



Role of Ambulance Services in Saving the Lives of Road Accident Victims in Kerala

Dr. Sivaprasad. D*

PhD holder in Social Work from Manonmaniam,
Sundaranar University, Tirunelveli Tamilnadu.

Abstract: Road safety is not only a public health issue but a social one with multiple implications. Road accidents cause physical, mental, emotional and financial trauma to the kith and kin of victims and place immense burden on health care and economic system of the state (as well as the country). In Kerala, there is a surge in road accidents and death tolls. It is a concern for the health sector as well as enforcement agencies like Police and Motor Vehicles Department. This is a reality for the ambulance sector, who are the first line responders during accidents and emergencies. Insurance sector is another agency accountable. Ultimately multiple stakeholders are linked to the scenario. So a multi pronged approach by involving different stakeholders is very much required for better road safety. There are no short cuts and quick fix remedies for accident reduction. A Baton relay mode is essential for rescuing a victim from accident spot to a rehabilitation center. The sequence of activities, issues and challenges and the role played by different stakeholders need to be studied for framing a new paradigm for road safety in the state.

Keywords: : Road safety, Enforcement, Behaviour change, Road culture, Stakeholder.

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INTRODUCTION

On an average, annually, 11.9 lakh people die in road traffic crashes, globally ([The Hindu, 2025](#)). In India road accident is the 13th largest contributor to health burden ([The Hindu, 2025](#)). The Sustainable Development Goals (SDG) adopted by the United Nations members in 2015 proposed 17 goals to be achieved by 2030 with an aim 'peace and prosperity for people and planet'. Among the 17, the third goal "Good Health and Well-being" is significant and related to emergency care and ambulance services. This goal focuses on ensuring healthy lives and promoting well-being for all at all ages. Ambulance services directly contribute to achieving SDG targets by improving access to emergency care, reducing preventable fatalities/deaths and addressing health inequalities ([Motor Vehicles Department, Government of Kerala, 2023](#)). Ambulance services play a vital role in delivering timely and effective emergency medical care, reducing mortality and morbidity from various causes including trauma, infectious diseases and emergencies ([Mathrubhumi, 2020](#)). In short, ambulance services are a vital component of a sustainable health care system, directly contributing to the achievement of several SDGs by improving health outcomes and promoting well-being for all.

The United Nations Decade of Action for Road Safety 2021–2030 aims to halve road accident-related deaths by 2030. In addition to campaigns, enforcement based on legal footing can also help ([Government of India, 2021b](#)). Penal action is not the final answer. Change in attitude, risk perception, statutory compliances, road culture, etc., are the key players. Moving stories of accident survivors are also useful for mass media campaigns. Monthly campaigns shall be

*Correspondence concerning this article should be addressed to Dr. Sivaprasad. D, PhD holder in Social Work from Manonmaniam, Sundaranar University, Tirunelveli Tamilnadu. E-mail: drsivaprasadd@gmail.com

implemented with key messages based on a specific theme. All these should focus on behaviour change which are reformative in nature rather than punitive.

Accident means any incident wherein, on account of the use of a motor vehicle on a public road, death, bodily injury or damage is caused to any public, properties, other vehicles, person, or persons or property or to any public property or other vehicles, as the case may be ([Government of India, 2021b](#)). Road accident means any accident occurred on a public road ([Government of India, 2021b](#)). Vehicle includes any contraption or device used or capable of being used for the carriage or movement of human beings, animals or goods ([Government of India, 2021b](#)).

In Kerala, legally all road accidents need to be reported to Police ([Government of India, 2021a](#)). The condition check of the vehicles met with accident will be done by the Motor Vehicles Department (MVD) ([Government of India, 2021b](#)). MVD and Police are the two sides of the same coin for accident registration, rescue operation and helping victims in care and claims ([Government of India, 2021a, 2021b](#)). Fortunately or unfortunately, all occurring accidents are not reported or registered owing to different reasons which need debunking. Only reported and registered cases appear in Crime Records Bureau data and information dashboards ([State Crime Records Bureau, 2025](#)).

In addition to Police and MVD, Kerala Road Safety Authority (KRSA) was established in 2007 by Government of Kerala for the implementation of road safety programs in the state, as per the Kerala Road Safety Authority Act 2007. It provides for the constitution of a road safety fund with different sources. As per section 10 of the Act, a one-time cess is proposed on every motor vehicle used or kept for use in the state at specified rates. The one-time cess as per its schedule is Rs. 250 for heavy vehicles, Rs. 150 for medium, Rs. 100 for light motor vehicles and Rs. 50 for two-wheelers. In addition, as per section 10(3), an amount equal to 50% of the compounding fee collected every year as per section 200 of the Motor Vehicles Act 1988 (as amended in 2021) also contributes ([Government of India, 2021b](#)). This includes all fines collected as per section 15c, 177 to 184, 185 coupled with 279 of IPC, 186, 190 to 192, 194, 196, and 198 of the MV Act ([Government of India, 2022, 2021b](#)). This road safety fund is exclusively used for road safety purposes in the state.

A Technical Support Group (TSG) exists under KRSA with experts from related sectors. The TSG conducts accident investigation at sites and submits reports to the Government through KRSA if the death toll in a single accident is at least three. State-level policies like parking policy, advertisement policy on roads, and grievance redressal are special focus areas of KRSA. The recommendation of TSG is necessary for all projects funded under KRSA. District-level Road Safety Committees are also functioning under the chairmanship of district collectors in all 14 districts.

