

Barriers to access prehospital care in Jimma City, Oromiya Region of Ethiopia

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ABSTRACT

Background: African nations experience a significant proportion of the global burden of death and disability. Prehospital emergency care provision has shown to reduce excess morbidity and mortality partially. However, access to prehospital care in Africa is still limited, with only 9% of the population having access. This study aimed to assess barriers to access prehospital care in Jimma City, Ethiopia.

Methods: Phenomenological qualitative study was conducted among key stakeholders for prehospital care in Jimma city in February 2018. Purposive sampling was used to select 68 participants from the community and organizations offering ambulance service. Three Focus Group Discussions (FGD) and 52 individual in-depth interviews were conducted in local languages. Recorded audios were translated and transcribed in English, then coded and analyzed using inductive thematic analysis. Finally, results were organized using sub-theme and themes.

Results: The majority of the participants were males (45), and 36 were from the community. Three major themes emerged from the findings: personal awareness and experience about prehospital care; perceived barriers to access, and solutions to improve access. Since access to prehospital care is difficult, it is infrequently utilized mainly due to a fragmented and under-resourced prehospital care system complimented with low community awareness. Particularly, lack of single-dial emergency number, transportation, and trained personnel were common access barriers. Respondents suggested that establishing formalized and well-resourced prehospital care systems, improving awareness, and building capacity in the community would improve access.

Conclusion: Access to prehospital care in Jimma City was hindered by multifaceted barriers and can be enhanced by establishing a unified system functioning on a universal emergency number with better resource allocation and improving community awareness. These solutions proposed by study participants are applicable in the present study context and should be taken into account by future interventions in prehospital care.

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1. Introduction

Globally, the demand for emergency care is ever-increasing due to the raising number of emergency conditions.^[1] In order to address the increased number of complex health problems, emergency care is becoming even more complicated.^[2] Four out of the six emergency care system components take place outside of a healthcare facility in a prehospital setting.^[3] Prehospital care is an essential component along the continuum of emergency care that has independent mortality and disability reduction benefits.^[4] It involves providing lifesaving intervention at the scene and rapid transportation to an appropriate health facility by trained ambulance crews during emergency situations.^[5] Despite the disproportionate burden of death and disability from a wide range of injuries and time-sensitive medical illness emergencies imposed on infectious, maternal, and children's illnesses,^[6] prehospital care has remained neglected in many African countries.^[3] Moreover, the disproportionate burden of deaths on the continent primarily occurs prior to arrival at a health facility^[3, 7] and is mainly attributed to a poorly organized prehospital care system, though the causes are multifactorial.^[8]

As many African countries have yet to incorporate it into their healthcare systems,^[9] only about 9.0% of the population has consistent access to prehospital care.^[3, 10] Several reasons for poor access to prehospital care have been reported across the continent, commonly due to an underdeveloped system with poor communication and resource scarcity, including human, equipment, and transportation.^[7, 9, 11-13] Evidence that would have supported the development of a robust prehospital care system in Africa are shortcoming, and further research is required, including in Ethiopia.^[14]

Despite the high burden of death and disability from a wide range of emergencies, as in other African nations, Ethiopia has no centralized prehospital care system like the Emergency Medical Service (EMS) system. Nevertheless, prehospital care has been delivered in a discrete style recently across the country, as ambulances have been distributed to districts and human resource trainings are ongoing. For instance, a study done in Addis Ababa City has reported that only 20.3% of emergency patients arrived by ambulance^[15] and 22.3% in Jimma City.^[16] Yet there is evidence targeting the status and access to prehospital care in such context are limited. This study aimed to assess the community's perceptions of access to prehospital care services in Jimma city, Ethiopia, where a formalized prehospital care system is lacking.

2. Methods

Study Design

A phenomenological qualitative study design was used.

Study Setting

The study was conducted among key stakeholders for prehospital care in Jimma City between February 5 and 23, 2018. Jimma is the largest city in the southwestern part of the country, located in Oromiya regional state, 352 km from the capital city, Addis Ababa. Jimma University Medical Center (JUMC) and Shenen Gibe General Hospital were the only public hospitals in Jimma. At the time of this study, the city had no formalized prehospital emergency medical service (EMS) system, and the prehospital care service is provided by ambulance services that operate under different organizations. The above-mentioned two public hospitals, Jimma City health office, Jimma Branch of the Ethiopian Red Cross Society (ERCS), and the Ethiopian Family Guidance Association, were organizations offering ambulances. Apart from JUMC, which owns four

ambulances, all organizations own one ambulance each, and hospital-owned ambulances are limited to inter-facility services only.

