

# Lived Experiences of Trained Motorcyclists and Bicyclists Providing First Aid after Road Traffic Accidents in Rwanda: A Phenomenological Study

Liberatha Rumagihwa<sup>1\*</sup>, Gerard Nyiringango<sup>1</sup>, Sandra Musabwasoni<sup>1</sup>, Claudien Thierry Uhawenimana<sup>1</sup>, David Ryamukuru<sup>1</sup>, Philomene Uwimana<sup>1</sup>, Peace Uwambaye<sup>2</sup>, Mukeshimana Madeleine<sup>1</sup>

<sup>1</sup>*School of Nursing and Midwifery, College of Medicine and Health Sciences, University of Rwanda, Kigali, Rwanda*

<sup>2</sup>*Preventive and Community Dentistry, School Dentistry, College of Medicine and Health Sciences, University of Rwanda, Kigali, Rwanda*

**\*Corresponding author:** Liberatha Rumagihwa. School of Nursing and Midwifery, College of Medicine and Health Sciences, University of Rwanda, Kigali, Rwanda. Email: [blessingtype@gmail.com](mailto:blessingtype@gmail.com). ORCID: <https://orcid.org/0000-0003-0973-9832>

**Cite as:** Rumagihwa L , Nyiringango G, Musabwasoni S, Uhawenimana TC, Ryamukuru D, Uwimana P, et al Lived Experiences of Trained Motorcyclists and Bicyclists Providing First Aid after Road Traffic Accidents in Rwanda: A Phenomenological Study. *Rwanda J Med Health Sci.* 2026;9(1): 191-200. <https://dx.doi.org/10.4314/rjmhs.v9i1.14>.

---

## Abstract

### Background

Road traffic accidents (RTAs) are a major cause of death and disability, particularly in low- and middle-income countries. Although motorcyclists and bicyclists have been trained to provide first aid, little is known about their experiences. This study explored their experiences while providing first aid after RTAs in Rwanda.

### Methods

A phenomenological study was conducted using two focus group discussions with 10 purposively selected first aid-trained participants from Nyarugenge and Nyagatare districts. Data were collected in February 2025, transcribed, and thematically analyzed using ATLAS.ti. Data saturation was achieved, as no new themes emerged from additional discussions.

### Results

Four main themes emerged: (1) first aid response at accident scenes, (2) transformation following first aid training, (3) community impact and recognition, (4) challenges faced during first aid provision. Participants reported increased confidence, readiness to assist, and emotional satisfaction. However, they faced barriers such as mistrust from bystanders, lack of official identification, and limited resources.

### Conclusion

First aid training empowered participants to provide timely care and highlighted their role in Rwanda's prehospital system. Strengthening public awareness, formal recognition, and access to supplies could enhance community emergency response and improve outcomes.

*Rwanda J Med Health Sci* 2026;9(1):191-200

---

**Keywords:** First aid, road traffic accidents, motorcyclists, community responders, qualitative study

## Background

Road traffic accidents (RTAs) remain a major global cause of morbidity and mortality and represent a significant public health challenge, particularly in low- and middle-income countries (LMICs). The World Health Organization (WHO) estimates that approximately 1.19 million people die annually due to RTAs, with nearly 92% of these deaths occurring in LMICs. [1] Statistics from different countries and regions illustrate the magnitude of this problem; for example, between 1997 and 2020, 472,193 people died in car accidents in Iran,[2] in Nigeria, 5,629 people were involved in car accidents, and 235 were brought to the hospital already dead, while 109 died in the emergency room.[2, 3] In Rwanda, the burden of RTAs is also substantial, with an estimated fatality rate of 29.7 deaths per 100,000 population.[4]

Motorcyclists and bicyclists represent an important group of potential community first responders in Rwanda. In Kigali, the capital city, approximately 26,000 motorcycles operate as taxi services [5] alongside about 5,000 commercial bicycle taxis,[6] demonstrating their widespread presence in daily transport. Organized into cooperatives and highly mobile, these riders are often the first to arrive at road traffic accident scenes, highlighting their potential role in emergency response.