The annual observation of Road Safety Week in the state is executed utilizing KRSA funds through Police and MVD. National Road Safety Week 2025 (“Driving Towards a Safer Future”) was observed from 5th of May onwards with the theme “Drive Safe, Arrive Safe, Together We Can Save Lives” ([Kerala Koumudi, 2025a](#)). Activities included workshops, mock drills, street plays, distribution of safety gear, school/college competitions, and honoring rescue operators ([Kerala Koumudi, 2025b](#)). However, broader involvement of NGOs and community organizations remains to be fully integrated.

“Safe Sabarimala” is a 24x7 MVD enforcement initiative started in 2018 during pilgrim season, though limited by staff and funding constraints. Similarly, the 2020 “Safe Kerala” project aimed to halve accidents, and a 2017 proposal for the first 72 hours of free trauma care remains under administrative development ([Kerala Koumudi, 2025c](#)).

Interference of Judiciary

As road accident fatalities show an alarming growth nationwide, higher judicial bodies, including the Supreme Court of India, have actively intervened to enforce statutory road safety protocols. To expedite the resolution of pending public interest litigation and assist in policy formulation, the Supreme Court established the Supreme Court Committee on Road Safety (SCCoRS) to act as an amicus curiae. Headed by a retired Supreme Court Justice alongside a panel of domain experts, SCCoRS exercises national jurisdiction to inspect and audit state-level data concerning Motor Vehicles Department (MVD) performance, crash scenarios, fund allocation, and utilization efficiency before submitting periodic evaluation reports to the designated Supreme Court bench.

At the national level, Kerala ranks fourth in overall vehicle density, with more than 1.8 crore registered motor vehicles. In response to the spike in traffic crashes resulting from deteriorating road surface conditions, missing warning signage, inadequate enforcement, and negligent driving behavior, the higher courts routinely interfere and issue binding directives to prevent accidents and streamline victim compensation.

Recognizing that unauthorized roadside installations pose critical visual distractions and physical obstructions to drivers, the High Court of Kerala has adopted a strict stance against illegal advertisement boards, illuminated hoardings, flex banners, cutouts, flags, and festoons situated along road shoulders and medians. Specifically, the single bench led by Justice Devan Ramachandran banned all forms of propaganda boards, flags, and festoons across pedestrian pathways, footpaths, traffic medians, and major intersections. To execute this directive, the High Court tasked local administrative authorities across the state's Local Self-Government Institutions (LSGIs)—comprising 940 Grama Panchayats, 93 Municipalities, and 6 Municipal Corporations—with enforcing the removal of illegal structures and penalizing non-compliant offenders, supported by mandatory Action Taken Reports (ATRs) submitted to the bench. Furthermore, to ease junctional friction and prevent visual clutter at key intersections, the High Court ordered the relocation of auto-rickshaw and taxi stands to a minimum distance of 100 meters away from major road junctions and transit bus bays.

Infrastructure deficiencies in active roadwork areas remain a major safety threat; statistical evaluations indicate that approximately 9% of total road accidents in the state occur in active road construction and maintenance stretches lacking standard warning signages, rumble strips, and protective night-time illumination. The Kerala Police is legally entrusted with registering road accident cases, conducting site investigations, taking legal cognizance, and carrying out interrogations ([State Crime Records Bureau, 2025](#)). Incident reporting, crash mapping, and emergency rescue data are centralized through a digital monitoring framework maintained by the Directorate of Crime Records Bureau (DCRB) ([State Crime Records Bureau, 2025](#)). According to the official DCRB accident dashboard, the crash metrics are detailed below:

Table 1 *Accident Statistics in Kerala (2019–2024)*

Year	No. of Accidents	Deaths
2024	48,836	3,714
2023	48,091	4,080
2022	43,910	4,317
2021	33,296	3,429
2020	27,877	2,979
2019	41,111	4,440

On average, the daily death rate due to road accidents in Kerala ranges between 15 and 20 fatalities ([State Crime Records Bureau, 2025](#)). Out of these casualties, approximately 70% are youngsters, with driver error identified as the primary root cause ([Mathrubhumi, 2023b, 2023a](#)). The “Safe Kerala” project—initiated by the Motor Vehicles Department (MVD) with assistance from the Kerala Road Safety Authority (KRSA) in 2020 at an outlay of Rs. 127 crore—did not produce the desired result ([Malayala Manorama, 2023a](#)). Over the last decade, Rs. 250 crore was spent on installing enforcement cameras state-wide ([Malayala Manorama, 2019, 2023a](#)). During the last 5 years, a total of 4,96,762 cases were booked through camera surveillance, yielding fines amounting to Rs. 64 crore, of which Rs. 23 crore was levied by the Police and the remaining by the MVD ([Malayala Manorama, 2023a](#)). On average, fifty thousand cases are detected in each district annually ([Malayala Manorama, 2023a](#)). Infra-red technology is utilized in the AI surveillance cameras to enhance image clarity during nighttime operations ([Malayala Manorama, 2023b](#)). Notices levying penalties are processed using the Payment Service Module (PMS) software developed by KELTRON, a Government of Kerala undertaking ([Malayala Manorama, 2023a](#)). Although the MVD's proprietary Smart Move software was initially not synchronized with PMS, the system has now been migrated to the national Vahan software platform ([Malayala Manorama, 2023a](#)). KELTRON operates 240 standard enforcement cameras controlled from a centralized control room in Kochi ([Malayala Manorama, 2019, 2023a](#)). According to United Nations estimates as of April 20, 2023, India's population (142.86 crore) surpassed that of China (142.57 crore) ([The Hindu, 2025](#)). However, population-proportionate camera surveillance remains lacking in Kerala ([Malayala Manorama, 2023a](#)). Nearly 20 lakh traffic offenses were detected by enforcement cameras during 2022–2023 ([Malayala Manorama, 2023a](#)). In addition to the original 240 cameras, an operational network of 726 AI surveillance cameras has been functioning statewide since April 20, 2023 ([Malayala Manorama, 2023b, 2023a](#)).

