MVA act, under Sect. 183, there is a law that states that no one should cross the speed limit. If anyone crosses the speed limit for the first time, charge them with a fine of 200 rupees. If he crosses the speed limit for the second time, we charge him 500 rupees. Even then, if he continues to break the traffic rules, we will cancel this driving licence for three months, as per as MVA act (Respondent 6)."

"We are checking everyone by using a breath analyzer. According to the law under the drink and drive section, if the person has 30 mg of alcohol present in 100 ml of blood, he will be penalized under the drink and drive offense. First, we will charge him some fine, and if he gets caught for the second time, we will file a case and seize his driving licence for three months (Respondent 9)."

Some respondents said that they had received orders from the district police chief (Superintendent of Police) that if they came across any young riders riding without a driving licence, they were supposed to cease the vehicle and inform and educate their parents regarding the dangerous consequences of riding without a licence.

"On orders of the district police chief, we have to cease the motorbikes and driving licence of young riders who are riding without driving licence and other records. In such cases, we also inform and educate their parents regarding the consequences of

riding without a driving licence and other records (Respondent 2)."

Other respondents reported that if young riders are seen performing stunts or riding with more than one pillion riders, legal actions are taken against them. Firstly, the vehicle is seized, and then a police case is registered with penalty charges. Along with these measures, if the offender happens to be a college student, the principal of the college is informed, and the student is sensitized about the traffic rules and safety. Additionally, if any young riders are seen riding recklessly in the city, the vehicle number plate is noted, and a notice will be issued from the RTO after verifying the vehicle registration certificate number. If the vehicle owner does not report to the police station, the process to cease the driving licence is initiated.

"They perform stunts on their motorbikes and ride with more than one person. If we notice them, then legal actions such as filing a case, seizing the vehicle, or imposing them with a fine are taken. We also call their college principal and inform them about the importance of traffic rules and safety (Respondent 8)."

"When the young riders indulge in risky riding behaviour such as reckless riding, we note down their bike number, and a notice is sent to them from the RTO office after verifying their vehicle registration certificate. If they do not come to the station, then we will recommend the RTO to seize their driving licence (Respondent 15)."

Current interventions undertaken in the city

Respondents mentioned that the authorities had initiated interventions to reduce road crashes. Traffic barricades have been placed to control the traffic, not allowing unnecessary crowding at important places in the city. To discourage the public from parking their vehicles at no parking areas, the traffic police will put a wheel lock on their vehicle and charge them with a penalty. The department has also installed necessary signboards on the roads and has made dividers on the roads to control the traffic.

"We have installed barricades near the university hospital. We put wheel lock and charge fine for those who park their vehicle in no parking area so that they do not repeat that mistake (Respondent 4)."

"We are trying our best to manage the situation by installing signboards and establishing dividers to control the traffic and reduce the crashes (Respondent 17)."

"Road construction is going on now. Our department is installing signals wherever required (Respondent 15)."

"We have installed CCTV cameras near the railway bridges to improve surveillance and to monitor those who break the rules (Respondent 12)."

Some of the respondents opined that crashes would reduce once the ongoing renovation of the roads is complete. The department has also scheduled fixed duty hours for the traffic police personnel in areas with heavy traffic and prone to crashes. The police personnel are regularly patrolling to ensure smooth traffic management and enforce traffic safety measures.

"Nowadays, road construction is going on, and once it is over, there will be a smooth flow of traffic and crashes will be reduced. We have been assigned the duty to the areas which are known for heavy traffic and crashes (Respondent 6)."

"Our department colleagues routinely go for rounds in the jeep around the city to keep a vigil on the traffic and safety measure rules (Respondent 10)."

Theme 5: Proposals suggested by the traffic police personnel

Preventive measures

Practically all the respondents observed that the most appropriate safety measure to prevent a fatal crash is to wear a helmet while riding. The respondents suggested that young riders should ride within the speed limit and avoid riding under the influence of alcohol. Additionally, they should use protective clothing while riding and must maintain their motorbikes properly. Youths should start riding a vehicle only after obtaining a legitimate driving licence and becoming fully aware of the traffic rules and guidelines.

