

Public health crisis of road traffic accidents in India: Risk factor assessment and recommendations on prevention on the behalf of the Academy of Family Physicians of India

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ABSTRACT

Roads are considered a sign of development bringing colossal benefits to community as socioeconomic and logistic facilitator. Yet, growth of road network has brought road crashes leading to civic pain from premature deaths of productive age group. In 2017, 16 citizens were killed and 53 injured every hour on Indian roads as per officially reported data, while a fair number go unreported. This is unacceptably high when compared with international standards. Risk correlates of road traffic injuries (RTIs) need to be redefined so as to form a continuum with other confounding factors that impact to take lives on road. Risk factors impacting RTIs vary from human components to the roles and responsibilities of healthcare stakeholders. We should have made roads safer for all citizens because a large percentage of population - children, pedestrians, cyclists, motorcyclists, and the elderly - are most vulnerable. A taskforce was set up by the Academy of Family Physicians of India to scientifically analyze the literature available to assess risks and put forward appropriate recommendations.

Keywords: Public health, road safety, road traffic injury, traumatic brain injury, vehicle

Prologue

Roads are considered a sign of development bringing colossal benefits to community as socioeconomic and logistic facilitator. Yet, growth of road network has brought road crashes leading to civic pain from premature deaths of productive

age group (wage-earning and child-raising group). Safety on road is a vital issue of well-being of any country. In India, two-thirds of road traffic injury (RTI) deaths are reported in the age group 15–44 years.^[1] In 2017, officially reported road accidents were 464,910, claiming 147,913 deaths and 470,975 injured persons, that is, 405 deaths and 1,290 injuries each day

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from 1,274 accidents. In the absence of trauma registry, adding unreported accidents, it is frightening to note this fairly high rate when compared with developed economies.^[2] There are a variety of preventable risk correlates that come into play in different permutations and combinations to culminate in injuries of varying severity. Making the road safer for the citizens requires a multipronged approach. RTIs are fatal or nonfatal trauma from road crashes concerning at least one moving vehicle. Children and elderly, pedestrians, and cyclists are the most common victims on road.^[3,4] The experts at the Academy of Family Physicians of India visualized public health components of road safety that extrapolates beyond the compulsory use of seat belts and helmets. Therefore, a committee of translational researchers from the related disciplines was formed for the systemic situational analysis followed by needful recommendations. This document encompasses the overall status of road safety in relation to public health activities in India.

Need to Revisit the Risk Factors of Road Safety

Road traffic crashes have increased over decades due to web of hazards for the easy-going citizen within unsympathetic environment – namely, vehicle design, road safety, supervision on the expertise, conduct of the driver, faulty traffic control culminating in downstream morbidity, disability, and mortality – which is largely avoidable among unintended injuries globally. After spectacular advancement in health, unfortunately we have put RTIs among top 10 global killers. World Health Organization (WHO) states that injury accounts for up to 15% DALY loss globally; 20% due to RTI. From the existing ninth foremost global cause of DALY loss, RTIs are going to be the third by 2020.^[5-7] More than 3,000 people die daily and tens of millions are injured or disabled every year on world's roads. WHO works with governmental and nongovernmental agencies globally to promote good practice to reduce a range of risk factors.^[4]

Risk Factors for Road Traffic Accidents

Human factors

WHO identified five major risk factors of road injuries and interventions to reduce these: speed, alcohol, seat belts, helmets, child restraint seat, and visibility; we added five more risk.