Moreover, a previous study in Rwanda reported that motorcycle-related RTAs constitute a substantial proportion of cases managed by SAMU (Service d'Aide Médicale d'Urgence), which is a public ambulance service provider in Rwanda.[7] As one of the most affected groups of road users, motorcyclists may therefore be particularly motivated to assist injured colleagues at accident scenes. This unique positioning provides an opportunity for them to deliver immediate first aid before the arrival of formal emergency medical services.

Different first aid trainings for lay bystanders were provided in different countries,

including Rwanda;[8] however, little is known regarding the experiences of trained lay responders, like motorcycle and bicycle riders, during the provision of first aid post-RTA. Therefore, this study aimed to explore the lived experiences of previously trained motorcyclists and bicyclists who provided first aid following RTAs in Rwanda to inform the development of more effective and contextually appropriate first aid training programs that address both technical skills and psychological preparedness.

## Methods

### Study Design

This study used a descriptive phenomenological design based on Edmund Husserl's philosophical approach [9] to explore the lived experiences of previously first aid-trained bicyclists and motorcyclists. Phenomenology is the study of how people understand and make sense of their experiences, with a focus on consciousness, meaning, and purpose. [10] In phenomenology, FGDs are actually beneficial because they stimulate discussion and open up new perspectives; that means the use of focus groups can provide a greater understanding of the phenomenon under study.[11,12]

### Study setting

Participants were specifically selected from two districts in Rwanda: Nyagatare District, located in the Eastern Province and representing a rural setting, and Nyarugenge District, located in Kigali City and representing an urban setting. These districts were purposively selected because motorcyclists and cyclists operating in these districts had participated in first aid training related to road traffic accidents six months before qualitative data collection. [8] The inclusion of both urban and rural contexts was intended to capture diverse experiences and challenges associated with the provision of pre-hospital first aid in different environments. The six-month interval was considered appropriate to allow participants sufficient time to apply the acquired skills in real-life

situations while still being able to recall and reflect on their experiences, thereby minimizing potential recall bias.

### **Population and study context**

The study population comprised motorcyclists and bicyclists operating in the Nyarugenge and Nyagatare districts of Rwanda. These individuals routinely use the road network for commercial purposes, primarily transporting passengers or goods. Given their constant presence on the roads, they are frequently either directly involved in road traffic accidents or among the first responders at the scene. In response to this reality, healthcare educators and researchers provided first aid training to a group of 95 individuals,[8] focusing on the management of road traffic accidents. Six months following the training, the same research team conducted follow-up interviews with selected participants who had encountered at least one road traffic accident and had engaged in first aid provision as an inclusion criteria.

### **Sample size and sampling process**

Researchers collaborated with leaders of motorcyclist and bicyclist cooperatives, who served as gatekeepers to identify individuals who had previously participated in first aid training related to road traffic accidents. To reduce potential selection bias, the researchers independently contacted the suggested participants by phone to verify that they had actually provided first aid to road traffic accident victims. While the use of cooperative leaders could introduce some selection bias, this verification step helped ensure the study captured a range of real-world experiences among trained first responders. The research team then contacted these individuals, provided detailed information about the study and its procedures, and invited them to participate.

### **Data collection procedures and study tool**

The study employed two focus group discussions (FGDs), each consisting of five participants from the same district. Each group included both motorcyclists and bicyclists.

The two FGDs were conducted separately with two different qualitative researchers at the University of Rwanda, College of Medicine and Health Sciences, Remera campus. Each session lasts between 60 and 120 minutes. A semi-structured interview guide was used to explore participants lived experiences of providing first aid after RTAs. The guide was developed based on an extensive review of existing literature and was pilot-tested with three individuals to ensure clarity, relevance, and reliability. Initial questions focused on whether participants had witnessed a road traffic accident, what actions they took in response, and the challenges they encountered. Follow-up questions probed more deeply into their first aid responses, aiming to explore the specific skills they applied during the incident. All interviews were audio-recorded with participants' consent and were securely stored on the principal investigator's password-protected computer to ensure data confidentiality and integrity. Two academic researchers from the University of Rwanda, trained in qualitative interviewing techniques, facilitated the discussions.

