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Examining Awareness, Response and Reactions of People Towards a Road Accident

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ABSTRACT

This paper investigates the role of laypersons as 'first responders' in road accident scenarios, emphasizing their potential to provide immediate post-accident care. Based on a survey of over 1,200 participants conducted online using Likert scale, multiple-choice, and binary questions, the study analyzes the relationship between three critical variables: experience, awareness and preparedness. These variables were operationalised and measured through parameters such as self-reported confidence, knowledge of first-aid procedures, and willingness to assist in emergencies. Data analysis methods included the use of descriptive statistics, correlation analysis, and inferential tests, which revealed a significant gap in basic first-aid training, which showed a strong correlation with likelihood of helping and confidence levels among respondents. While awareness and preparedness were also positively associated, they proved insufficient without formal first-aid training, which emerged as a critical determinant of effective response. Demographic analysis further uncovered notable variations in how different groups respond to accident situations. Based on these insights, the paper recommends strategic interventions to enhance public response, including making first-aid training a mandatory requirement for obtaining a driver's license. It also calls for institutionalised emergency response protocols, that moves beyond the legal restrictions, and emphasises regular monitoring of emergency responses.

Keywords: road accidents, first responders, citizen intervention, road safety, emergency preparedness

1. Introduction

Road traffic injuries are the ninth leading cause of death globally, claiming the lives of more than a million people each year on the roads (WHO Global Status Report 2015), and with an increase in urbanization and motorisation, road accidents have become more common than ever. In many

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places, policies have struggled to keep up with these radical changes and respond to the increasing demands for improved road networks and emergency response systems.

India has the highest number of road deaths in the world today (Sundar and Ghate, 2013). An estimated 43.6% of road crash deaths occur on the spot or within six hours of the accident, and nearly 80% of crash victims die within the first three hours (Garg and Hyder, 2012). This means, by the time most accident survivors reach a medical help centre or a hospital, it's already too late for help. One of the most common causes of death after a road crash is anoxia, or the lack of oxygen due to blocked airway, and it can be fatal in under 4 minutes (GRSP,). By contrast, even where ambulance services are well-developed, the average response time is more than 10 minutes (Garg and Hyder, 2012). If this is the standard in well-developed areas, the question arises of how long must victims wait in rural or remote places where emergency services are scarce or often, even absent.

This is partially why first responders, people who are on the scene before emergency services arrive, form the first and vital link in the chain of survival. These first responders are usually not trained specialists with uniform but rather, vendors, students, construction workers, pedestrians or bystanders who just happened to be passing by at the time of the accident. Whether they choose to act or not in these first few moments could heavily determine the outcome of the crash. Emphasis on positioning the victim properly before emergency teams arrive alone can mean the difference between life and death. Despite the opportunity and the proximity, many bystanders are afraid to act and wide variations are found between people's knowledge and their actual behaviour. There is evidence of widespread hesitation among bystanders due to fear of police harassment, legal entanglements, or being asked to appear in court. This hesitation can also be explained by the bystander effect, or bystander apathy, which refers to the phenomenon where individuals are less likely to offer help to a victim in the presence of other people. In the context of India's overcrowded roads, this effect can be much more glorified. The more bystanders there are, the more likely it becomes for the people to assume that someone else will step up to help. The problem is made much more urgent by the fact that road traffic deaths, while often described to be "predictable and preventable", still lack any major structured government programme for response. (Sundar and Ghate, 2013)

Without a structured approach, the responsibility falls on the ordinary people who are not equipped or confident enough to deal with such emergencies. That is primarily why first aid training is so important. It should not only have basic medical help but also address road-specific risk factors like drunk-driving, speeding, lack of helmets and seatbelts. To be even more effective, training should also be adapted to local laws and cultural conditions. But in places where these don't exist, people, more often than not, rely on instinct or simply just freeze.

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This hesitation stems from multiple sources: fear of legal repercussions, lack of awareness about laws such as The Good Samaritan law, medical uncertainty about what to do or even social pressure and the assumption that someone else might step in first. To understand why people hesitate, we need to look beyond simple instinct and consider the real-world factors that shape and impact those few crucial moments after a road crash.