Speed

Speed limit can be called as “the bandmaster of road crash orchestra”: we need to slow down! Speeding initiates deadly accidents – the faster a vehicle travels, the higher the impact. Speed contributes up to one-third of RTIs. Remedial measures include road designing, enforcing speed limits including strategic installation of cameras, traffic calming measures, and regular awareness programme. African researchers reported that speed control bumps can reduce the number of crashes by one-third, fatalities by half, and serious injuries by three-fourth.^[4,8] The Government of India notified in July 1989 in the exercise of

Motor Vehicles Act 1988 section 112 subsection; in 2007, it set the national speed limit as 100 km/h for cars and 65 km/h for motorcycles; sincere efforts from enforcement authorities are needed to implement in whole India.^[9-14]

Alcohol

Alcohol within blood as low as 0.04 g/dL increases road crashes significantly by impairing decision-making process in foreseeing danger; 0.05 g/dL results in 1.83 times higher risk; it also causes hindrance in diagnosis, management, recovery, and prognosis from RTIs.^[15-17] Researchers suggested stricter alcohol restriction for young/novice drivers for reduction of RTI in the long run.^[14,18-20] In India, random breath testing at police checkpoints and both breath and blood testing of all drivers involved in crashes are done following police and hospital emergency reports of alcohol as important cause of RTI. However, due to logistical deficiencies in many situations, the checking is less than expected. Young or beginner drivers under the influence of alcohol are prone to RTI. Thailand, the only country in South-East Asia, declared special Blood Alcohol Concentration limit.^[12] We need to enforce alcohol breath testing with “tough on the spot” penalties for offenders with mandatory safety fittings with breath test devices for ignition interlocks.^[8] Western literature reported that even after drink, invariably one in four drivers get behind the wheels. This triggered education and advertising strategies with campaign for social support for enforcement and contribution to ongoing road safety policy development, with periodical evaluation. Research groups reported that a majority of respondents (72%) opposed to drink driving, but also found that a quarter of all these would still drive after one drink. Though they also supported imposing drink drive penalties when exceeding the proposed lower blood alcohol limits.^[21] Indian researchers, working on road safety, in a recent study, concluded that alcohol-related RTIs are foremost threat to civilization due to premature losses with downstream socioeconomic effects on family and society that must be prevented by holistic approach.^[22]

Seat belts

Seat belts strap in – among many other road safety interventions – protect from serious fatal or serious injury by 40%–65%. Although not a cause, failure to wear a safety belt may increase the coincidental thrown out from or smash inside the vehicles, or go through the windshield leading to fatality. Consistent child restraints reduce fatality in two-thirds of infants and half of children. Stringent laws on seat belt and child restraint with strict implementation by health education, reminder alarms, and child restraint learning programs are effective keys to improve road safety. In Korea, a national campaign of police enforcement, a publicity campaign, and an increase in fines have shown huge success.^[8] Overall, safe use of belt reduces RTI morbidity and mortality by half. Unfailing routine practice of child restraints has also demonstrated effectiveness in prevention of infant mortality on roads.^[14,23,24] India has no legislation on the use of child restraints, whereas 96 countries are already enforcing this; unfortunately, seat belt use is far from expected by undermotivated citizen who only use it to save penalty money.^[10,12,13]

Helmets

United Nations Motorcycle Helmet Study (2016) estimated that motorized two-wheeler riders have 26 times probability of death in road crash than four-wheelers; correct wearing of best available helmets improves survival by 42% and reduces injuries by 69%.^[25] Other literatures supported reduction of death by nearly half and fatal injuries by over two-third by right helmet use. However, to effectively reduce traumatic brain injury (TBI), the most common cause of mortality, morbidity, and disability, motorized two-wheeler users have to correctly wear crash-proof helmets consistently even for small distances; socioeconomic status are associated with these unsafe behaviors.^[14,26-30] Indian study on helmet use of the two-wheeler riders noted that half were using helmet, 45% fastened properly, and 38.5% of ISI quality “Crash proof” safety standards as optimum helmet use affects better outcomes with fewer TBIs.^[31]

Visibility

Visibility of drivers can be increased by placing noticeable reflectors on vehicles, wearing yellow or white helmets and light-n-bright colored clothing while riding motorized and nonmotorized two-wheelers particularly on highways especially during night times, and regular use of antiglare safety glasses at night and with daytime running lights. Generally increasing the visibility of the pedestrians by reflective clothing also increases road safety at low-light situations.^[8]