### **Ethical considerations and data management**

This study adhered to established ethical standards for research involving human participants. Ethical approval was obtained from the University of Rwanda's Institutional Review Board (IRB) (Ref: 344/CMHS IRB/2024), and formal authorization was granted by both Nyarugenge District (Ref: 3155/07.01.01.09/24) and Nyagatare District (Ref: 0159/07/06/02/01). The FGDs were conducted in Kigali city, and participants who came from Nyagatare district were facilitated with transport and one night's accommodation fees aligned with the Rwanda official gazette, which details mission fees depending on participants' categories.

Participants who attended from the Nyarugenge district were given compensation fees of 5000 Rwandan francs (\$3.40 – \$3.45). All participants first provided oral consent, followed by written

informed consent before participation. Signed consent forms were securely stored in a locked cabinet, while audio recordings were saved on a password-protected laptop to ensure confidentiality. In accordance with the University of Rwanda’s data protection policy, both the consent forms and audio files will be destroyed after the retention period specified by institutional guidelines.

**Data analysis plan**

All interviews were transcribed verbatim and analyzed using ATLAS.ti version 7.1.4. Thematic analysis was conducted inductively following the six-step framework proposed by [13] which included: (1) familiarization, involving repeated reading of the transcripts to gain an in-depth understanding of the data; (2) coding, where key statements and recurring patterns were identified and labelled; (3) theme development, which entailed grouping related codes into broader thematic categories; (4) theme review, aimed at refining and validating themes to ensure internal coherence and relevance to the data; (5) theme definition, involving the articulation of clear and distinct meanings for each theme; and (6) reporting, where themes were presented and supported with illustrative participant quotations.

All transcripts were independently reviewed by members of the research team, who identified initial themes. These preliminary themes were then discussed collectively to strengthen the thematic structure and enhance the rigor of the analysis. This collaborative process contributed to the reliability and credibility of the findings.

**Trustworthiness**

This study ensured trustworthiness by applying the framework proposed by the study, which includes credibility, transferability, dependability, confirmability, and reflexivity. [14] Credibility was supported through in-depth discussions with participants, probing their experiences of first aid provision and challenges encountered, and through collaborative team reflections. Data were analyzed inductively, allowing themes to emerge from participants’ accounts.

Multiple researchers coded the data independently, and any disagreements were resolved through consensus discussions to ensure consistency.

Transferability was achieved by providing rich, contextualized descriptions of the study setting, participants, and findings. Dependability was addressed via regular team meetings to review and verify the coherence of emerging findings, creating a transparent research trail. Confirmability was ensured through reflexive discussions in which researchers critically examined their assumptions and potential biases, grounding findings in participants’ experiences.

**Results**

The study included a total of ten participants from Nyagatare and Nyarugenge districts in Rwanda. Six motorcyclists and four bicyclists. Among them, nine were male and one was female. Table 1 below summarizes participants’ sociodemographic data.

**Table 1. Participants’ sociodemographic information (N=10)**

Characteristics of Participants	Category	Frequency (n)
<b>District</b>	Nyarugenge	5
	Nyagatare	5
<b>Gender</b>	Male	9
	Female	1
<b>Profession</b>	Bicyclists	4
	Motorcyclists	6

**Emerged themes**

This qualitative inquiry yielded 4 major themes: (1) first aid response at accident scenes, (2) transformation following first aid training, (3) community impact and recognition, and (4) challenges faced during first aid provision. Table 2 below summarizes key findings of this study.