Table 2 *Penalty Rates for Camera-Detected Offenses*

Offense	Fine (Rs.)
Non-wearing helmet	500
Non-wearing seat belt	500
Triple riding on two-wheeler	1,000
Unauthorized parking	250
Over-speeding	1,500
Using mobile phone while driving	2,000
Signal jumping	Adjudicated by courts

Leading Factors for Road Accidents

On a threadbare analysis, there are various reasons for the spike in accidents statewide ([State Crime Records Bureau, 2025](#)). Fault of the driver of the motor vehicle and of other vehicles are the top priority causes, followed by technical defects, lack of speed breakers like rumble strips, drunken driving, stray animals, and driver visibility issues ([Mathrubhumi, 2023b, 2023a](#)). In addition to roadway factors, pavement and shoulder conditions, surface friction, lighting, lack of dedicated cycle and bike bays, and weather conditions also contribute to crash frequency. Driver characteristics—such as driving skill, travel speed, driver age, experience, visual acuity, and the time required for object detection and recognition—play a key role in crash severity ([Mathrubhumi, 2023b, 2023a](#)). Hydroplaning is a well-known reason for accidents during the rainy season, causing vehicle skidding due to the loss of contact between the road surface and tires caused by a water layer. Highway hypnosis is another major concern on well-constructed, high-tech roads where drivers are not forced to maneuver with continuous active effort ([Mathrubhumi, 2023b](#)). In such situations, driver attention diversion occurs, significantly increasing response lag when sudden braking is required ([Mathrubhumi, 2023b](#)). A minimum response time of 3 seconds is needed for a driver to execute a reaction upon detecting a safety threat; notably, a vehicle traveling at an average speed of 60 km/h covers a distance of 50 meters within those 3 seconds. Consequently, tailgating by vehicles must be strictly regulated to prevent rear-end collisions.

The Indian Roads Congress (IRC), established in 1934 as the national apex body of highway engineers, formulates standards for road development and safety across India. Compliance with IRC code standards is mandatory for medians, pedestrian bays, cycle tracks, signage, Chevron signs, warning boards, traffic signals, enforcement cameras, and speed limits. A critical factor in road safety management is the identification of black spots—defined as road sections of 300 to 500 meters where at least 5 accidents or a minimum of 10 fatalities have occurred over a 3-year period due to persistent local risk factors ([State Crime Records Bureau, 2025](#)). In 2021, the Kerala Road Safety Authority (KRSA) identified 4,592 black spots statewide, including 214 on National Highways, though annual updates mandated by regulatory guidelines have faced delays.

In chronological order, the primary vehicle types involved in state traffic crashes are cars, jeeps, taxis, minibuses, heavy trucks, three-wheelers, KSRTC buses, goods carriers, and unidentified vehicles ([State Crime Records Bureau, 2025](#)). Temporal analysis reveals peak accident occurrences between 6:00 PM and 9:00 PM, with early morning hours (1:00 AM to 3:00 AM) presenting heightened risk due to driver fatigue ([State Crime Records Bureau, 2025](#); [Mathrubhumi, 2023b](#)). Classified by road category, local and district roads account for the highest crash volume, followed by National Highways and State Highways ([State Crime Records Bureau, 2025](#)). During 2022–2023, Kerala recorded 17,627 crashes across 1,800 km of National Highways (ranking 2nd nationally) and 9,500 crashes across 428 km of State Highways (ranking 5th nationally) ([State Crime Records Bureau, 2025](#)). Although Kerala represents only 2.76% of India's population, it accounts for 8.3% of the total national road crashes, ranking 5th in overall accident rates ([State Crime Records Bureau, 2025](#); [The Hindu, 2025](#)). Furthermore, hit-and-run incidents show an upward trajectory, though claims are now covered up to Rs. 2 lakh under revised Ministry of Road Transport and Highways (MoRTH) Motor Accidents Claims Tribunal (MACT) norms.

Regulatory mandates under Rule 15A of the Kerala Motor Vehicles Rules require Vehicle Location Tracking (VLT) devices and emergency panic buttons in school buses, public service vehicles, and goods trucks, following state enforcement orders issued on November 28, 2019. Additional measures under consideration include penalizing pedestrian traffic violations (wayfarers), particularly mobile phone distraction while crossing ([Mathrubhumi, 2023a](#)).

Automated fine processing is supported by the Virtual Court system operating out of Kochi, though designated emergency response vehicles—including police, fire and rescue, disaster management, and active ambulances—remain exempt from automated camera penalties (Malayala Manorama, 2023a). Non-compliance with seat belt mandates and delayed re-notification of the 2014 statutory speed limits persist despite varying road ownership across the Local Self Government Department (LSGD), Public Works Department (PWD), and National Highways Authority of India (NHAI).