"Wearing a helmet is one of the best safety measures one can have while riding vehicles. Any injuries or fractures can be treated, but a head injury can lead to loss of life. If one controls the speed of the vehicle, uses protective clothing, and does not drink and drive, then crash chances can be minimized. A youngster should only start riding after getting a valid driving licence. He should also be aware of the traffic rules and regulations (Respondent 12)."

Few of the respondents reported that in addition to imposing fines for those violating the traffic rules; they also sensitize them about its dangers by giving examples. The respondents felt that if they can bring about change in one person's behaviour, they might be able to influence others. Furthermore, the respondents believed that through this approach, they would be able to spread awareness regarding road safety and rules to the entire community, thereby achieving the desired behavioural changes.

> *"Along with putting fines, he should be made to understand his fault, and his mistakes should be corrected. So, we advise them like our brothers. We will give examples of other incidents and tell them that if you do like this, then you will be in a problem. All should tell him about this. He will also change his behaviour if the same thing is said to him by about ten people. He will also think that what he has done is wrong, and he tries to change his behaviour (Respondent 13)."*

Some respondents suggested that by building more speed bumps on the roads and strictly enforcing the law, road crashes can be reduced. Furthermore, the RTO should regulate the number of vehicle registration and should also perform proper scrutiny before issuing driving licences to young riders. The vehicle registration certificate should not be issued to those who do not have a driving licence, and this procedure should be banned. The colleges should include a module on traffic rules and safety in their course curriculum like the Western countries. Parents should also equally contribute to educating their children about safe riding behaviours.

> *"By installing speed bumps and by filing cases for those who do not follow the rules, road crashes can be reduced. Nowadays, the registration certificate book is issued to vehicle owners even though they do not have a driving licence. It means that they can ride the vehicle even though they do not have a driving licence. This should be stopped. A course for road safety can be included in schools and colleges. In foreign countries, this method is followed but not in our country. The parents should also advise their children regarding this (Respondent 8)."*

Crash prevention strategies

The majority of the respondents were of the view that the onus lies on the road users in terms of their responsible riding behaviours to reduce road crashes. The traffic department should consider proposals and suppositions from the citizens to improve road safety and make it better and safer. Few of the respondents observed that road safety improvisation could be achieved by infrastructural changes in the city, such as expanding the roads and creating appropriate parking spaces. Some of the respondents said that to reduce crashes, specific equipment needs to be installed, such as signals, speed breakers, streetlights, and traffic barricades in crash-prone areas.

> *"Roads should be broadened. There must be proper parking places and footpaths on the roadsides. Traffic signals and streetlights should be installed wherever necessary. Speed bumps must be put at the crash spots. Suggestions from the public can also be taken for improving road safety. The public also has responsibilities (Respondent 11)."*

> *"Signals must be put at crossings, and speed breakers must be installed where there are schools, colleges, and temples. Placing the traffic barricades may prevent the overspeeding of vehicles. If they try to speed up, they know that they may fall onto the barricade or hit the barricade (Respondent 9)."*

Other respondents suggested that driving schools must make the trainee more aware of the traffic rules and safety. Additionally, they should conduct regular driving classes to ensure that future riders are thoroughly trained. Some of the respondents likewise suggested that the surveillance and monitoring of traffic in the city should be digitalized. Furthermore, they opined that traffic control would be more efficient if traffic police personnel were present in crash-prone areas.

> *"At driving schools, the riders should be given awareness regarding the traffic rules, signals, and the importance of different kinds of signboards like a zebra crossing, pedestrian crossing, school zone, hospital zone, and usage of those signboards along with teaching them to drive vehicles safely. Also, they must be taught about new rules, emergency traffic rules, and giving way to the ambulance, all these have to be told to the riders by the driving school itself (Respondent 2)."*

> *"The traffic situation in the city is handled manually. It would be better if digital handling came to work. Our personnel should be present in crash-prone areas. Nevertheless, still, digital signals are way better than this (Respondent 5)."*

Some of the respondents recognized that the number of vehicles is on an unprecedented rise in the city, and there is little or no expansion of the roads and parking spaces.

Additionally, it was suggested that if the shopkeepers having shops close to the roadside could make some space for the parking area, the number of vehicles parking in no-parking zones would decrease. This change can make the flow of traffic uninterrupted, thereby minimizing the chances of crashes.