**Table 2. Findings summarized into themes and sub-themes, key descriptions, and illustrative quotes**

Theme	Sub-theme	Key description	Illustrative quote
Theme 1: First Aid Response at Accident Scenes	Application of first aid techniques	Participants reported applying skills learned during training, such as bleeding control and airway management, to stabilize victims.	“Because I know that bleeding can lead to death, I compressed the bleeding site, and the blood stopped.” (Respondent 2, Nyagatare)
	Coordination with bystanders and emergency services	Participants contacted emergency services and mobilized bystanders to assist victims and ensure timely help.	“I dialed 912 and gave my phone to my helper to talk to the ambulance.” (Respondent 3, Nyarugenge)
Theme 2: Transformation Following First Aid Training	Increased confidence to respond to accidents	Training increased participants’ confidence and willingness to intervene compared to before training, when many avoided accidents.	“Before, whenever I saw an accident, I used to run away. But now I even carry clean gloves.” (Respondent 5, Nyarugenge)
	Sense of pride and personal fulfillment	Participants expressed pride and satisfaction when helping injured individuals and saving lives.	“I just felt well... like I was a strong man because I saved a human being.” (Respondent 3, Nyarugenge)
Theme 3: Community Impact and Recognition	Appreciation from victims and families	Victims and their relatives expressed gratitude toward trained responders, which motivated participants to continue helping.	“The child’s mother always thanks me and says I saved her child’s life.” (Respondent 4, Nyagatare)
	Increased community interest in first aid training	Community members became interested in learning first aid after witnessing participants’ interventions.	“People even ask us where they can learn these skills so that they can also help others.” (Respondent 5)
Theme 4: Challenges Faced During First Aid Provision	Lack of official identification for trained responders	Participants reported that police and community members often questioned their competence due to lack of proof of training.	“It is important to have something like an identity card to show that you are trained.” (Respondent 2, Nyarugenge)
	Interference from bystanders and relatives	Bystanders sometimes prevented participants from providing first aid due to mistrust or fear of interfering with evidence.	“Sometimes relatives stop you because they do not trust that you can help.” (Respondent 5, Nyarugenge)
	Delayed response from emergency services	Participants reported delays in ambulance or police arrival which hindered effective emergency response.	“I called the police and ambulance, but they did not come quickly.” (Respondent 1, Nyarugenge)
	Lack of protective equipment	Participants highlighted the absence of gloves and other protective equipment as a barrier to providing care.	“If you have gloves, you will be protected when touching blood.” (Respondent 1, Nyagatare)

**Theme 1. First aid response at accident scenes**

Participants described actively applying the knowledge and skills learned during training when encountering road traffic accidents. Many reported providing immediate assistance, such as controlling bleeding, clearing airways, and contacting emergency services while coordinating with bystanders.

One participant from Nyagatare explained how knowledge and skills gained during training enabled him to control bleeding and potentially prevent death: *“Because I knew that bleeding can lead to death, I applied pressure to the bleeding site, and the bleeding stopped”*. (Respondent 2, Nyagatare)

Similarly, another participant described assisting a victim with airway obstruction:

*"I moved his tongue because it was blocking his throat, and after that he started breathing again"* .(Respondent 4 Nyarugenge)

Participants also reported coordinating with others at the accident scene to ensure victims received timely assistance. A participant from Nyarugenge explained how he contacted emergency services while managing the situation:

*"I dialed 912 and gave my phone to my helper to talk to the ambulance and explain where the accident happened."*(Respondent 3, Nyarugenge)

Likewise, a participant from Nyagatare described mobilizing bystanders to assist with moving an injured child to safety:

*"I started calling the people around the casualty to come and help me. We lifted the child from the road and called the ambulance."*(Respondent 3, Nyagatare)

### **Theme 2: Transformation following first aid training**

Participants reported that first aid training significantly changed how they responded to accidents. Before training, many described feeling afraid or avoiding accident scenes, but after training they felt more confident and willing to intervene. One participant from Nyarugenge reflected on how the training changed his behaviour:

*"Before, whenever I saw an accident, I used to run away. But now I even carry clean gloves with me. The training helped me greatly."*(Respondent 5, Nyarugenge)