Pedestrian fatalities constituted 26% (1,117 deaths) of total road fatalities in 2022, driven by unscientific driving training, operating under the influence, mobile phone distraction, and negligent driving (State Crime Records Bureau, 2025; Mathrubhumi, 2023a). Fatalities among adolescents aged 12 to 18 average 200 annually, while 3% of total crash injuries result in severe permanent disabilities (State Crime Records Bureau, 2025). Vulnerability is particularly pronounced among elderly pedestrians aged 60 to 70; out of 633 elderly pedestrian fatalities recorded in 2023, 492 were female and 141 were male (State Crime Records Bureau, 2025; Mathrubhumi, 2023b). As vehicle density rises, pedestrian facilities are frequently compromised through road widening, unpruned roadside vegetation hiding sight lines, illegal waste dumping, and encroachments by political flag posts, advertisement hoardings, and religious charity boxes. Standard IRC specifications mandate pedestrian walkways of at least 180 cm in width to allow two wheelchairs to pass simultaneously, along with protective fencing, pedestrian-actuated signal phasing, and designated street vending zones separated from footpaths. Enforcement tools such as wheel clamps (Denver boots) are deployed by police in designated no-parking zones to encourage voluntary compliance, alongside directives encouraging pedestrians to walk facing oncoming traffic on the right side of the road.

OBJECTIVES

1. To understand the alarming situation of the road accident scenario in Kerala.
2. To identify issues, causative factors, challenges, and consequences leading to spikes in road accidents.
3. To gain in-depth knowledge regarding victim care and the supportive role of ambulance services in saving lives.
4. To examine the scenario from a multi-stakeholder perspective (Police, MVD, Health, Pedestrians, Ambulance Drivers, Public) and suggest measures for establishing a safe road culture.

METHODOLOGY

This study is based on primary data collected from field using a structured interview schedule from 14 urban local bodies (6 municipal corporations and 8 municipalities) across 14 districts of Kerala. One ULB each was selected using convenient sampling method. Information was also collected from key informants and agents, stakeholders who are related to road accidents, transport, care and support.

Exploration and descriptive method with mixed approach (qualitative and quantitative) was used as no previous study was done as far as road accidents are considered. A few issue or cause based studies conducted by NATPAC is an exception. A sample of 100 ambulance drivers were selected as respondents on a random cum convenient sampling basis. Six districts have municipal corporations and these 6 corporations were selected for the study. In remaining 8 districts, one each ULB was selected on a convenient sampling basis. 10 respondents were selected from 6 municipal corporations and 5 each from 8 municipalities. Key informant interviews were held with Road Safety Experts, NATPAC Officials, Police and MVD, NGO representatives. No male, female exclusion was adopted for the study. Focus group discussion was also conducted with ambulance drivers' unions/associations. Descriptive statistical analysis was done using SPSS package. Secondary sources were also used as part of literature review.

DISCUSSION AND RESULTS

Ambulance driver refers to individuals employed by ambulance services responsible for transporting patients to medical facilities in emergency situations. They are involved in driving ambulances equipped for providing basic or advanced life support. Occupational stressors are the specific demands or pressures inherent to ambulance drivers which may include witnessing traumatic incidents, time management and transportation pressures, communication challenges, and exposure in distressing patient situations. Coping mechanisms refer to the strategies, behaviors, and resources employed by ambulance drivers to manage and mitigate occupational stresses. This encompasses a spectrum

of individual-level coping strategies like emotional regulation and problem-solving. Organizational support mechanisms like peer support networks, access to mental health resources, training programs etc. form part.

Ambulance services

Ambulance drivers are vital as front-line or first respondents who rope in to pick road accident victims and transport to hospital for primary care or even critical emergency care. The service of ambulance is spread over in congested urban streets as well as in remote villages. The ability of ambulance drivers and support staff to withstand, adapt, and thrive in the face of multifaceted stressors inherent to their profession is to be appreciated. Quick response during emergencies is critical in saving lives.

As per the registration details maintained by Motor Vehicles Department, there are about 9335 ambulance vehicles operating in the state as of March 2025. Private and public organisations in the State operate ambulance services to transport sick people/crash victims to medical centres. The Government of Kerala had launched ambulance services through out the state to provide free transport to victims in distress. The KANIV-108 project has 315 ALS ambulances state wide. It is operated under the Toll free No 108. A total of 150 ambulances will be operational round the clock and 165 during 12 hours. These ambulances are equipped with Medical equipment, Trauma Care devices, Driver and Emergency Medical Technician (EMT), in addition to call centre for management.

Nearly 3000 ambulances are running on roads, out of the 9335 number registered. That means, only 30% are fit as ambulances with life supporting equipments

Table 3 Registration Details of Ambulances in Kerala (Source: MVD, Kerala)

Sl. No.	Category	Nos.
1	LMV-Ambulance	8,985
2	MMV-Ambulance	129
3	HMV-Ambulance	118
4	LMV-Hearse Ambulance	100
5	LMV Ambulance (Imported)	3
Total		9,335

Registration details of ambulances in Kerala (Source: Motor Vehicles Department, Government of Kerala).

A good percentage of ambulances are used for other purposes like medicine transport, staff transport, and other purposes including criminal activities due to the immunity given to ambulance by Police and MVD, the law enforcing agencies. Same siren is used while traveling without patient. Some of them charge exorbitant rates from the relatives of the victims though rates are fixed by MVD. There are a lot of private ambulances operated by NGOs, institutions, political fronts, Trusts, hospitals etc. throughout the state. NGOs who provide ambulance services include i). ANGELS (a Kozhikkod based NGO), ii). IEMS (an institution based at Kottayam) and 1298 services in different parts of the State. iii). Indian Medical Association providing similar service in different districts by networking private ambulances through a mobile number 91 88 100 100, iv). TRACK is based in Kollam district and 108 is operated by Health Department/ Medical services Corporation.