This research paper aims to gauge people's awareness and preparedness in case of road accidents. It has been established that road accidents form one of the leading causes of death worldwide and in India it has been a decades old issue, ranking high on the causes of death. Against this context, this paper seeks to address these fatalities by recognizing the role that people as bystanders, pedestrians, onlookers, fellow passengers and residents in general witness road mishaps and accidents play in response and rescue. This study attempts at driving the focus on 'first responders' who can be of immense assistance in road accidents.

2. Literature Review

According to the World Health Organization, intentional and unintentional injuries account for 4.4 million deaths annually, with motor vehicle crashes alone responsible for 1.35 million fatalities each year, making them the leading cause of death among individuals aged 5–29 years (Ehsani, 2020). Within this group, young males are reported as being the most affected demographic, accounting for nearly three-quarters of all road traffic fatalities.

Between 1960 and 2012, federally mandated safety technologies in high-income countries, including seat belts, airbags, and child restraint systems, were credited with saving more than 613,000 lives, over half of which were attributed to the introduction of seat belts in the late 1960s (Ehsani, 2020). Frontal airbags are reported to have saved an estimated 50,457 lives since 2017, while child restraint systems prevented more than 11,000 deaths between 1975 and 2017 (Ehsani, 2020). A comparative analysis of 53 countries further revealed that those adopting the safe systems approach, which integrates road design, enforcement, and human behavior, have achieved the lowest fatality rates (Ehsani, 2020).

Registered motor vehicles surged from 21 million in 1991 to nearly 160 million in 2012, with motorized two-wheelers constituting the majority of this growth (Mohan, 2014). This motorization trend paralleled an alarming escalation in fatalities, which grew at an annual rate of 4–6% before 2000 and accelerated to nearly 8% thereafter (Mohan, 2014; Sundar & Ghate, 2011). The National Crime Records Bureau data shows that road traffic deaths in India have risen from 56,278 in 1991 to 137,352 by 2013, leading to an increase in fatality rates per million persons from 67 to 114 over this period (NCRB, 2014). Independent crash tests conducted by Global NCAP in 2014 revealed that many of India's small, mass-market cars offered negligible

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crash protection, with manufacturers failing to prioritize safety features such as airbags and anti-lock braking systems, particularly in base models under $12,000 (Mohan, 2014).

India reports one of the highest mortality rates globally, at 29.2 deaths per 100,000 population, second only to a handful of nations with weak road safety governance (Garg, 2012). The majority of victims are male, with ratios ranging from 3:1 to 9:1 compared to females, and approximately half are in the economically productive age group of 21–40 years (Garg, 2012). Further, pedestrians and two-wheeler users have been reported as being disproportionately affected, representing almost half of all fatalities, while trucks and buses have been identified as the most frequently affected vehicle. Temporal and seasonal patterns also reveal peaks during commuting hours and winter months, with alcohol-related nighttime crashes increasingly reported in metropolitan areas such as New Delhi (Garg, 2012).

The India Status Report on Road Safety (2024) noted that while Tamil Nadu, Telangana, and Chhattisgarh reported some of the highest death rates (19–22 per 100,000), states such as Bihar and West Bengal recorded comparatively lower figures (5–6 per 100,000). Overall, the existing scholarship argues that motorcyclists are the most vulnerable group nationwide, with their mortality can be strongly correlated with state-level helmet enforcement patterns (ICMR-IHME, 2024).

The Global Road Safety Partnership (GRSP), an international non-profit formed in 1999 to study road crash deaths and injuries, emphasizes that airway obstruction and anoxia are among the leading causes of death at crash sites, often fatal within minutes if not addressed (GRSP, 2016); which can be prevented through the right kind of precautionary measures. For example, research has shown that with the correct use of helmets can reduce the risk of death by 40%, and severe injury by 70%, while seatbelt enforcement decreases the probability of fatality by nearly half for front-seat occupants; further, strict enforcement of drink-driving laws were observed to reduce fatalities by up to 20% (Garg, 2012). Despite such evidence, a large number of studies argue that nearly 80% of critical injuries in India occur within the first six hours of trauma, with head injuries accounting for the majority of early mortality (Garg, 2012). This gap highlights the urgent need for standardized emergency response protocols in the Indian context.