Similarly, a participant from Nyagatare explained that training transformed him from a passive observer to someone actively helping victims: *"Before the training, we were afraid and just watched while people were dying on the road. But after the training, I help because I know what to do."* (Respondent 2, Nyagatare)

In addition to increased confidence, participants described a strong sense of pride and fulfillment when helping injured individuals. *"I just felt, well, felt like I was a strong man because I was able to save a human being."*(Respondent 3, Nyarugenge)

Another participant expressed similar feelings of pride:

*"I am super proud of providing something that I am sure is safe and can help to recover someone's life."*(Respondent 2, Nyagatare)

### **Theme 3: Community impact and recognition**

Participants reported that their interventions were often recognized and appreciated by victims, relatives, and community members. Expressions of gratitude served as a powerful motivator for continued involvement in providing first aid.

One participant from Nyagatare described how a mother remained grateful after her child recovered:

*"When the child's mother saw her child regaining life, she always thanked me and said I saved her child's life."*(Respondent 4, Nyagatare)

Similarly, a participant from Nyarugenge recalled how a victim he assisted continued to express appreciation: *"Even now that person I saved is still alive, and when we meet, he tells me, 'You saved me.'"*(Respondent 1, Nyarugenge)

Participants also noted that their actions increased community interest in learning first aid skills.

*"People even ask us where they can learn these skills so that they can also help others."* (Respondent 5 Nyagatare)

### **Theme 4: Challenges faced by participants during first aid provision**

Despite their training, participants faced multiple challenges in real-life situations that may hinder early interventions post road traffic accident. Participants from both urban (Nyarugenge) and rural (Nyagatare) settings reported that the absence of official identification or certification created barriers when attempting to provide first aid. Many explained that police officers, security personnel, and community members often questioned their competence because they had no visible proof of training. An urban participant from Nyarugenge emphasized the importance of having official identification, stating,

*"It is important to have something that shows who you are, like an identity card... so when someone asks if you are harming their relative, you can show that you are trained."* (Respondent 2, Nyarugenge). Similarly, another urban participant noted that *"many times police officers ask us if we are trained... if we had cards showing we were trained, it would help us a lot."* (Respondent 3, Nyarugenge).

Participants from Nyagatare expressed similar concerns. One rural participant explained that community members often doubt their abilities, saying, *"Do you know what you are doing?" There is nothing to show them that you had training.*" (Respondent 2, Nyagatare). Another participant added that *"Providing official documentation or informing local authorities about trained first-aiders could improve trust and support during emergencies."* (Respondent 3, Nyagatare).

Participants also described frequent interference from bystanders and relatives at accident scenes, which sometimes prevented them from providing timely first aid. This challenge was reported in both districts, where individuals assisting victims were often suspected of interfering with evidence or causing further harm. In Nyarugenge, one participant explained that *"sometimes when there is an accident, if you want to intervene, the relatives present stop you because they do not trust that you can help."* (Respondent 5, Nyarugenge). Another participant described how bystanders discourage assistance by saying, *"Do not change anything; do not clean signs of what happened."* (Respondent 4, Nyarugenge). Similar experiences were reported in Nyagatare. One participant noted that people often insist on waiting for authorities, stating, *"They say, 'Let the police come and do their job; this is not your job'... you find yourself providing first aid while fighting with people."* (Respondent 2, Nyagatare).

Participants from both districts reported difficulties in obtaining timely assistance from emergency services such as police or ambulances.

Delays in response were perceived as a major barrier to effective first aid and sometimes contributed to poor patient outcomes. In Nyarugenge, one participant recalled a distressing experience where attempts to contact emergency services were unsuccessful: *"I called the police and ambulance, but they did not come quickly... I did not have support at the right time to save the life of that girl."* (Respondent 1, Nyarugenge). Similarly, in Nyagatare, participants reported delays due to limited availability of emergency responders. One participant explained that *"sometimes police or ambulances delay coming to the scene because they are attending other incidents."* (Respondent 1, Nyagatare).