> *"Nowadays, the number of vehicles has increased on the roads with minimal change in the broadness of the road and the parking areas. If the roadside shopkeepers could create some parking slot spaces, the number of vehicles parking beside the roads may be decreased. This can give a smooth flow in traffic (Respondent 3)."*

Few of the respondents reported that recently their department had installed CCTV cameras in the crash-prone areas, and the work hours of traffic police personnel have been scheduled for three shifts consisting of four hours each, from 6 AM till 8 PM. The request for a modern traffic police station has been made to the government. Furthermore, some of the respondents suggested behavioural change can be brought about among the young riders by showing them fatal crash pictures during their licensing procedures in the RTO and driving schools.

> *"The department has deployed us on different points to look after the traffic. We work in three shifts of four hours each from 6 AM till 8 PM. We have installed CCTV cameras wherever required. We check vehicles regularly. We have requested a new traffic police station from the government (Respondent 11)."*

Discussion

Traffic police personnel are the key stakeholders who play a predominant role in the maintenance and enforcement of traffic safety in any city. An in-depth understanding of their perceptions is essential to designing targeted interventions to improve road safety. The current study therefore explored the opinions of traffic police personnel regarding road safety among young riders. Five themes emerged from the qualitative data; (1) Current traffic scenario in the city, (2) Common practices observed among the young riders, (3) Determinants of crashes observed among the young riders, (4) Strategies to improve road safety in the city, and (5) Proposals suggested by the traffic police personnel.

A concern that emerged from the study was the lack of adherence and seriousness to traffic enforcement among the young riders. The riders will either pretend a false reason or try to influence the traffic police personnel, which is like the findings of the study conducted by [32]. They continue to violate traffic rules due to sheer negligence despite having the knowledge and awareness about the traffic laws. Most of the respondents observed that young riders often overspeed, ride with more than one pillion rider, and do not use helmets. These results align with the study conducted by Hassan et al. [23]. Talking and texting on mobile phones while riding is a common behaviour among the young riders reported by the most of respondents, which is similar to the study findings by Save LIFE Vodafone Foundation [21] and [23], which reported high usage of mobile phones among young riders while riding. The current generation of young riders has been profoundly influenced by movies, fashion trends, and peer praise. Many respondents identified that the personality of flaunting their possessions like buying expensive modified bikes and overspeeding is one of the important personal issues observed among the young riders. A similar finding was observed in the study conducted by Tetali et al. [33]. Lack of parental supervision and peer pressure were identified as essential factors in influencing the behaviour of young riders. These factors are more prominent in the current Indian scenario with a rapidly changing culture in terms of negligent parental supervision with both parents working and having less time for their children [23]. Poor road infrastructure, such as bad roads and potholes, were identified among the main reasons for road crashes, particularly in the rainy season from June to September. Additionally, some of the respondents were of the view that the national highways, which pass through the city, have made roads vulnerable to crashes like never before [33–35]. The respondents also recognized the vulnerability of food delivery motorists to crashes. The financial hardship of delivery boys compels them to indulge in reckless riding as they need to be fast enough to claim reimbursement [36].

On the ongoing interventions undertaken in the city, respondents recognized the importance of road safety week *"Raste Surakasha Saptah"*, which is conducted in schools and colleges to create awareness about road safety. They were of the view that conducting this kind of activity creates awareness regarding road safety among the youth population. Some of the respondents also mentioned the ongoing collaboration with the Lions Club in colleges to raise road safety awareness levels. This corresponds to findings reported by Gururaj et al. [37] and Gopalakrishnan [17]. The authorities have initiated interventions like installing traffic barricades to control the speeding of vehicles, reflectors on roads to provide effective night guidance during night hours and in adverse weather conditions, and CCTV for better traffic management and surveillance. Additionally, traffic police personnel have been posted on the junction and crash-prone areas. This corresponds to findings reported by Ramos et

al. [38], Pal et al. [39], Gopalakrishnan [17] and Singh [5]. The efficiency of traffic barricades in controlling speeding has been assessed in a study conducted by Molan et al. [40] in Wyoming, USA, where it was found to be effective in controlling speeding. The respondents felt the need to inform about the risky riding behaviour of young riders to sensitize their parents and the principal of the college. Likewise, the need for these measures was reported in the study conducted by Tetali et al. [33]. Turning to the current status of law enforcement, many respondents felt that they are properly enforcing the traffic laws as per the Indian Motor Vehicle Act. Interestingly, several studies in India have reported poor enforcement of traffic rules [5, 8, 17, 41]. Additionally, few of the respondents reported regular patrolling by the authorities to keep a vigil on road users' compliance with traffic legislation and punishment for non-compliance. This is similar to the suggestion put forward by several studies conducted in India [33, 39].