3. Research Objectives

The research objectives for this paper are:

1. To assess the present levels of awareness, confidence, and preparedness among bystanders and average citizens when they encounter a road accident

2. To analyse how prior experience, willingness to intervene, and the presence (or absence)

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of training influences first-responder behaviour

3. To examine entry-points for policy oriented interventions and suggest recommendations that can strengthen first responder behaviour and capacities in the Indian context

4. Research Questions:

The research questions for this paper are:

1. What is the level of awareness, training and confidence among people with respect to road accidents?

2. How do individuals choose to respond in a situation where they witness road accidents?

3. Is there a correlation between experience, willingness and training in shaping first-response actions?

4. What measures can improve the capability of first responders in undertaking response and rescue?

5. Research Method

This study adopts a mixed-method research design. A structured survey was designed to garner responses from people to understand awareness levels, preparedness, and behavioural responses during road accidents.. The survey was designed with a focus on measuring awareness among people regarding response to road accidents and general preparedness levels that allows them to act as first responders, whether it is directly assisting crash victims, calling an ambulance, hospitalisation or any other forms of response to rescue.

The sample size for this study consisted of 1232 respondents, gathered through snowball sampling by means of an online form. After removing irrelevant responses, the sample was stratified across multiple age cohorts: under 18, 18-25, 26-35, 36-50 and 50+ years. Such an age-based division allowed for the identification of groups that may require targeted interventions on specific fronts, as well as those who could be identified as the active first responders. Further the demographic is divided into region specific groups of rural, urban and semiurban or suburban. Another category that has been layered is mode of travel and transport used by them. The questionnaire included 13 items covering demographic details, awareness of emergency helpline, protective laws, likelihood of helping, confidence levels, training status etc utilising likert scale questions, multiple-choice questions, binary questions, situation-based responses.

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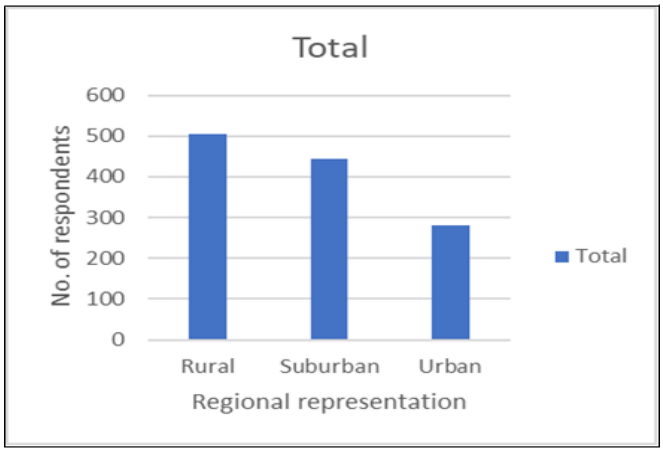
Survey responses were analysed through both descriptive and inferential statistical methods. Pivot tables and charts were used to identify correlations across variables, and chi square tests were conducted to test the significance of relationships. Analysis was further done by building layers on different variables to add breath and depth to the findings. The analysis reveals not just correlations, but also measures intent, understands lacuna, creates possibilities of intervention, and to create space for policy recommendations and further in-depth research.

6. Data Analysis

The survey responses were analyzed across three primary demographic parameters: age group, place of residence, and mode of transport. To assess participants' road crash experiences, awareness and preparedness, the survey included ten questions that covered knowledge of emergency procedures, accident involvement either as a witness or participant, understanding of Good Samaritan protections, formal first-aid training, and self-reported willingness and confidence to intervene during a road crash. The analysis below displays trends from the survey, focusing on training rates, accident exposure, and confidence levels affecting preparedness across various population groups.

At the outset, the analysis aimed to test three main variables, namely experience, awareness and preparedness, across the demographic profile of participants, beginning with a discussion on the relationship between different age cohorts in relation to experience and response. Two major age cohorts have been discussed for this purpose, which have the largest number of participants, that of age groups between 26-35 and 36-50, the latter constituting 54% of the total respondents. This population belongs largely to rural areas (41%), followed by participants from semi-urban regions (36%).