Participants from Nyagatare particularly highlighted the absence of basic protective equipment as a barrier to providing first aid. One participant explained, *"You may find that someone has an accident and you are afraid to touch blood, thinking that it will contaminate you, but if you have gloves, you will be protected."* (Respondent 1, Nyagatare).

## Discussion

This study explored the lived experiences of trained motorcyclists and bicyclists who provided first aid at RTA scenes in Rwanda, six months after receiving first aid training. The findings suggest that lay responder training can significantly improve the quality of initial care during emergencies and meaningfully contribute to strengthening prehospital care systems, particularly in low-resource settings.

Participants consistently reported utilizing their training to execute critical interventions, including airway clearance, bleeding control, and casualty immobilization. This type of study indicates that community-based training gives people the knowledge and skills they need to be first responders and help people get emergency care, especially in places with few resources.

Results of the current study are in agreement with the results of previous studies that were conducted in different African countries. An example is the Tanzanian study, which revealed that taxi and motorcycle drivers were motivated to help road traffic victims after learning first aid.[15] Nigerian study also recommended first aid training for laypersons who were found to frequently bring victims to the hospital.[16]

Current study participants experienced substantial modifications in their self-perception as a result of the training. They talked about feeling more responsible, more confident, and emotionally fulfilled after helping others. Many participants talked about going from being passive bystanders to being active responders because they felt a stronger sense of duty. The findings of the current study are consistent with previous research demonstrating that first aid training improves participants' confidence and self-efficacy in responding to emergencies. A quasi-experimental study conducted among motorcyclists and cyclists in Rwanda reported significant improvements in knowledge, attitudes, skills, and self-efficacy following first aid training, indicating that trained individuals are better prepared to respond to RTAs and assist victims before professional help arrives.[8, 17]

The present study identified several barriers that limited participants' ability to provide first aid despite receiving training. The absence of official recognition or identification for trained first responders created mistrust among community members and authorities, which sometimes prevented participants from intervening. Previous research indicated that lack of legal protection or formal recognition can discourage trained individuals from providing first aid due to fear of blame or misunderstanding from the public.[18]

Participants also reported interference from bystanders and relatives at accident scenes. This finding is consistent with earlier studies indicating that crowd presence and

mistrust at crash scenes can delay care and create conflicts that hinder timely assistance.[19] Another challenge identified was delayed response from emergency services. A previous study conducted in Nigeria revealed that in many low-resource settings with limited emergency medical services, trained community members often play a crucial role in providing initial care before professional help arrives. Finally, the lack of protective equipment such as gloves created fear of infection and reduced willingness to assist victims. Similar concerns have been reported in other studies where fear of contamination discouraged lay responders from providing first aid.[19] Another study mentioned that responders in prehospital settings should be safe before helping victims.[20]

This study has several strengths. It provides in-depth insights into the experiences of trained motorcyclists and bicyclists providing first aid at road traffic accident scenes in both urban and rural settings in Rwanda. Including participants from two different districts allowed the study to capture diverse perspectives and contextual differences in prehospital response. In addition, the use of qualitative methods enabled a detailed exploration of participants' experiences, perceptions, and challenges that may not be captured through quantitative approaches. However, several limitations should be considered when interpreting the findings. First, the study included a relatively small sample drawn from only two districts, which may limit the transferability of the findings to other settings. Second, the recruitment of participants through association leaders may have introduced selection bias. Third, the data were collected at a single time point and relied on self-reported experiences, which may be subject to recall or social desirability bias. Finally, the study focused primarily on the perspectives of trained responders and did not include views from accident victims, community members, or emergency service providers, which could have provided additional triangulation of the findings.