Study Population

The study populations were key informants (KI) who were purposefully chosen from ambulance service organizations, community and healthcare workers. Eligible KI were those who were 18 years of age and older, had lived in Jimma for at least a year, and could speak Afan Oromo or Amharic; no exclusion criteria were in place unless the participant refused to participate.

Sampling method: A purposive sampling technique was used to involve 68 key informants from various relevant settings, including the community, police department, public schools, public healthcare facilities, and organizations offering ambulance service in Jimma city. Categorically, study participants were: leaders and members of the community; traffic and community police officers; teachers and school principals; community health extension workers; healthcare professionals working in health facilities and academics; and administrative officials and workers representing organizations offering ambulance service. Community (kebele) leaders assisted in recruiting appropriate participants for those residing or working in the community within the 12, out of 17 administrative kebeles of Jimma City.

Data Collection

Individual in-depth interviews and Focus Group Discussions (FGD) approaches were used to gather information using separately developed interview guides for both methods. We used FGD to yield information that is enriched due to discourse and various viewpoints from a group discussion, whereas individual interviews were used to elicit information related to personal experiences and to get replies to specific questions. General topics that were included in

the interview guides were individual awareness of prehospital care; personal experience; perceived accessibility and availability; barriers to access; and perceived solutions to overcome barriers. The interview guides were prepared in English and then translated to Afan Oromo and Amharic, further tailored to fit the participant's background or organizational context of the relevant informant, and pretested for clarity and flow. The tools were forward and backward-translated by investigators to ensure consistency between the original and translated versions.

We conducted three "closed door" FGDs with small groups consisting of 5–6 participants at a hall in the community. A total of 10 data collectors participated in this study. FGD facilitators were trained healthcare professionals fluent in the local Afan Oromo and Amharic languages; one moderator and one note-taker conducted each session. In addition, in-depth individual interviews were conducted with officials from ambulance service organizations, healthcare professionals, and content experts. Each FGD lasted for 45–60 minutes, while an individual interview lasted for a maximum of 45 minutes. All sessions were audio-recorded after verbal permission was obtained from the participants and supplemented with facilitator note-taking. FGDs and interviews were conducted until thematic saturation was reached.

Data Analysis

Audio records were translated and transcribed into English, which were back-translated to ensure consistency between the original and transcribed translations.^[13] The transcribed data and interviewer notes were organized using Microsoft Office Word (Microsoft, Redmond, CA, 2016) and analyzed using inductive analysis. Initially, the transcribed data sets were fully explored, and tentative themes that were used to construct the coding frameworks were identified using content analysis. Then, the first researcher

started coding data using the coding frameworks, which was followed by interpretation and aggregation of codes into major key themes. Next, the first researcher provided a detailed explanation of the codes and themes to the second researcher, who also coded the data on the same transcripts. After, a third independent researcher assessed the consistency between the two coding researchers, and this process continued until a consensus was reached. Finally, identified key themes were organized into final themes, including three larger themes and eleven sub-themes.

Ethical consideration

Informed verbal consent was obtained from the participants, which was approved by the Jimma

University, Institute of Health IRB. All methods were carried out in accordance with relevant guidelines and regulations.

3. Results

We conducted 52 individual interviews and 3 FGDs involving 68 total participants. More than half (36) were from the community, and the majority (45) were males. In terms of occupation (role), participants were community leaders and members (merchants, teachers, and police officers), healthcare workers, and officials (**Error! Reference source not found.**). The obtained findings are organized into three main sections (with sub-themes) as follow: personal awareness and experience, access barriers, and solutions to overcome.

Table 1: Characteristics of the study participants, Jimma City, 2018

Characteristics of the participants	Number
Sex	
Male	45
Female	23
Roles (Occupation)	
Community members (merchants and other self-employed)	14
Community leaders	12
Police officers	6
School teachers	4
Officials from organizations	10
Health professionals	10
Community health extension workers	8
Ambulance drivers	4

3.1. Respondents' personal awareness and experience

i. Knowledge of Prehospital Care

Most respondents knew about the concept of first aid given at the scene, while a few healthcare workers added professional care and transportation components. They agreed on the importance of prehospital care to preserve life

and prevent complications, which is a moral obligation for most of them.

"Patients may need instant care at the scene and during transportation [...], until arriving at the health facility [...]." (A health professional)

ii. First-hand knowledge

Apart from a few, most respondents neither utilized the ambulance service nor knew the phone number to call an ambulance at the time of their interview.