Figure 1.1: Regional Representation of Respondents



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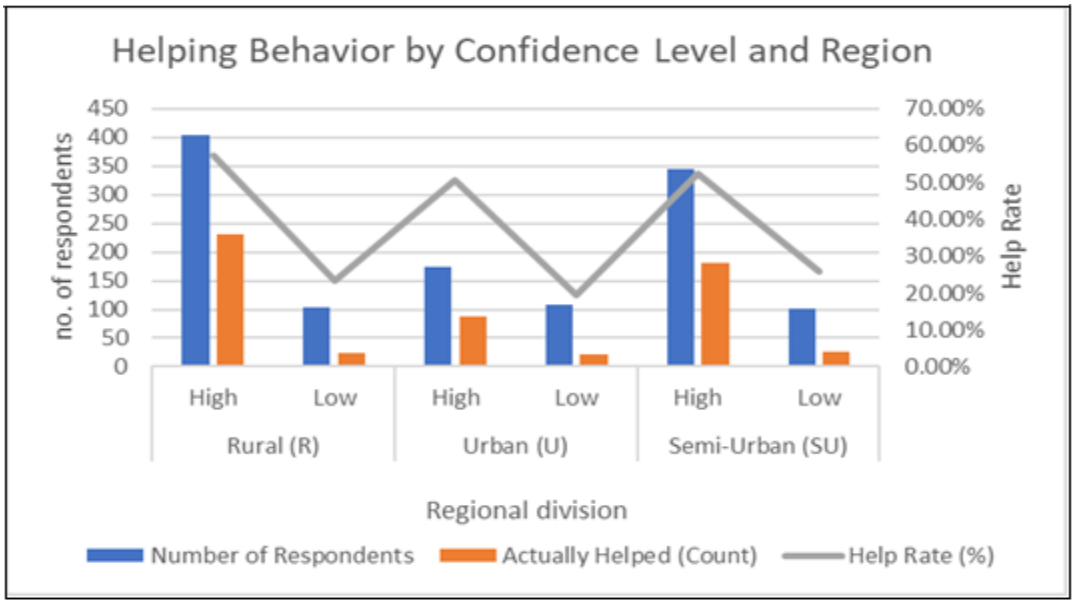
The total number of respondents that belonged to Rural and Semi-urban or suburban areas were in majority with around 41% and 36% of the total respectively. While respondents from urban areas comprised only 22% of the sample. Such a distribution brings forward an opportunity to explore regional variation in responses, and test the differences across preparedness and awareness. Interestingly, the findings reveal a consistent lack of formal training in all regional groups against the assumption that urban areas might have more exposure to formal training. The analysis will consider some of the major variables and understand correlations between them. The aim is to understand how likely are people to respond, what could be some of the barriers preventing response, training in first-aid if any, distinction between age cohorts and regional distinctions.

Figure 1.2: Response for help by Confidence Levels and Region



To understand the relationship between the 'confidence level' of knowing what to do in an accident situation was compared to those who 'actually helped' in an accident. The response to 'Helped in an accident situation' was consistent across groups, where about half of the sample in its respective group confirmed that they had helped in an accident. This points to an important fact that while half of the people helped, the other half did not and when generalised, that amounts to a larger number of people who end up not helping.

The barriers associated with not helping or having lower confidence as included in the survey do not sufficiently capture the actual sentiments. The variables assumed include 'fear of legal trouble', 'didn't feel safe', 'didn't know how to', and 'none'.

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The study also revealed that only 14% of urban drivers, aged 26–35, reported having received first-aid training, the lowest rate within their age cohort. Accident exposure was high despite this lack of training: 88.6% of respondents in this group had witnessed a road crash, and 57.1% had personally experienced one. . However, their confidence levels and self-reported willingness to help averaged between 3.3 and 3.4 on a five-point scale, indicating only moderate preparedness.

The confidence level (of knowing what to do) in the situation of an accident is generally high across groups irrespective of training levels. It is higher in the rural and semi-urban sample more as compared to urban respondents. Among rural residents aged 36–50, only 6.3% reported having first-aid experience, particularly those who predominantly relied on public transport or walking. Despite these low training levels, 65.6% of this group had witnessed a road crash, and 36% had been directly involved in one. Interestingly, their average confidence score was 4.2 out of 5, indicating relatively high self-assurance in responding to accidents despite limited formal preparation.