Distracted driving

During driving, a range of diversion considerably reduces driving performance in tech-savvy new millennium – text messaging, use of cell phones while driving, or grooming while driving a motor vehicle can impair safety in a number of ways, namely, slower reaction times, not keeping lane driving, deranged split decision, and so on. Yet it has become a hazardous fashion to use cell phones while driving not only noted among professional drivers but also in citizens alike, which has risk four times more likely for crashes even with hands-free devices. Nowadays, audiovisual entertainment gadgets fitted to the vehicles to reduce monotony of long driving lead to distraction to driving. Governments need to be proactive on this issue at the earliest with concrete steps to take actions with stricter implementation of statutory actions, initiating community awareness campaigns, and regularly collecting data on distracted driving.^[14]

Exhaustion

RTIs to both the pedestrian and occupant tend to be clustered toward the latter part of the week, and later hours of the weekend prove to be the deadliest. On other days during the week, late afternoon to evening tend to be the riskiest times for driving.^[32]

Unsafe roads for elderly generation

An Australian study noted that although older road users form relatively small proportion of crash casualties, yet they are far more likely to get severely injured and more likely to sustain serious chest injuries. Older drivers represent about 5% of trauma to drivers, whereas older pedestrians experience 14% traumas in

crashes at intersections and at crossings controlled by stop and give-way signs, and particularly face crashes during daytimes.^[33]

Unsafe roads for children and adolescents

All children have the right to get protection, survival, safety, adequate care, and to grow up in a caring atmosphere.^[34] In a hospital-based study in North Kerala, one out of every five children and adolescents with unintentional injuries had RTIs; preadolescent age group was the most common among children victims; the majority [39 (52.2%)] were pedestrians and injury occurred while crossing the road.^[35,36] In a recent hospital-based study in Odisha, 11.43% were children less than 15 years out of all TBIs admitted with a male: female ratio of 2.19:1 with 56.47% mild, 29.25% moderate, and 14.28% severe TBI. In India, road crashes are reportedly higher among males and adolescents in the 14–18 years age group.^[37-39] RTI fatalities are more among lower socioeconomic status all over the world; more than half among productive age groups.^[14] It is also the foremost cause of unnatural deaths in children, contributing to death of more than two lakhs children and adolescents per year.^[40] In 2010, United States Department of Health and Human Services reported that 5.8% of 16–17 years old and 15.1% of 18–20 years of adolescents drive in inebriated condition risking their lives as well.^[31] Three-fourths of all road traffic deaths occur mostly among young men under 25 years. U.S. Department of Transportation found that among teenagers 13–19 years, two out of three fatalities were males.^[14,41] After 70 years of independence, we need population-based researches for national-level representative data to know how much safe the road is for our children and how much of our budget for the healthcare for the children and adolescents is drained away for this preventable group of morbidities from road crashes. Researches are in progress in south India to establish composite supplementary battery of laboratory parameters in forecasting outcome among RTI cases in Indian population.^[42]

Comorbidity as additional risk factor

Irish and European Union legislation necessitates that all should disclose on temporary and permanent morbidities that may affect driving safety.^[43] Diabetes mellitus is a predictor of worse outcomes with morbidity and mortality from hypoglycemia during driving and injuries. The caregivers and patients need to be aware of potential hazards of diabetes, which is connected to incompetent driving, due to erratic psychomotor skills, visuospatial functions, and reasonable judgments in emergency situations; this results as a result of neurogenic symptoms such as sweating, tachycardia, shakiness, and sensation of hunger and/or neuroglycopenic symptoms such as tiredness, weakness, inappropriate behavior or confusion, and impaired vision. There is a dire need of behavior change communication in healthcare experts, public education, law enforcement, newer technology, and special care for elderly population.^[44] Parkinson's disease may lead to unsafe driving with variable impairments in vision and cognition.^[45] Routine changes due to senility like diminished eyesight and slow reaction time should not be equated with Alzheimer's disease. Many elderly people without dementia