Moving on to the proposals suggested by the respondents, many of them felt the need for digital monitoring of traffic in the city for better control and coordination. With the existing scarce human resources, the department is finding it difficult to manage the ever-increasing traffic and crashes [38]. The RTO should regulate the number of vehicle registration and conduct proper scrutiny before issuing the driving licence. A module on traffic rules and safety can be included in the course curriculum of the colleges. Parents should equally contribute to educating their children from the beginning about safe riding behaviours [42]. Almost all the respondents felt that young riders should use a helmet, ride within the speed limit, and avoid riding under the influence of alcohol to prevent fatal crashes. Not surprisingly, these suggestions have been provided by several studies in India [5, 8, 17, 41]. However, what must be seen is whether the authorities can enforce it, given that they are short of human resources [8, 33, 39]. Few of the respondents felt that road safety improvisation could be achieved by infrastructural changes in the city, such as expanding the roads and creating appropriate parking spaces. This is similar to the findings reported by Pal et al. [39].

Practical implications

The current study explored the opinions of traffic police personnel regarding road safety among young riders. The findings of this study revealed the importance of their opinions in understanding the various determinants of road crashes observed among young riders. Despite the awareness activities promoting road safety on social and electronic media, young riders continue to violate safety rules and ride recklessly. According to the interviewed traffic police personnel, the main reasons for road traffic crashes are behavioural factors such as speeding, using a mobile phone while riding, reckless riding, and overtaking from the wrong side. Interventions like the installation of traffic barricades, closed-circuit television cameras, speed breakers, and signboards at the crash hotspots, together with strict enforcement of traffic laws, were suggested by the respondents to reduce crashes. Furthermore, it is noteworthy that in the last decade, more university towns have been established in other parts of India, where this study can be replicated in evidence generation and subsequent localized interventions. The study findings can also be generalized to the university towns of the Global South. For instance, Yogyakarta in Indonesia is home to 3,00,000 students from across the world. Young students are prone to road crashes in Yogyakarta. One of the news reports published by Universitas Gadjah Mada indicated that 57% of road crash victims in Yogyakarta are youths [43]. Additionally, a study conducted by Fikrihadi & Guntur [44], in Yogyakarta highlighted the crash vulnerability of young student riders.

Our findings warrant further exploration to understand each of the underlying behavioural by analysing the personal and environmental factors that drive these behaviours, so-called determinants [45]. Furthermore, the study strongly advocates the need to improve the city's road safety measures by considering the target population group. Establishing a coordination committee that can locally organize evidence-based awareness programmes for road safety and proper traffic police personnel training could improve road safety and reduce crash fatalities. Finally, the current study's findings may be valuable for decision-makers to implement strict regulations for riding underage or without a valid license. Until and unless licensing procedures in India are carefully regulated and closely monitored, the quality of the rider will remain questionable [46]. Graduated driving license programmes already exist in the European Union and Australia [42] and might be worth consideration in a country such as India. Furthermore, policymakers can think of proceeding with informed interventions that have been successfully implemented in other parts of the world to improve road safety for motorized two-wheelers. For instance, in Taipei, as part of improved road design, advanced stop boxes have been set up for two-wheelers at road intersections, and the Netherlands has mandated helmet use for all vehicles that can travel faster than 25 km/h [47].

From theme 1, i.e., the Current traffic situation in the study under the category (best traffic practices observed in the city), it was found that the college students sometimes also participate in activities at the local level to spread awareness regarding road safety and traffic safety rules. It can, therefore, be recommended that the college students' participation be enhanced to spread awareness, and other college students will be inspired to participate as well. In theme 2, i.e., common practices observed

among young riders, under the social environment category, respondents highlighted social factors like lack of parental supervision, peer pressure, and the environment of educational institutions for the risky riding behaviour among young riders. Taking this into consideration, sessions for parents can be organized where they are sensitized better to monitor their children's risky riding behaviour. For theme 3, i.e., strategies to improve road safety, interventions like the installation of traffic barricades, closed-circuit television cameras, speed breakers, and signboards at the crash hotspots, together with strict enforcement of traffic laws, were suggested by the respondents to reduce crashes.