Rural drivers aged 26–35 generally demonstrated strong awareness of emergency services, with 97.5% reporting having knowledge of the ambulance number. However, only 19% of these respondents had received formal first-aid training. Within this group, 68% had witnessed an accident, while 38% reported being personally experiencing the same. Their confidence averaged 4.4 out of 5, a high score, yet awareness of Good Samaritan protections was weak, with a mean of only 2.6 out of 5.

For rural drivers over the age of 50, training rates were comparatively higher, with 21.1% having received first-aid instruction. This group also displayed consistently high confidence, averaging 4.4 out of 5. However, their knowledge of legal protections remained limited, with an average Good Samaritan awareness score of 3.2 out of 5.

A Chi-square test of independence revealed a significant association between training status and helping behavior, $\chi^2(2, N = 1193) = 23.45$, $p < .001$ (the smaller sample not included as it was insignificant , only 39 respondents from the age group 18-25 and Under 18). It supports the idea that training may help promote a proactive role in rescue and response. Similarly, to infer a statistically strong relationship, different variables were tested

Across the full sample set of 1,232 responses, several broader patterns were visible beyond group-specific differences. A large majority (86.3%) agreed that basic first-aid training should be made mandatory before the issuance of a driver's license, reflecting widespread recognition of its importance. Most respondents also indicated that they would help in the event of a crash, regardless of background or training level. However, the data also revealed a striking gap between intent and preparedness: only 14% of the total sample had received formal first-aid

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training, while the remainder was nearly evenly split between having no training at all and having acquired some form of informal knowledge through online resources or short workshops. This imbalance highlights a consistent trend across groups: while respondents expressed willingness to intervene, this willingness was not matched by structured preparedness.

Figure 1.3: Overall Level of First-Aid Training

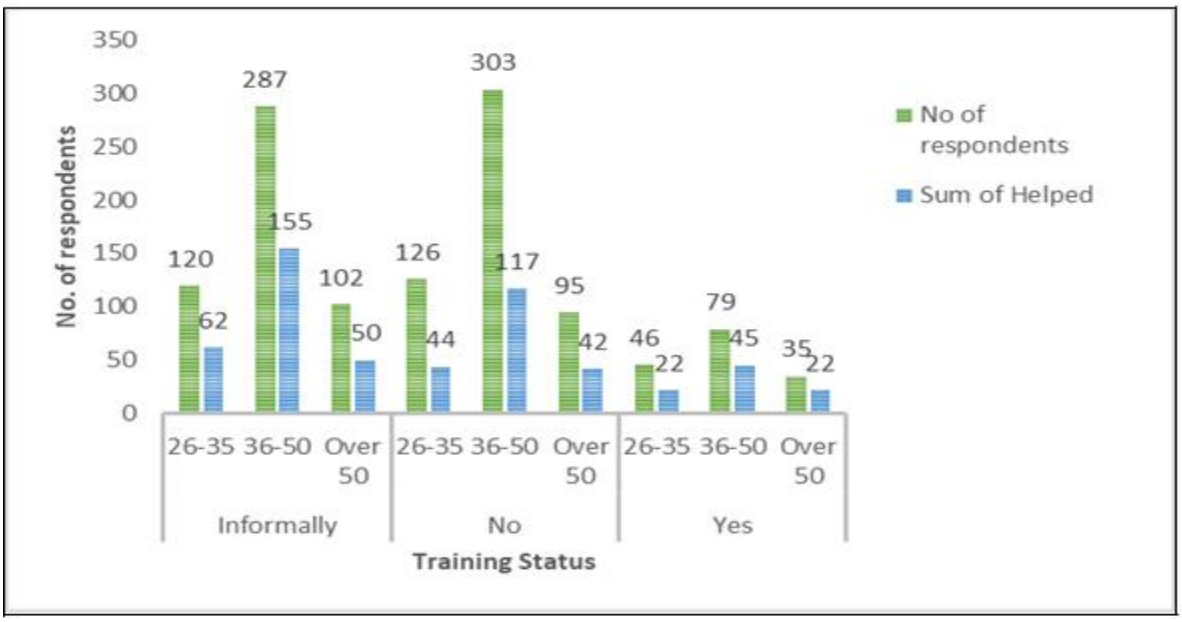

Figure 1.4: Correlation of Experience, Intent and Action towards Accident Response