can drive with gradual adjustment, but it is reasonable to make transition from driver to passenger over a period of time, before a crisis occurs. The main idea being that the safety of the person with Alzheimer's and that of other road users is protected at all times.^[46] Driving by persons with epilepsy is a public safety issue as seizure leads to lapses in consciousness. Moreover, "adverse drug reactions" like drowsiness additionally contribute to RTI both as pedestrian and drivers. It is not sensible for patients with epilepsy to drive throughout the first 2 years of management, but laws in different countries vary with regard to absolute contraindications.^[47] TBIs are reported to be up to two-thirds from road crashes and roots half of death at the injury site, the single largest cause of morbidity and mortality in patients who reach the hospital alive. These injuries are diagnosed with a high index of suspicion as they are most commonly present with blunt and closed injuries. They lead to many cases of TBI following RTIs with reported complications of cognitive dysfunctions.^[48-54]

Logistics issues of road safety

Training of drivers

Recent study among the taxi drivers in north India noted that three-fourths (77.38%) had formal training, yet nearly all were consistently using seat belts and pursued front-seat passengers to use seat belts. The participants admitted avoidable risky behavior during driving, namely, talk in speaker mode (73.44%), calling (87.21%), and hearing music (49.84%), while a minority (4.92%) confessed watching video and using Bluetooth headphone (11.80%); all these risky behaviors culminated to missing road signs by 71.80%.^[55] Another Indian study noted that formal training, retraining, and sensitization on avoidable risky behaviors be imparted to professional and nonprofessional drivers in a systematic manner and to be a part of curricular education.^[56]

Quality and maintenance of roads

The above-mentioned risk factors are mostly person-centric and do not pertain to environmental factor infrastructure which has a huge role to play. There is a consensus among researchers on road safety that transport logistics add speed and efficiency leading to progress of any country.

Inclement weather

Unfavorable environments in hilly areas, during rainy seasons and snow fall, usually increase the risk of RTIs, particularly when the roads are wet and slippery.^[32] Unintended injuries are a global problem in general and noted also in India where rapid urbanization has placed people at greater risk. Furthermore, women folk in the poorer families cannot get time to look after children and elderly members dwelling on roads, leading to more injuries.^[27]

Infrastructure: Technical and engineering issues

Road safety technical issues are documented solution to prevent road crashes, yet there are many road safety impediments in its smooth implementation. They are discussed below.

Road quality standards and maintenance

Roads' conditions in almost all parts of India are in unacceptable conditions except in arterial roads in and around national capital, state capitals, and metro cities. Roads are not built with proper long-term vision of town and country planning or keeping in mind futuristic visions to accommodate more vehicles down the lane in the next few decades. Instead of low-pollution long-lasting methods of road maintenance, age-old methods are followed for unknown reasons.

Road safety standards

Well-maintained signal, signage, and marking (including lane marking) are conspicuously missing in a majority of Indian roads; erratic traffic signals are common experience. Further wherever possible, two-way traffic should be separated with sufficiently high dividers to reduce face-to-face collision. Policy-makers need to ensure safe footpaths on all arterial roads along with subways and foot over bridges, wherever necessary, particularly near busy junctions.

Vehicle standards

- (a) Manufacturing quality

Vehicle safety gears inbuilt in the design are a function of safety of the riders particularly in case of four-wheelers and above automobiles. Day-by-day, not only vehicles are increasing in number on Indian roads but also high-speed compliant technologies are imported by the transnational companies adding events of road traffic accidents. Unfortunately, globally accepted safety features are conspicuously omitted for cost-cutting market competition and are provided to only high-end vehicles. Thus, safety norms of vehicles on Indian roads are far behind the international standards that need to be addressed on an urgent basis to save Indian citizens.^[57]
- (b) Preventive maintenance