"I had experience (of using), [...]. Often, I also call for others, but it is less available during the night." (A community leader)

3.2. Barriers to access

Several access barriers to prehospital care were often identified by respondents, including issues related to public awareness, system infrastructure, and providers.

i. Public perceptions and awareness

Respondents felt that there is a lack of awareness within the community about when and how to access ambulance service, as well as the types and values of prehospital care. Moreover, none of the participants remembered when the phone numbers for ambulance service was publicly advertised. They felt that the ambulance operator's phone number was not commonly known, and this was true even among interviewed healthcare professionals. In spite of this, ambulance drivers reported frequent calls they received from the community, including reported prank calls. Moreover, respondents identified misconceptions in the community with regard to contacting ambulance services. According to them, there is a belief that only members of ERCS and those who personally knew healthcare professionals could use or have access to an ambulance. Other respondents, including healthcare professionals, felt that ambulances were primarily reserved for serving only certain emergency conditions—maternal and pediatric emergencies. However, a few experts mentioned that it is difficult to build public awareness in the absence of a universal phone number and a formalized prehospital (EMS) system.

"The majority (of community members) do not have an ambulance phone number [...], but it should have to be advertised publicly (mentioned different methods) [...]." (A community leader)

ii. Systemic impediments

System that is disorganized and under-resourced

System issues: Lack of universal working systems for prehospital care, poorly organized system elements (in terms of personnel, logistics, communication, and transportation), and poor integration with health facilities were other identified major barriers to access.

Resources and logistics: Respondents commonly mentioned the scarcity of ambulances relative to the community's needs. Furthermore, there was often no backup ambulance should one need to be taken out of service for maintenance or repairable damage. Additionally, the available ambulances were not equipped with essential emergency supplies and medications and were not always staffed with a trained crew. Officials also mentioned the limited budget allocation to ambulance services, which is inadequate for operational and other expenses such as fuel and maintenance costs. According to them, ambulances dedicated to public service receive an annual budget of 50,000 Ethiopian Birr (at the time of this study, this was equivalent to US\$ 1500 using the average exchange rate for the year).

"[...] there is only one ambulance. This cannot address needs in the community (...) Most of the time, this itself becomes out of service in such event, and we don't have another option." (A community leader)

Unlike ambulances engaged in public services, those operating under study health facilities have no formally assigned phone numbers. According to respondents, publicly operated ambulances use regular landline phone numbers; however,

these are not free of airtime charge and are not easily memorable in emergency situations. Moreover, respondents revealed that phone operators either do not answer calls or challenge the callers as if they had mistakenly called the wrong number, particularly during the night when optional commercial transportation is limited.

"We call them so many times. Sometimes they refuse to come [...], but often they do not answer the calls." (A community leader)

Legislation and protocol

Interviewed officials and health professionals indicated there is a lack of regulatory standards (local or state-wide) that enforce staffing, logistics, and setups for prehospital care. They felt that there is a great deal of variability between crews and emergency supplies, where only ERCS's ambulances were often equipped with first-aid kits and trained volunteer first-aiders. Furthermore, there is a lack of legislation that protects caregivers and ensures patients receive safe and appropriate care in an ambulance.

"[...] I am not aware of the existence of regional or national legislation (for ambulance service)." (A medical doctor)

Delayed response to the scene

Another access barrier identified was delayed response times, which could sometimes take up to 2 hours or occasionally absent. Though officials attributed this to high demand for a limited supply of ambulances, most respondents mentioned that this is a major cause of community dissatisfaction and preference for commercial transportation over ambulances.

"[...] usually, they did not come at all, and even if they did, they would arrive after labor was already complicated." (A midwife)

Poor roads and transportation options

Respondents mentioned that commercial transportation, such as taxis, is the most commonly used in the community over ambulances. Difficulty on the road is one of the major reasons for this, despite commercial taxis' being challenging to afford. As a result of missing or difficult roads, many drivers find it hard to navigate to reach the community.

"[...] but inner roads between blocks in the city are not suitable for ambulances. Often communities are forced to convey labouring women using homemade survival stretchers [...]. There was a woman who gave birth on the way while being carried [...]." (A health professional)

iii. Provider-related impediments

Professional shortages: The availability and practice of healthcare workers were also among the commonly reported barriers to access. Due to the limited availability of trained ambulance crews, only a few organizations are staffing their ambulances with individuals trained in first aid. However, this is insufficient for several respondents to ensure patients' access to safe and proper care. The scarcity of professional care providers is related to limited opportunities to train Emergency Medical Technicians (EMTs) locally. Nevertheless, due to this and a lack of proper logistics, patients usually did not receive professional prehospital care in the ambulances, as mentioned by the respondents.