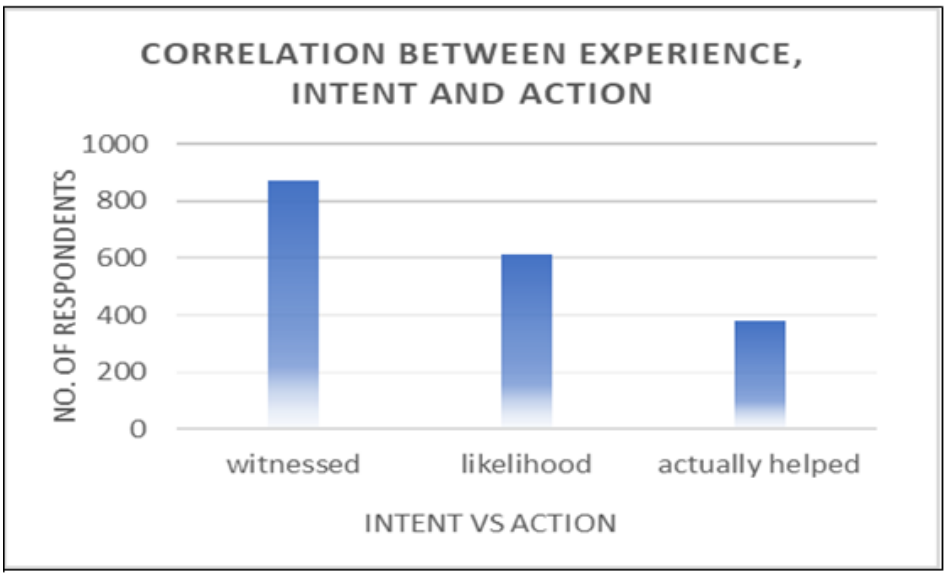

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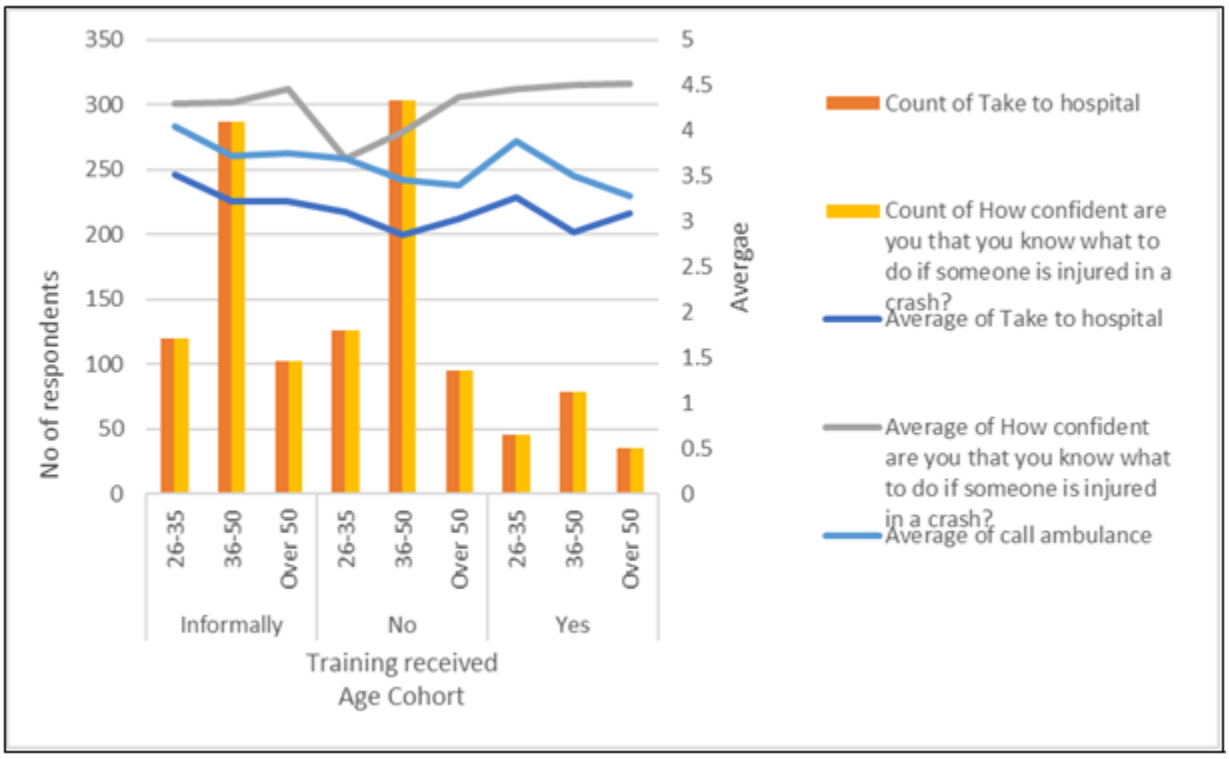
Figure 1.4: Confidence level, readiness in different age cohorts