Type of Ambulances and Specifications as per National Ambulance Code

The Government of India notified National Ambulance Code which defines constructional and functional requirements for ambulances in the Country. According to National Ambulance Code, four variants of road ambulances are prescribed.

- **Type A:** Medical First Responder
- **Type B:** Patient Transport Vehicle (PTV)
- **Type C:** Basic Life Support (BLS) Ambulance
- **Type D:** Advanced Life Support (ALS) Ambulance

Currently, there is no standardisation of ambulance design across the country. Not even colour code. The interiors of the ambulances are not ergonomically designed and have sharp edges. The oxygen system used in most ambulances is not certified for medical purpose.

Specification for Advanced Life Support (ALS) Ambulance

The ALS ambulance is mostly used for transporting critically ill patients from a primary or secondary care facility to tertiary care facility. The vehicle should be equipped with essential life support equipment and emergency care medicines to support life of patients. The Government of Kerala should mainly focus on the deployment of ALS ambulances. The ALS ambulance should be a vehicle registered as ambulance of any make with EMT and a minimum of the following equipment of any make permanently fitted in it. The equipment required are AED with cardiac monitor, portable ventilator, suction apparatus, pulse oxymeter, syringe pump, auto folding stretcher, spine board, jumbo oxygen cylinder with control panel, digital BP apparatus, portable pulse oxymeter, glucometer with strip, thermometer, ambubag (adult/pediatric) and stethoscope

Once a vehicle is registered as ambulance with MVD Office, there is no control over the ambulance except for annual fitness. Even during routine police checking, the ambulances are spared. In Kerala, there is no difference between the ambulance carrying critically ill patients, patients with minimal injuries and transporting dead bodies. In abroad, the vehicle which carries dead bodies plies with a name board- Hearse.

The robust public health care system, especially emergency care in Kerala is a renowned fact and model for all other Indian states, which rests on ambulance services to deliver timely and efficient care, amplifying the pressure as frontline first responders. The first hours of any accident is termed as 'Golden hours'. Most of the fatalities happen during the first hour. So timely and effective transporting and medical care is crucial. Ambulances and medical institutions play a vital role here in saving lives. Delay in providing first aid and in transporting patients to hospital contribute to surge in fatalities. For better results, the ambulances should be equipped with essential medical equipment and trained emergency attendants to administer extended care including airway management, fluid resuscitation and spinal immobilisation. The availability of cervical collar for patients or victims with further neurological damage is to be encouraged.

Extreme care is to be given while transferring injured victims from accident site to the ambulance to prevent secondary injuries. The 'second injury' can further complicate the recovery of the victim and even mortality. To mitigate this timely care and transport, hospitals with emergency care facilities and facilitate efficient triage and expedite delay of critical care. Critical care ICUs also need to provide intense care. To elevate the standard of emergency care adequate staffing and infrastructure is to be provided. Skilled medical doctors and para medical staff are necessary in critical care centres on a 24x7 basis. Rehabilitation department under physical medicine is vital for recovery. An initiative for networking ambulance by IMA is in function but not commendable, Collaborative and coordinated efforts of Police, MVD and hospitals are necessary to address this issue. The support of ambulances and the public is also worth mentioning. Reactive approach needs to be replaced with proactive measured strategy for optimized long term results. A real time monitoring under the State Healthy Agency (SHA) needs to be initiated. (SHA is the statutory agency to provide 72 hour cashless accident health care to road accident victims in the state as per the MoRTH directions). As a bolt from the blue, while considering a public interest litigation, the SC of India on 8th January 2025 made a direction to MoRTH, Government of India to introduce the golden hour free health treatment on or before 4th March 2025, in all the 36 states and Union Territories. Also directed to prepare a swift response plan within six months. Subsequently MoRTH announced in Gazette the cashless treatment scheme for road accident victims from 5th May 2025. As per the scheme (Cashless Treatment of Road Accident Victims Scheme 2025) the road accident victims all over India will be entitled to cashless treatment either for up to Rs. 1.5 lakh or for the first seven days, at designated hospitals, irrespective of income, age, social status etc. The objective of the scheme is to reduce the death toll arising from road accidents due to delay in timely medical intervention. Fund allocation will be from Central Motor Vehicle Accident Fund. The National Health Agency shall be the implementing agency at National level with respective State Health Agencies (SHA) in every state and Union Territories. In Kerala 643 hospitals are already empanelled for the scheme which were already functioning under Ayushman Bharath Pradhanmanthri Arogya Yojana (ABPAY). In emergency situations those expenses incurred in private hospitals can be claimed till they overcome critical situation. Subsequently they shall be transferred to empanelled hospitals. In another judgement of SC, headed by Justices A.S. Oka and Ujal Bhuyan, on 3th May 2025, directed the states and Union Territories to frame guide-lines

to ensure proper foot paths for pedestrians calling it under Article 21 of Indian Constitution (Right to life and dignity). Court observed that right to have foot paths unobstructed is an essential characteristic. They should be accessible to persons with disabilities and removal of encroachments is mandatory, if any.

The nature of work undertaken by ambulance drivers inherently exposes them to a spectrum of occupational stresses. Witnessing traumatic incidents, negotiating hazardous road conditions, and contending with time-sensitive interventions; all contribute to the cumulative burden of stress experienced by them. Moreover, the emotional toll of encountering patients in critical conditions, coupled with the responsibility of providing immediate medical assistance, further compounds the stress experienced by ambulance drivers, which needs a comprehensive study. The health and safety of ambulance drivers need to be targeted.