Poorly maintained vehicles result in reduced road safety, whereas properly maintained vehicles always safeguard the riders and pedestrians. Many accidents from vehicle failure can be prevented, and many stranded motorists need to know the importance of proper maintenance.^[46]
- (c) Traffic volume

Empirically, we can model the number of road crashes as a function of vehicles' quantity. The Government of Delhi had recently introduced new norms to allow private vehicles with ODD–EVEN numbers to ply inside Delhi on ODD–EVEN days of the week for reducing ambient pollution inside Delhi Metro.^[58]
- (d) Liquor, road, and traffic culture

The Supreme Court India has issued a verdict that "liquor shops are not allowed within 500 meters of arterial roadways for which administrative penalty will be applied if violated." We consider it appropriate to clarify that this prohibition be applied in all municipal areas as well to remove ambiguity.^[59]

Recommendations for Prevention of RTA on Behalf of Academy of Family Physicians of India

Indian roads have to be made safer for all citizens to save the productive age group population and thereby

ensuring improvement of the health of the citizens. This will affect the overall growth of our country since a large percentage of population – children, pedestrians, cyclists, motorcyclists, and the elderly – are most vulnerable on unsafe roads. Developed countries have reduced RTIs adopting holistic approach to road safety involving all stakeholders from police to education, despite their high levels of vehicle ownership. From them, we need to learn which ways to suit our needs with targeted and sustainable multisectoral, multidisciplinary intersectoral approach with optimal coordination mechanism and concurrent evaluation of outcomes. Dedicated plans for vulnerable population should be separately formulated by the government to save our future citizens.

Research and development

In the demographic transition from predominantly agricultural to industrial paradigm, road safety has to reach global standard though translational researches involving all the stakeholders.

Improvement of healthcare teaching–learning

In healthcare teaching–learning of our country, the learners cannot learn the trail of events from risk factors to injury and scope of early interventions in the natural history of trauma. This delinking from contextual and conceptual learning can affect the diagnosis and prognosis of trauma management in a time-bound manner. Even when teaching–learning of noncommunicable diseases, injury as an outcome is usually not expressed in relation to the epidemiological triad. Furthermore, we need to be more serious to understand that injury care is not the sole responsibility of orthopedicians, neurosurgeons, and other specialities. On the contrary, an integrated teaching on injury science is much awaited resolution in health sciences of all schools of medicine as every one's problem. The Academy of Family Physicians of India hopes, believes, and trusts that we need a systematic planning and implementation over the next decades for first responders training; ambulance, fire, and police personnel should be trained in prehospital care and should be provided with well-equipped supportive ambulance and infrastructural support including well-oiled communication and referral system. Furthermore, the concept of “bystander training” for prehospital care should be introduced from KG of education to PG levels in all the courses and curriculum for all the citizens of the world.^[60-62]

Research in injury science

We have only a handful of dedicated trauma care centers out of a plenty of tertiary care centers including more than 400 medical colleges in India; many Indians are unfamiliar to prehospital care even the healthcare delivery personnel. We lack a uniformity of conventional four pillars of trauma care model: prehospital care, hospital network, communication organization, and system-based in-hospital care and

rehabilitation of residual disabilities which are challenges outside our urban territory.^[63-65]

Need of developing public transport system

Comfortable, reliable, and cost-effective public transport service should be ensured for all levels of citizens which will force everyone to think not to use personal vehicle and that transport infrastructure is vital for a country's progress. For our large and diverse transport sector, we need energy-efficient technology and customer-focused approach as the “lifeline” of a nation. Optimally managing one of the largest transport network among urban, periurban, and rural areas can help economic growth over a billion Indian population solving all challenges. Compared with road transport, Indian railway systems are six times more energy-efficient and four times more economical, and hence need to be optimally promoted for overall cost-effective traffic loads to carry cargo and passengers across India's gigantic terrain. Mass transport is needed using rail as basic infrastructure, namely, monorail, metro rail, and so on to effectively reduce load on road transport to improve road safety by eventual reduction in vehicle. Furthermore, the fossil fuel used in road transport damages the environment in more than one way including greenhouse gas emission leading to global warming.^[66]