Few respondents mentioned that ambulance staff lacked a friendly approach to the clients, which also contributed to public mistrust. They felt that most of the ambulance drivers were negligent, disrespectful, and lacked compassion and commitment. In particular, police officers mentioned that ambulance drivers drive unprofessionally and transport nonmedical personnel and items, such as Khat and alcohol in ambulances, in which some drivers were caught red-handed. However, interviewed ambulance

drivers and a few other respondents did not agree with these allegations.

"I called him (the driver) as my sister was in labour; he responded that the ambulance was out of service [...]. But, later on, I saw him [...]. He was transporting an administrative person in that same ambulance." (A community health extension worker)

According to respondents, ambulances are commonly misused by administrative officials and others as office cars to transport medical and nonmedical goods for office purposes and even for personal consumption. Few respondents mentioned the occasional use of ambulances to transport military personnel, particularly in the event of civil unrest. Interviewed officers have confessed to the existence of such a practice, but not on behalf of their good wishes, but rather of compulsions from administrative personnel. They believed that a lack of awareness, strong legislation, administrative commitment, and a scarcity of alternative transportation were major motivators for ambulance misuse.

"Using ambulances as office service has now become a habitual practice [...]." (A physician at the public hospital)

3.3 Perceived Solutions to Overcome the Barriers

Respondents suggested a wide range of solutions to improve access to prehospital care, including system organization, resource allocation, trained personnel availability, legislation, and public education.

i. Better system organization

Respondents felt that improved resource organization with better integration and coordination would improve access. They felt that integrating existing multiple ambulance providers under one unified leadership with one public access point would improve the efficiency of the

currently over-strained providers. Integration under one call system of toll-free universal emergency numbers would improve access, though such a common working platform may need legal backing and enforcement.

"[...] but system integration is possible. This requires creating a common working platform; there should be legal enforcement, guidelines, politics, and the provider's commitment." (An official from the ambulance organization)

ii. Improvements in resources and infrastructure

Improving resource allocation to prehospital care services was another commonly proposed solution. This included increasing the number of ambulances, finance, and logistics for ambulances. In addition, according to community members, investing in proper road construction would do more to improve access to emergency transportation.

"[...] due to the scarcity of ambulances, the infrastructure, especially roads inside the city, is not suitable and not adequate. I think all these should be improved; the government has to invest here." (A community member)

iii. Better healthcare providers

Respondents felt that improving EMS personnel through pre-service or in-service training programs would improve access and acceptance of prehospital care. According to them, investing in pre-service training curricula and programs would improve professional provider availability, while continuous on-the-job training would improve quality.

"I don't know why such training (paramedic training) is still lacking in our country. [...]. I think this is a time to move forward." (A health professional)

iv. Better regulations

According to the respondents, clear regulatory standards for personnel, practice, and equipment should be settled at the state or local level, in addition to human resource prehospital care policy. In particular, officials and professionals suggested protocols to standardize care, as well as legislation and administrative commitments against misuse of prehospital care resources.

"[...] One day we will end this practice (ambulance misuse), but this may take time, and it needs strict regulations and commitment." (A nurse)

v. Community education and capacity building

Most respondents suggested raising public awareness to improve the community's awareness of when and how to access the service. They also suggested community capacity building through first aid training, so that access to first aid in the community would improve.

"The public at large does not have awareness. I have not seen any attempt to create public awareness [...]. The public at large should be aware of basic lifesaving skills and a first aid training program for the community." (A police officer)

vi. Better evidence generation

A few professional experts mentioned the need for evidence generation for a better understanding of the existing burden, the status of services and systems, and the potential benefits of interventions. They believe this would allow understanding of the current gaps and future policy direction to strengthen the prehospital care system.