7. Discussion

The above analysis reveals several interesting trends. While a lot of respondents had been exposed, or had personally experienced road accidents and reported a willingness to help, their actual knowledge, awareness, and preparedness remained low. Only 14% of the respondents reported undergoing any formal first-aid training, while 86.3% supported making it a requirement for driver licensing. This gap between intent and preparedness is consistently visible across findings and reflects the data in existing literature. This gap indicated that willingness doesn't lead to competence without proper training programs.

Looking more closely at the age groups, settings and transport modes highlights a very interesting contrast. Urban drivers aged 26 to 35, who face the highest exposure (88.6% had seen a car crash and 57.1% had been in one) report comparatively very high levels of receiving training (81.6%). Yet their reported confidence level remains moderate, averaging a 3.3 out of 5. This shows that training does not translate into confidence to act, reasons for which could vary. In contrast, rural respondents in the same age group report very little formal training but record much higher confidence levels, average a 4.4 out of 5. This pattern suggests that in areas with weaker emergency services, exposure may encourage individuals to rely more heavily on

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themselves. Taken together, these findings highlight that preparedness is not simply a matter of training or exposure. For urban drivers, the mismatch lies between training and confidence, while for rural drivers it lies between confidence and competence. In both cases, nonetheless, the outcome is the same: those most likely to witness or to be involved in car crashes are not fully ready to act effectively and without hesitation.

The existing scholarship on global road safety (GRSP) highlighted why these mismatches are critical. Hosted by the International Federation of Red Cross and Red Crescent Societies, the Global Road Safety Partnership (GRSP) was founded in 1999 to bring together stakeholders from business, government and civil society to implement evidence-based road safety solutions that were flexible and easily adaptable to local language and culture. GRSP's first-response guidelines note that airway obstruction can cause fatal brain damage in under four minutes, while the average ambulance arrival takes more than ten minutes, even in well-developed areas. In that critical window, what bystanders do, such as managing airways positioning, controlling bleeding, etc., can make all the difference. Garg and Hyder (2012) review reinforces this sense of urgency, and found that 43.6% of deaths occur on-scene or within six hours of the accident, with almost 80% happening in the first three. Head injuries are a leading cause of early fatalities, precisely the area where trained bystanders can be most effective. Placed in this wider context, the mismatches in the data set, training without confidence among urban drivers and confidence without training among rural drivers are a cause of concern.

The issue is compounded by low legal awareness. Good Samaritan law scores are low across all groups, especially 2.6 out of 5 for rural drivers aged 26 to 35 and 3.2 out of 5 for rural respondents over 50. This aligns with Gupteswar's (1969) critique of India's liability and compensation system. He argues that unclear protections and complex processes discourage participation even when legal safeguards exist. The data shows this clearly. Rural drivers aged 26 to 35 have a high awareness of the ambulance number (97.5%), but their understanding of Good Samaritan protections is still weak. In other words, people know whom to call, but not what they are legally allowed to do in the meanwhile. This uncertainty and hesitancy around the law is central to the gap between intent and action. Low awareness of legal protections and supportive laws are general impediments when it comes to getting directly involved with rescue, for instance, in a situation where the victim needs hospitalisation.