In this study both male and female ambulance drivers were chosen as respondents. However no female and transgender respondents were identified. The gender distribution status shows that this is a male monopoly occupation.

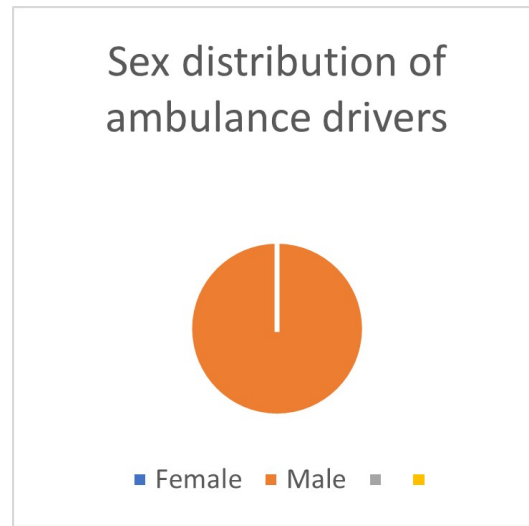


Figure 1 Figure showing sex distribution of ambulance drivers

Education plays a crucial role in transforming the society irrespective of sex and occupation. Development and well being of any community is correlated with education. Literacy is defined as the ability to read and write with understanding on any language. Illiteracy can be a serious challenge like physical handicap. The analysis shows that there are no illiterates and majority are having secondary education. When education level increases the knowledge, perception, attitude etc. can improve which is a better situation in the current scenario

Table 4 Educational Attainment Level of Ambulance Drivers

Educational Level	Frequency	Percentage (%)
Illiterate	0	0
Literate	17	17
Up to Std 10	33	33
Up to Plus Two	40	40
Graduate	2	2
Post Graduate	1	1
ITI / Diploma	7	7
Total	100	100

Stress is the body's reaction to a challenging situation or changing environment. It is a natural human response demanding environment or situation that can cause mental tension or distress to anyone. There are internal and external stressors. That can be personal feelings , events, incidents of witnessing traumatic conditions, accidents, thoughts that disturb us, makes nervous or frustrated, including work pressure or other tension. Stress is manifested in different

ways like head ache, muzzle pain, loss of appetite, digestion issues, chest pain, dizziness or fainting, rashes in skin etc. Unmanaged stress can lead to issues like sleeplessness, concentration issues, constipation, work efficiency concerns, diabetes, high blood pressure, stroke, heart diseases or manifested as depression, anxiety etc. They are usually invoked to overcome stress or manage stressful situations.



Figure 2 Figure showing stress among ambulance drivers

Coping mechanisms are the strategies to deal with different emotional conditions, social situations etc. like physical activity/ exercise, mindfulness, yoga, meditation and breathing exercises. It is a conditioning of body and mind to overcome the stressful situation. Physical pleasure, mental happiness and extreme satisfaction namely Anantha or nirvana is described by psychologists and mental experts.

Table 5 *Coping Mechanisms Adopted by Drivers (n = 55)*

Coping Strategy	Frequency	Percentage (%)
Ventilation through Sharing	25	45
Social Media and Smartphone Usage	20	36
Smoking / Drinking	5	9
Medication	1	1
Counseling / Professional Help	4	9
Total	55	100

Table 6 *Stakeholder Responsibility Matrix for Accident Prevention*

Stakeholder / Cause	Frequency	Percentage (%)
Pedestrians	10	10
Drivers	40	40
Enforcement Agencies (MVD / Police)	16	16
Road Conditions	24	24
Vehicle Defect Issues	14	14
Others	6	6
Total	100	100

Table 7 Primary Reasons for Choosing the Profession

Reason	Frequency	Percentage (%)
Livelihood Activity	56	56
Lack of Alternative Employment	34	34
Charity	5	5
Passion	3	3
Thrilling Experience	2	2
Total	100	100

Driver interactions were conducted across key operating bodies, including the Kerala Ambulance Drivers and Technicians Association (Thrissur), All Kerala Ambulance Drivers Union, and the Ambulance Owners and Drivers Association (Ernakulam).

ISSUES AND CHALLENGES IN AMBULANCE OPERATIONS

1. **Over Speeding tendency:** Rash and negligent driving by ambulance drivers during efforts to reach hospitals to save life of victims, leads to over speed. Though speed is limited to 100 km/hour, there is no restriction placed on ambulances. Ambulance vehicles are generally exempted from traffic rule violations like over speed, signal jumping, using for unintended purpose etc.
2. **Road Worthiness of Ambulance Vehicle:** Validity of ambulance is permitted till it is road worthy. Many countries have statutory centres to test road worthiness. But in India, it is not in place. Efforts should be made to set up such centres across the State to conduct test road worthiness of ambulance vehicle and other passenger transport vehicles.
3. **Tax exemption for Ambulances:** As per the Motor Vehicle(Taxation) rules, all ambulances operated for charity purposes are exempted from collection of road tax. Generally, there is no enforcement-check on ambulance on transit either by Police or by MVD Officials. Ambulances are exempted from booking petty/compounding fee challans in ANPR enforcement cameras.
4. **Unauthorized use of Ambulance vehicles:** Ambulances are, at times, used for unauthorized purpose. It is used widely for transporting doctors/medical staff or for carrying drugs and hospital equipment, vaccination drives, pick and drop of medical staff and for palliative care and allegedly for transport of narcotic substances. Siren is used while traveling without sick/injured patient. Louder noise generating alarm and variety of color lights are used. No regulation with respect to fixing stickers, curtains and cooling papers. Capacity of passengers is not specified. In many cases, overloading of patient's attendants are seen in ambulances.
5. **Hiring Charges:** Fixing of hiring charges of ambulances is under the consideration of Kerala Fare Revision Committee formed under MVD. Allegations of over charging is widely received. Actions on such cases need to be formalized. (This was addressed by Government of Kerala by regularizing ambulance tariff in September 2024 thereby Kerala becoming the first state to introduce uniform ambulance fares. The tariff is to be placed in the ambulance as visible to the patient and care taker. As part of the campaign special training and identity cards will be issued to ambulance drivers by MVD. Navy blue shirt and black pant was introduced as the uniform.)
6. Routine check up by MVD biannually for new vehicles up to 8 years and annual checks beyond that period to be insisted. Fitment of GPS and speed governors are necessary. As such, it is not made mandatory for ambulances.