## Implications for health policy and practice in Rwanda

The findings of this study support ongoing efforts by the Rwandan Ministry of Health to improve prehospital care. Currently, ambulance response time is estimated at 15 minutes, and the national target is to reduce it further.[21] Trained lay responders, especially in high-traffic urban centers and underserved rural areas, play a critical role in bridging the emergency care gap. This aligns with global strategies from the World Health Organization (WHO), which emphasize the importance of community involvement in building resilient emergency response systems.[22]

## Conclusion and recommendations

This study highlights the important role that trained lay responders, particularly motorcyclists and bicyclists, can play in strengthening early emergency response and improving outcomes following road traffic injuries. However, several barriers, including limited access to protective materials, lack of official identification, public mistrust, and concerns about legal consequences, may hinder their willingness and ability to provide assistance. Addressing these challenges requires practical measures such as providing basic first aid supplies, issuing identification or certification for trained responders, strengthening public awareness about community first aid initiatives, and developing legal protections for individuals who assist injured persons. Expanding first aid training programs, particularly in high-risk areas, could further enhance community capacity to respond to emergencies. Expanding community first aid training programs could contribute to global road safety initiatives, including the goal of reducing road traffic deaths by 50% by 2030.[23]

## Authors' contribution

LR, GN and MM conceived the idea and drafted the proposal, and LR and MS conducted interviews; GN, PU, MM, MGM S, PU, and DR drafted the manuscript.

All authors revised the manuscript and approved the version for publication.

## Conflict of interest

All authors declare that there is no conflict of interest.

## Funding

The study was funded by the University of Rwanda in collaboration with a SIDA grant

This article is published open access under the Creative Commons Attribution-NonCommercial NoDerivatives (CC BY-NC-ND 4.0). People can copy and redistribute the article only for noncommercial purposes and as long as they give appropriate credit to the authors. They cannot distribute any modified material obtained by remixing, transforming or building upon this article. See <https://creativecommons.org/licenses/by-nc-nd/4.0/>

## References

1. WHO. Road traffic injuries. *Geneva: World Health Organization*. 2025. <https://www.who.int/news-room/fact-sheets/detail/road-traffic-injuries>. Accessed 15 June 2025.
2. Sadeghian F, Mehri A, Ghodsi Z, Baigi V, Bardsiri MS, Sharif-Alhoseini M, Reilly GMO, Mokdad A. Road traffic injuries and associated mortality in the Islamic Republic of Iran. *East Mediterr Health J*. 2023;29. <https://doi.org/10.26719/emhj.23.104>.
3. Ibrahim NA, Ajani AWO, Mustafa IA, Balogun RA, Oludara MA, Idowu OE, Solagberu BA. Road traffic injury in Lagos, Nigeria: Assessing prehospital care. *Prehosp Disaster Med*. 2017;32:424–430. <https://doi.org/10.1017/S1049023X17006410>
4. Jean de Dieu G. Time series and forecasting analysis of road traffic crashes in Rwanda. *Int J Crashworthiness*. 2025;30(6):1-16. <https://doi.org/10.1080/13588265.2025.2492981>
5. Rosenberg A, Uwinshuti FZ, Dworkin M, et al. The epidemiology and prehospital care of motorcycle crashes in a sub-Saharan African urban center. *Traffic Inj Prev*. 2020;0:488–493. <https://doi.org/10.1080/15389588.2020.1785623>.