The need for training is evident. When even a small portion of respondents (about 20%) had some first-aid education, their confidence levels rose to 4 out of 5 range. However, knowledge does not equal legal certainty, and having confidence does not imply competence in emergencies. The contrast between rural non-drivers (low training, high confidence) and urban drivers (high exposure, moderate confidence) reinforces this point: confidence can come from exposure or self-reliance, but without proper instruction, it doesn't guarantee effective action.

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These findings have clear policy implications. The nearly unanimous (86.3%) support for mandatory first-aid training before licensing indicates strong public backing for reform. Countries like Germany already require first-aid certification for licensing, demonstrating its feasibility. Sundar and Ghate (2012) argue that road safety is often neglected in India, and this dataset supports that view: training is limited despite the clear demand. Ehsani's (2020) global review further highlights that where systematic measures like seatbelts, airbags, and child restraints are implemented, fatalities decrease significantly. In places where these measures are lacking, deaths are concentrated among young men and vulnerable road users. The high-exposure group aged 26 to 35 fits this risk profile.

In summary, this study highlights what global research has long shown: bystanders are willing, exposure is high, but without training and legal clarity, willingness hardly ever translates into effective life-saving actions. The gap between intent and preparedness identified here represents not a marginal issue but a systemic flaw with serious consequences and direct effects on outcomes in the critical moments after a car crash.

8. Conclusion

This research demonstrates that improving India's post-road accident response requires a coordinated, multi-level strategy that integrates awareness, preparedness, and hands-on training. The findings from this survey of over 1200 respondents reveal a consistent pattern: while most people express a willingness to help accident victims, their confidence and ability are hampered by gaps in knowledge, insufficient legal knowledge, and lack of structured guidance. Addressing these gaps would require strategies such as first-aid training among drivers but also community members through structured workshops, simulation exercises, and refresher programs. By incorporating these efforts into licensing systems, community initiatives and public campaigns, India can create a strong, evidence-based foundation for an effective bystander response to road accidents among people.

While this study provides critical insights due to its large sample size, it is also important to acknowledge the limitations of this study. The sample for this study is largely skewed towards rural and semi-urban areas (77%), and individuals aged 36-50 (54%), which may have exaggerated rural confidence levels compared to a more balanced national sample. Also, self-reported measures of willingness and confidence may also suffer from social desirability bias, overstating actual preparedness in real-life emergency situations. Additionally, while the data captures knowledge and self-reported confidence, it does not measure actual first-aid skills in practice. Future studies could overcome these limitations by including observational components, ensuring a balanced sample distribution, and directly measuring the impact of structured training programs.

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Encouragingly, 86.3% of respondents supported the idea of mandatory first-aid training for drivers, an approach already in practice in countries like Germany and Switzerland, proving both its feasibility and impact. However, as illustrated by this survey, the Good Samaritan Rule remains a concern. Focused awareness campaigns through transport apps, driving schools, and even highway rest stops can help address this issue. In this regard, existing initiatives show promise. Odisha's *Rakshak* scheme (2021), which trained over 38000 roadside community members as first responders, and the *SuVahak* program for heavy vehicle drivers, demonstrate that with administrative support, community centered training, it is both possible and effective.

9. Policy Recommendations

1. Mandatory First aid training that would integrate structured first-aid training and simulation-based exercises into the driving license process, similar to practices in Germany and Switzerland. This should also be supported with periodic refresher programs to sustain skills and confidence over time.

2. Strengthen awareness of Good Samaritan Protections that would inform citizens of their legal rights and also monitor for their effectiveness in changing bystander behaviour during real-time emergencies

3. Expansion of community-centered training programs such as Odisha's *Rakshak Scheme* and the *SuVahak Program* for heavy-vehicle drivers to other states. These programs should be adapted to regional languages and cultural contexts to ensure greater acceptance and effectiveness

4. Inclusion of first-aid and bystander preparedness in school and college curricula as part of life-skills education. This early exposure would create generational shifts in confidence, awareness, and proactive engagement during emergencies.

5. Development of neighbourhood-based volunteer networks trained in basic first aid, integrated with existing disaster management and emergency response plans. Sustaining participation could be achieved through recognition, certification, or small incentives.

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