Regulations on Ambulance Operation

Ambulance Operation Protocol was implemented in the State in 2023 to regulate and guide safer mobility of ambulance service. Special training and certification shall be made mandatory for ambulance drivers after undergoing training on trauma care process, safe driving practices, etc. with the support of hospitals and emergency operation care experts. Only drivers with ambulance driver permit should be allowed to drive ambulance. Periodic renewal to be

considered and should be enforced. This will be very much helpful to reduce accidents involving ambulance vehicles and to ensure safety and efficient operation. Police Clearance Certificate(PCC) to be mandated for ambulance drivers.

However enforcement of the Ambulance Operation Protocol for Kerala is yet to be in full swing. GPS Vehicle Tracking & Monitoring System should be made mandatory in all public vehicles including ambulances. Vehicle Location Tracking (VLT) system hardware specifications and features should be AIS-140 standards . In addition ‘Over speed buzzer’ with audio warning should be fitted to have deterrence effect on the driver. For accurate speed warning, speed zone mapping of entire road network in Kerala needs to be done, within the GPS tracking devices. Any continuous speed limit violation (3 or more - speed alerts within 5min) may be considered as a violation and the driver needs to be advised to undergo training cum counselling. Good drivers can be rewarded while unsafe drivers may be blacklisted.

As per the current study, proper awareness of the public regarding road safety is below 50 percentage . NGO efforts (5%) are also lacking . No mass campaigns were implemented except during National Road Safety Week observed, every year by MoRTH.

Enforcement of Rules is done only for achieving the targets of the Chief of Police and MVD. Camera surveillance and penalizing the offenders is a remarkable endeavour appreciated by experts. But e- chellaning and compounding into the account has not yet reached the desired level. E-courts are in existence for the same but people are taking time to acquaint with the procedures. Media (visual, print, audio and social) is also not much contributing in unpaid IEC activities. Only paid advertisements are encouraged, it needs a change.

Signs boards and warning boards are not up to the desired level . Speed governors are not fitted in all the heavy vehicles or are not properly working. Speed limit boards for various vehicles in different stretches are also not installed to expectation. Road markings, humps and rumble strips are not provided in all the roads. Separate bay for two, three wheelers and cyclists in major roads are also not surfaced. Kerala Road Fund Board had piloted cycle bay in a road (Vellayamqabalam – Attakulangara stretch) in Thiruvananthapuram. A safety corridor road was also piloted in Kazhakootam- Adoor stretch, funded by World Bank.

Enforcement squads at regular distances are very essential on roads but due to less staff strength and vehicle shortage the department is unable to put in place.

Voluntary compliance of traffic rules and regulations by vehicle drivers/ owners are also only 70%. The other 30% contributes in increasing accidents.

Model road safety corridors are few in number. It is to be scaled up.

Online training programs and centres are yet to emerge for imparting road safety education to the needy and public at large.

Signal jumps, violation in road markings by users, unauthorized parking, over speed, non respecting pedestrians at Zebra crossing are observed in common parlance.

Tail gating and drunken driving are still in existence. Overnight driving is to be regulated or warning may be given to drivers. High Court has directed MVD to regulate driving duration to a maximum of 8 hours in one stretch. Lack of rest centres and refreshing centres for long distance passengers and drivers is also a hurdle in reducing accidents.

SUGGESTIONS AND WAY FORWARD

For imparting awareness on road safety, School curriculum was developed by the Road Safety Authority in 2021 with the collaboration of SCERT and road safety experts. A text book, “Surakshitha Yathra” prepared by SCERT in collaboration with NATPAC and KRSA has been planned to be introduced in higher secondary level for plus one students and teachers through the Directorate of Higher Secondary Education. The curriculum proposes formation of a club at school level which is yet to emerge. However, Union Minister for Government of India in September 2025 announced that road safety will be made part of school , college curriculum, It is necessary to introduce the curriculum to high school level also with appropriateness. A curriculum can be developed for the aspirants of driving licenses. A school level club shall be planned to conduct programs with the active involvement of students, teachers and parents for the public.