"There should be improvements, but it has to be evidence-based. Still, further research and investigations have to be done to establish the basis for better solutions." (A health professional)

4. Discussion

The present study has identified public awareness, perceived barriers to access, and community-generated solutions to improve access to prehospital care services in Jimma, Ethiopia. Access to timely emergency care can be influenced by the community's perception of and the ease of access to prehospital care during emergencies.^[13] We found a limited awareness regarding the value of prehospital care, as well as when and how to access prehospital service in the general population in Jimma city. Though previous studies in Addis Ababa, Ethiopia^[17] and other African countries also reported similar findings,^[11-13] perception in the community is a major factor influencing the decision to seek and access emergency care.^[13] Thus, as participants in this study suggested, public education and community-based first aid training programs have been recommended to improve public awareness and timely care-seeking in Sub-Saharan Africa.^[3, 7]

Due to the increased burden of emergencies across Sub-Saharan Africa due to the epidemiological transition to time-sensitive emergencies,^[3] countries like Ethiopia would have benefited from investing in building a strong prehospital care system. This study identified the lack of an organized and well-resourced prehospital care system as major barriers to prehospital care access in Jimma City. These barriers included a lack of a universal emergency phone number, shortage of ambulances, trained personnel, and logistics for ambulances. However, having a strong system operating on a functional common toll-free emergency number is a key to ensuring citizens can access prehospital care resources during emergencies.^[3, 18] Therefore, we recommend a formalized system that operates on a common toll-free emergency number that is managed by a responsible EMS agency in the present study area.

Establishing a region-specific and context-appropriate Emergency Medical Dispatch (EMD) system is a feasible and efficient solution in resource-limited settings such as Jimma City.^[18] In fact, the viability of such a jurisdictional system rather than a resource-intensive single nationwide system has been proved in Ethiopia, with a previous publicly operated system under the fire department^[19] and private providers^[20] in the capital city of Addis Ababa.

Moreover, to overcome prehospital resource scarcity, previous experience from the Punjab region of Pakistan^[21] and in Jaffna, Sri Lanka,^[22] shows that locally available resources can be tailored to build effective EMS systems. However, to realize this in Jimma city and other Ethiopian cities, evidence-driven advocacy to create awareness and commitment among stakeholders is required.^[3, 7, 13] Therefore, the present study is a continuation of a previous study towards founding a benchmark for the future establishment of a region-specific formalized prehospital care (EMS) system in Jimma City.

Though an integrated prehospital care system can supplement the emergency care system and reduce the mortality burden,^[5, 23] a lack of critical elements such as professional providers and supplies will obviously reduce its efficiency.^[3] These were also among the major barriers to access that forced community members to use commercial transportation such as taxis over ambulances as a means of emergency transportation in Jimma City. Since this has been commonly reported across Sub-Saharan Africa,^[3, 10, 24, 25] efforts should be made to meet the critical demands in the community with available resources.^[3] In fact, low-cost options such as retrofitted ambulances have been suggested in resource-limited areas and can be complemented with available commercial and private transportations.^[4, 8, 23] We also

recommend improving the availability of professional care provider training programs in Ethiopian higher education institutions in order to meet current gaps and address future growing demands.

Another access barrier identified by the present study is the misuse of ambulances. This can interfere with utilization and lead to public mistrust of the healthcare system as a whole.^[3] The participants called for legal enforcement and administrative action against this while also stating that at this time, misuse of an ambulance is a prohibited practice under international humanitarian law^[26] as well as existing local regulations.^[27, 28] Overall, we stress that a lack of a proper prehospital EMS system means a higher number of deaths, which could have been prevented easily.

Limitations

The participant interviews were conducted in Afan Oromo and Amharic, then translated and transcribed into English. Therefore, there was potential for mistranslation as many words in Amharic and Afan Oromo are not directly translatable to English. Furthermore, there are likely opinions that were not represented in this study, even though efforts were made to ensure diversity by involving participants from different parts of the community and relevant settings.

5. Conclusions

The study identified substantial barriers to accessing prehospital care in Jimma City. Frequently mentioned access barriers were poor awareness on the role of prehospital care and misconceptions in the community; a lack of an organized prehospital EMS system and a toll-free single-dial emergency number; a limited number and under-equipped ambulances; poor road infrastructure, and misuses of ambulances. Therefore, access to prehospital care can be enhanced by establishing a unified system

functioning on a universal emergency number with better resource allocation and improving community awareness. The solutions generated by study participants seem feasible and applicable in present study context and should be considered in future interventions in prehospital care.

Abbreviations

EMD - Emergency Medical Dispatch

EMS - Emergency Medical Service

ERCS - Ethiopian Red Cross Society

FGD - Focus Group Discussions

JUMC - Jimma University Medical Center

US\$ - United States Dollar

Author Contributions

Authors contributed as follow to the conception or design of the work; the acquisition, analysis, or interpretation of data for the work; and drafting the work or revising it critically for important intellectual content.

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Conflict of Interest

The authors declare that they have no conflicts of interest for this work.

Data Availability

Data will be available upon request from Corresponding author.

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