An Indian road crash registry is the call of the day

The backbone on the prevention depends on mitigative research on the public health impact of RTIs. To find the spectrum of health and other socioeconomic downstream impacts of RTIs, a comprehensive injury registry of real-time data is urgently needed in India like the developed world in search of quality care systems approach including prehospital care to plug a majority of the loopholes of road safety.^[67] The European Union–funded project on advanced protection systems introduced passive safety technologies for all road users. The researchers wanted to increase the competitiveness of European road transport business and improve safety technology, appropriate design, and evaluation methods to help increase efficiency of development processes and encompass safety-related issues. The project also developed a new model of crash test dummy, to help assess side-impact accidents.^[68]

Strict Compliance: India: New Motor Vehicle Act 2018 on road safety^[69]

Motor Vehicle Act 2018 has plans of better signaling, close circuit camera (CCTV) to monitor rash drive with stricter penalty for violation, and digitalization of traffic administration; for under-aged users on roads, the parents will also be punished. The following are the salient features of fines:

Speeding: A minimum of Rs. 1,000 fine to five times of last penalty depending on the speed with or without suspension of license.

No helmet: A minimum of Rs. 1,000 fine for nonuser with or without suspension of license.

Triple-seat riding: Rs. 2,000 for each spell.

No seat belts: A minimum of Rs. 1,000 fine for nonuser with or without serious charges.

Drink and drive: A minimum of Rs. 10,000 fine with or without jail.

No racing on public roads: Heavy fine with or without jail; first time only warning.

No talking on a phone and driving: A minimum of Rs. 10,000 subject to situation.

Jump red light: Not only fine but also be losing driving license.

Blocking ambulance: Fine Rs. 10,000, and repeatedly license will be suspended.

Car/bike modification: Fine ordinarily; pounding vehicle in drastic changes.

Community participation

1. “Speed limit” to be the next campaign of the Government of India after Swachh Bharat with call for zero path holes, divider for arterial thoroughfare.^[70]
2. Modernization of traffic control and implementation of traffic rules at all levels with stringent penalty on breaking traffic rules for all including riders and pedestrians.
3. Inculcating traffic discipline among lay persons from childhood and traffic rules should be introduced at school levels to continue in higher curriculums.
4. Rigorous process of issue of driving license (best kept secret) is the need of hour.
5. To discourage car as “false” ego, restriction should be imposed depending on the necessity and numbers of vehicle per family; introduce higher tax for private and added vehicles; no vehicles will be allowed to be purchased unless prospective owner can provide proof of dedicated parking place (c.f. strictly introduced in Indian state of Sikkim).^[71]
6. Equity in safety – helmet for females and kids, restricting number of pillion riders to be implemented in letter and spirit.
7. Comfortable, reliable, and cost-effective public transport service should be expanded to reduce craze for personal vehicle to reduce congestion and increase road safety.^[72]
8. Breath alcohol test should be applied stringently with exemplary punishments like seizure of driving license for a minimum 1 year instead of monetary punishments.
9. Researches on road safety should be initiated in multidisciplinary holistic approach.
10. Finally, a citizen’s charter is the call of the day for which we have proposed an outline.

Pehle Aap – Responsible citizenry for road safety

To address the problems of interface of the quality of road safety, the government has to innovate mechanisms to make

people responsive and empower for continuous improvement in the form of the citizens’ charter. This will lead to transparency and accountability of government run by taxpayer’s money by updating and addressing rules, regulations, and the processes and procedures and windows of redressal of citizens’ grievances. Till date, some of the Indian states have published Citizen’s Charters. Researchers of this study wish to add suggestions to improve, which are as follows:

1. RTI should be declared as a notifiable public health issue by the Union government which will direct all state governments to have concurrence.
2. Immediate steps should be taken to incorporate the recommended core planning in road safety into the existing basic administrative setup at all levels.
3. Department of Road Safety should be urgently established under the Ministry of Road Transport. All old data on RTI have to be shifted to the Department of Road Safety from National Crime Records Bureau (which currently keeps records of RTI in India) as injury is not a “crime.”
4. “Road traffic injury registry” is the need of the hour: to be urgently started to record all minor and major injuries on road to internalize the prevalence of this fully preventable problem.
5. Provision should be made for training on road safety from KG to PG levels with the new slogan “Road safety – of the people, by the people, for the people.”
6. Research units on road safety to be established wherever possible.
7. Gender equality in personal safety should be an important concern for all levels of stakeholders including local administration as more women are added daily in different professions and staying on roads in odd hours of day and nights.
8. Modernization of traffic control system and vehicle volume management should be an agenda in the parlance of road safety for which dedicated research including computer simulation and other advanced techniques have to be applied.
9. Instead of “lip service” by the stakeholders regarding refurbishment of this critical component of road safety, again we need paradigm shift of the motor vehicular management. Instead of age-old “Motor Vehicle Inspector Office/District Transport Office culture,” we need complete overhaul with personnel with managerial skill at the “center stage,” who will be competent to, implement stringent licensing procedures, and enucleate “traffic police” on road to stop corruption in traffic management by outsourcing to agencies to enforce “traffic rules.”^[73-75]

Reducing economic cost of RTI

Globally, including south-east Asian countries, more than half of RTI-related mortality reported in the economically productive period of 15–49 years age requires costly trauma care. Annually in south Asia, direct treatment costs and loss of productivity with aggregate economic value of a life range from 1.3% to 3.0% of gross domestic product. These data exclude ruin of the victims in terms of nonmedical economic burden incurred by the victim’s

family (even with subsidized public health facilities), to incur debt or sell assets or even losing regular earning, and loss of savings and income of family members and relations. Yet, there is limited literature on the economic burden on south Asian households of severely injured and/or hospitalized RTI victims on the extent of work and earning loss plus related out-of-pocket expenditure. In case of fatality or permanent disability of bread earner, it can be disastrous with pauperization and bereavement.^[76]

RTIs are an unfortunate fact of life – evidently, there is no way to just rub out the reality given the situation of road safety. We can take responsible safeguards alongside – use vehicle sensibly, mandatorily use safety gears even for short distances, optimally use headlights and signals for smooth traffic, and so on. Furthermore, a majority of deaths on roads are those of the susceptible road users, primarily stemming from poor and inadequate infrastructure, lack of general cultivation of awareness, and strategic enforcement.^[77]

Family physicians and other healthcare providers as trainers in community to improve safety on road

Road safety should be embedded in the concept of universal health coverage and need to be part of training of Family Medicine in India. This study has been designated as a study for developing formal position paper on the behalf of the Academy of Family Physicians of India as we felt that primary care physicians are the axis of first-contact care in all cases of RTI. So, family medicine–trained primary care experts should learn the art of capacity building of the “first responders” and take initiatives to train them so that they can serve the last man on the road. This will comprise the transparent cutting-edge knowledge of “do-s” and “do not-s” in any form of prehospital setup during golden and platinum hours.^[78] Several countries have strengthened “Family Medicine” as the basic healthcare discipline in a quest to develop quality primary care workforce as an essential requirement toward regulating cost of medical services delivered though their respective universal health coverage.^[79]

Summary of recommendations

1. Research and development
2. Improvement of healthcare teaching–learning
3. Research in injury science
4. Need of developing robust public transport system
5. An Indian road crash registry is the call of the day
6. Strict Compliance: New Motor Vehicle Act 2018 on road safety^[69]
7. Addressing road rage
8. Pehle Aap – Responsible citizenry for road safety
9. Reducing economic cost of RTI
10. Family physicians and health workers as trainers in community to improve safety on road.

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