In road safety affairs, NGO intervention is lacking. NGOs are considered as the fifth pillar of development of any country. In Kerala the intervention of NGOs is lacking or very meagre . Funds shall be allocated from the road safety fund for targeted interventions periodically. The magnitude of Kudumbashree system being the largest women empowerment initiative and network also can be tapped for observances and campaigns at grass root level . The general

complaint that there are no mass campaigns or movements can also be overcome through this effort. NCC, NSS and the new Special Police Cadet (SPC) systems can be converged for road safety awareness and compliance. Safety Cadet system was launched in June 2025 in a high school at Mavelikkara in Alappuzha district level on a pilot basis, under the guidance of MVD. This will be scaled up to other schools based on performance evaluation. Enforcement shall be linked with Social and Behaviour Change Communication (SBCC) component as part of Information Education and Communication (IEC) strategy.

Road safety in general

In general, road safety itself is an emergency subject which needs more attention and way forward. Lot of lives are lost at sites where improvement of infrastructure are taking place without proper warning boards. In addition to warning boards proper lighting also to be provided to prevent accident during night. Proper signaling and camera surveillance is essential. Speed detection cameras are placed for name sake. The number should be increased and dummy camera approach shall be introduced. Auto-rickshaw stands need to be designated at a point which is 100 meter away from the junction, as per the directives of High Court. That should be immediately complied with. Road safety Audit (KRSA) is mandatory at every new infrastructure development site as per IRC Code. It shall be considered on a high priority.

Synchronization of traffic signals is necessary for efficient and safe journey. A statewide parking policy is also essential. People should follow traffic rules without compromise. Earn awareness and educate family as well as peer groups shall be a motto of every responsible citizen. Respect emergency vehicles like ambulances and the rights of pedestrians and differential able. Misuse of ambulances need to be restricted. Use should be limited to patient transport only. In other countries ambulances are used for patient transport only. And not for dead body transport. While carrying dead body the board 'hearse' shall be placed against ambulance in vehicle. The system shall be introduced in India too. The defaulters should be exempted from tax waiver.

Color code of ambulance is not introduced so far. That needs quick attention. Dress code of drivers and medical attendants in the vehicle should be enforced. Periodic training to be made mandatory. Police Clearance Certificate shall be made mandatory for ambulance drivers. Ensure necessary medical equipment / life support equipment, oxygen, collar etc. in ambulances as per the category or type of classification. Some ambulances are plying without standard life support equipments. Strictly enforce for speed control/over speed by MVD and Police. Do not exempt ambulances from enforcement checks. Do it appropriately to prevent misuse of siren while not carrying patients. Ambulance drivers shall be trained periodically for such parameters, patient handling and transport and first aid assistance. Research on such areas shall be promoted. Mention the category of ambulance, the facilities available and hiring charges in a conspicuous outside part of ambulance, visibly. Ambulance priority system shall be introduced on a pilot basis (opening pathway to the ambulance by freezing other routes at major junctions near Medical colleges and major hospital junctions, based on an electromagnetic fencing). A detector needs to be fixed in the ambulance as well as in the signal post. Emergency support personnel shall be arranged at casualty section of the hospitals to avoid delay in attending the victims by doctors, assisting to take x ray, scan and informing next friend or near relative of the patient.

List of hospitals providing free accident care for first 3 days shall be publicized. Psycho-social support shall be arranged for the ambulance personnel at some mental health centers, after attending traumatic victims. The tariff for the ambulances should be fixed and notified periodically and monitored for compliance. Complaints redressal system also needs to be introduced on online and offline modes. The cashless transport facility introduced by MoRTH shall be implemented and monitored in Kerala too through SHA and the network of ambulance owners and drivers. An ambulance networking or coordinating system or network station is also desirable similar to the 108 ambulance system used by the Medical Services Corporation Ltd., Health Department, Government of Kerala. One state level control and co-coordinating control room working on intelligent software for ambulances is necessary for immediate response. Strict adherence of ambulance protocol and color code are required. More behaviour Change Communication (BCC) activities and IEC activities are needed. In campaigns ensure more participation of NGOs, voluntary organizations and Community Based Organizations (CBOs).

Monitoring ambulances based on GPS needs attention for monitoring. Over speeding and atrocities to patients from staff especially to female victims can be prevented through this measure. The condition of ambulances as well as roads need attention through multi-agency coordination (NHAI, PWD, CPWD and KRFB). Ensure proper road infrastructure including street lights. CSR fund, volunteer's support, NGO intervention and contribution can be routed through this system for caring the needy victims and their families, which was not arrived yet in the state of Kerala.

It may be re-looked. Students and public at large may be exposed to accident care and transport gradually through awareness and IEC campaigns for saving lives as well as exchequer from expenses. As per the existing estimates one fatality may cost 12 lakh rupees to the exchequer on an average. Considering average fatality per year as 4000, means we are losing 48000 crore. This can be pooled for prevention purpose, if taken pro-actively. Welfare measures including social security is also an urgent need as far as a welfare state is concerned. Alternate livelihood options may also be considered for them or dependent family members. A safety driven new road culture is an essential element with proactive inclusion and contribution of all the stakeholders where by compliance of traffic rules can be ensured so as to achieve the UN Sustainable Development Goals 2030 by bringing down rate of current accidents on roads to 50% .

CONCLUSION

This research holds significant implications for various stakeholders especially the ambulance drivers by shedding light on the unique challenges faced. The well-being of them is also taken care. The outcome of the study will be an eye opener and help plan and policy makers to chalk out interventions and support systems aimed at strengthening the support for ambulance drivers and optimizing the delivery of emergency medical services. Improved patient outcomes and community well-being is the ultimate aim . Welfare of ambulance drivers also to be addressed. The blind folded approach of enforcement agencies towards ambulances needs a paradigm shift. A detailed study on the psychological aspect of ambulance drivers and medical attendants is highly necessary and exists as a research gap.

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