Noteworthy to mention, there are certain potential barriers in implementing the proposed recommendations suggested in the study. Firstly, due to the ongoing COVID-19 pandemic, the entire focus of the government has shifted toward it, and it will not be easy for LMICs such as India in the immediate future to invest in road safety measures. Secondly, at the local level infectious disease prevention and control remain the priorities of the authorities, even though road crashes happen to be one of the leading causes of deaths, and disabilities in India [48]. Thirdly, the manpower shortage in the traffic police department is a common issue across India [49]. Therefore, the difficulties in implementing enforcement-related interventions cannot be ruled out.

Limitations

Manipal is a cosmopolitan university town with a sizeable student population, which places it demographically different from many other Indian cities. Generalization of the findings to other cities in India must therefore happen with caution. Also, our study used a strictly qualitative design. Although data saturation was reached before concluding the full set of planned interviews, the study sample was small, and the data do not provide the possibility to assess the relative importance of the different factors mentioned by the police personnel influencing risky driving. Cross-sectional survey research can be taken up in other settings in India to validate the current study's findings further. Also, alternative analyses, such as traffic crash analyses and case study approaches, could provide more detailed information on the factors that most urgently need targeting in future policy and communication measures. In terms of the employed study procedure, the in-depth interviews were conducted in Kannada and were then translated into English. Although the principal investigator was well-versed in both languages, some information might have been missed during the translation process. Furthermore, since the interview guide was based on the traffic police professionals' perception and observation, the actual information on the enforcement of safety rules and regulations to control risky driving behaviour among young riders cannot be assessed.

Conclusion

In the current study, the perception of traffic police personnel related to road safety among young riders was assessed. Traffic police personnel are essential stakeholders in the maintenance and enforcement of safe riding practices. Their perspectives are important as they have a unique position to judge and evaluate the riding behaviours and the effectiveness of the existing interventions. To the best of our knowledge, no study has been conducted in India yet to explore the perspective of traffic police personnel in understanding the determinants of road crashes among young riders. Henceforth, the current study will provide an impetus for researchers in other Indian cities to explore their perspectives. Risky behaviours such as speeding, mobile phone usage while riding, reckless riding, and overtaking from the wrong side were identified as the main reasons for road crashes. Interventions like the installation of traffic barricades, closed-circuit television cameras, speed breakers, and signboards at the crash hotspots, together with strict enforcement of traffic laws, were suggested by the respondents to reduce crashes. There is a need to establish a coordination committee that can locally organize awareness programmes involving all the stakeholders on road safety to increase the level of risk perception and reduce crashes. It is noteworthy to mention that, over the last decade, more university towns have been coming up in other parts of India, where this study can be replicated for additional evidence generation and subsequent interventions that are better tailored to the local context. However, important differences may exist in factors that may influence risky riding (e.g., climatic conditions and road infrastructure). Therefore, similar studies need to be undertaken to confirm, extend, or further specify our findings in other settings of India, particularly the university towns, and thus better inform local traffic safety measures and interventions.

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Author contributions

"K.S" collected the data and reviewed most of the background literature. He and "R.R" have analyzed the data. "V.R", "K.B" and "G.W" have contributed to conceptualizing the topic and study setting. "K.S" processed the research permission and wrote the first draft along with "V.R". "R.R" contributed to the review of prior studies as well as methodology. All the authors participated equally in the fine-tuning of the analysis and the formulation of the discussion and conclusion as well as in responding to the review comments. All the authors saw and agreed to the final version of the article.

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Data availability
No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate
The study was approved by the institutional ethical committee of Kasturba Medical College at Manipal Academy of Higher Education, Manipal, India (Reference number – 09/2018). Since the study involved human participants, the data collection was performed in accordance with the principles of the Helsinki Declaration. There was written informed consent before interviews on participating in the investigation. Information about the study was offered in a language understood by the informants.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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