6. Rumagihwa L, Nyiringango G, Uwambaye P, Uwimana P. Effect of first aid training on motorcyclists and cyclists' knowledge, skills, attitude, and self-efficacy in managing road traffic accident victims in Rwanda: A quasi-experimental study. *Rwanda J Med Health Sci.* 2025;8:473–482. <https://doi.org/10.4314/rjmhs.v8i3.3>.
7. Husserl E. The idea of phenomenology. *Springer Dordrecht.* 1990. <https://doi.org/10.1007/978-94-010-2371-9>
8. Bullington J, Karlsson G. Introduction to phenomenological psychological research. *Scand J Psychol.* 1984;25:51–63. <https://doi.org/10.1111/j.1467-9450.1984.tb01000.x>
9. Jones C, Bradbury C, Smbrook S, Irvine F. The phenomenological focus group: an oxymoron? *J Adv Nurs.* 2009;65:663–671. <https://doi.org/10.1111/j.1365-2648.2008.04922.x>.
10. Vella J. Reclaiming dialogue: Focus groups and hermeneutic phenomenology. *J Clin Nurs.* 2025;21:811–816. <https://doi.org/10.1016/j.sapharm.2025.05.013>.
11. Peel KL. A beginner's guide to applied educational research using thematic analysis. *Pract Assess Res Eval.* 2020;25. <https://doi.org/10.7275/ryr5-k983>
12. Lincoln YS, Guba EG. Naturalistic inquiry. *Beverly Hills: Sage.* 1985. pp. 92–109, 357–367. [https://doi.org/10.1016/0147-1767\(85\)90062-8](https://doi.org/10.1016/0147-1767(85)90062-8)
13. Ndile ML, Saveman BI, Outwater AH, Mkoka DA, Backteman-Erlanson S. Implementing a layperson post-crash first aid training programme in Tanzania: A qualitative study of stakeholder perspectives. *BMC Public Health.* 2020;20:1–8. <https://doi.org/10.1186/s12889-020-08692-8>.
14. Ibrahim NA, Ajani AWO, Mustafa IA, et al. Road traffic injury in Lagos, Nigeria: Assessing prehospital care. *Prehosp Disaster Med.* 2017;32:1–7. <https://doi.org/10.1017/S1049023X17006410>.
15. Aveyard N, Russam GS, Gluyas-Harris J. Bystander interventions and their impact on road injury outcomes: a scoping review. *Scand J Trauma Resusc Emerg Med.* 2025;33:1–9. <https://doi.org/10.1186/s13049-025-01464-6>. PMID:41408344.
16. Pandey B, Banstola A, Smart G, Joshi SK, Mytton J. Barriers and facilitators to learning and using first aid skills for road traffic crash victims in Nepal: a qualitative study. *Glob Health Res.* 2025;1:109–122. <https://doi.org/10.3310/UTKW7640>.
17. Haghparast-Bidgoli H, Hasselberg M, Khankeh H, Khorasani-Zavareh D. Barriers and facilitators to provide effective pre-hospital trauma care for road traffic injury victims in Iran: a grounded theory approach. *BMC Emerg Med.* 2010;10:1–11. <https://doi.org/10.1186/1471-227X-10-20>.
18. Lukumay GG, Outwater AH, Mkoka DA, Ndile ML, Saveman B. Traffic police officers' experience of post-crash care to road traffic injury victims: a qualitative study in Tanzania. *BMC Emerg Med.* 2019;19:1–11. <https://doi.org/10.1186/s12873-019-0274-x>.
19. Ministry of Health (MoH). Rwanda's Ministry of Health expands emergency services with acquisition of 114 new ambulances. *Kigali: MoH.* 2026. [https://www.moh.gov.rw/news-detail/rwandas-ministry-of-health-expands-emergency-services-with-acquisition-of-114-new-ambulances?utm\\_source=chatgpt.com](https://www.moh.gov.rw/news-detail/rwandas-ministry-of-health-expands-emergency-services-with-acquisition-of-114-new-ambulances?utm_source=chatgpt.com). Accessed 15 March 2026.
20. WHO. Emergency care systems for universal health coverage: ensuring timely care for the acutely ill and injured. *Geneva: World Health Organization.* 2021. [https://apps.who.int/gb/ebwha/pdf\\_files/WHA74/A74\\_39-en.pdf](https://apps.who.int/gb/ebwha/pdf_files/WHA74/A74_39-en.pdf). Accessed 15 March 2026.
21. WHO. Decade of action for road safety 2021–2030. *Geneva: World Health Organization.* 2025. [https://www.who.int/teams/social-determinants-of-health/safety-and-mobility/decade-of-action-for-road-safety-2021-2030?utm\\_source=chatgpt.com](https://www.who.int/teams/social-determinants-of-health/safety-and-mobility/decade-of-action-for-road-safety-2021-2030?utm_source=chatgpt.com). Accessed 15 March 2026.