



# Healthcare professionals perceptions towards the determinants of effective emergency health care services in public health centres of Addis Ababa, Ethiopia

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## ABSTRACT

**Introduction:** Emergency healthcare services enable early detection and life-saving interventions for time-sensitive acute injuries and illnesses. The aim of this paper was to assess health care professional's perception towards determinants of effective emergency healthcare services in public health centers of Addis Ababa, Ethiopia, in 2023.

**Methods:** A facility-based cross-sectional study was conducted at public health centers in Addis Ababa with a sample of 422 study participants. Study participants were selected using simple random sampling techniques. To identify factors associated with the outcome variable, bi-variable and multi-variable logistic regression analyses were conducted. Variables having a *p*-value less than 0.05 in multi-variable logistic regression analysis were declared determinants of positive perception towards emergency medical services effectiveness.

**Results:** Among the study participants, 76.3 % (95 % CI: 72.3, 80.6) had a positive perception towards the public health centers effectiveness in providing emergency healthcare services. Moreover, training (AOR: 4.05; 95 % CI: 1.97, 8.32), ICT service implementation (AOR: 6.55; 95 % CI: 3.37, 12.73), resource availability in the emergency department (AOR: 5.07; 95 % CI: 2.51, 10.25), and management support (AOR: 3.22; 95 % CI: 1.66, 6.25) were determinant factors associated with the perception of effectiveness in emergency medical care services.

**Conclusion:** Nearly three-fourths of healthcare providers in Addis Ababa perceived that the emergency healthcare services were effective. Furthermore, training on patient service delivery, ICT service implementation, availability of resources in emergency departments, and management support were independent determinants of positive perception towards effective emergency healthcare services.

## African relevance

- Medical emergencies are one of the leading causes of morbidity and mortality globally.
- This study assessed the perception of health care providers towards emergency medical services effectiveness, which is one of the fundamental health-care problems in low-income countries, including Ethiopia.
- According to the findings of this study, roughly three-fourths of the study participants perceived that the Addis Ababa public

health centers are effective in providing emergency health care services.

## Introduction

An emergency is defined as a type of event or imminent threat that causes or has the potential to cause a variety of health consequences [1]. Each emergency is context-specific, and its impact is determined by a variety of elements, including the intensity of the hazard, the affected

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country, the community's ability to manage risks, and the preexisting susceptibility of the affected populations [2]. A medical emergency is a potentially fatal and unexpected situation that involves illness or injury and necessitates immediate intervention [3].

Emergency medical services (EMS) are one of the most fundamental health-care services, which play a critical role in saving lives and lowering mortality and morbidity rates [4]. It is anticipated to encompass the six essential domains of quality in healthcare that have been identified by The Institute of Medicine (IOM): equitable, timely, efficient, safe, effective, and patient-centered [5,6]. Emergency medical services involve immediate assessment, timely provision of proper treatments, and immediate transportation to the next appropriate health facility using the best feasible techniques to improve survival, control morbidity, and prevent disability [7]. Health services are of high quality if they are effective, safe, easily accessible, without extra barriers due to cost, language, culture, or geography [8]. Moreover, such services should be accessible to the public, with a regular point of entry into the service network at primary care levels [9].

Trauma, infection, non-communicable disease, and pregnancy-related complications are addressed by emergency care services. In 2019, these issues were responsible for nine of the top ten leading causes of death in low-income countries [9], where a delay of hours may result in preventable death or disability [10,11]. Recent studies estimated that implementing effective emergency care might prevent more than half of deaths in low- and middle-income nations and up to 2.5 billion disability-adjusted life years (DALYs) every year [12,13]. These conditions are likely to grow as a result of factors such as increased motor vehicles, urbanization, and lifestyle changes that lead to an increase in coronary heart disease [14].

Ethiopia has one of the highest road casualty rates in Africa, with 68 deaths per 10,000 vehicles per year [15]. Furthermore, trauma is responsible for 28 % of emergency care visits in Ethiopia, primarily affecting a younger and more economically active age groups [16]. Non-communicable diseases are also on the rise, with cardiovascular disease accounting for 24 % of adult fatalities [17,18].

The common determinants for effective emergency service utilization identified so far include the socio-demographic characteristics, gender of the service provider, age, educational status, workload, and performance [19], perception and related factors, trust, greater convenience [20], service-related variables, communication process, implementation of Information and Communication Technologies (ICT), training, resource availability, management support [21,22,23], or lack of primary care accessibility and availability [24,25]. Reducing emergency medical visits has become a policy priority in many low and middle income countries as a means of improving the overall efficiency of the healthcare system. On the other hand, enhancing health care utilization in a health facility requires equity and positive interactions with every corner of society. To encourage this, Ethiopia has set a target towards universal health coverage through strengthening primary health care by 2035. The aim of this paper was to assess healthcare professional's perceptions towards determinants of effective emergency healthcare services at public health centers in Addis Ababa, Ethiopia, in 2023.

## Methods

### Study area and period

The study was carried out in public health centers in Addis Ababa, Ethiopia. Addis Ababa is the capital city, and is divided into 11 sub-cities and 117 administrative districts. The current population of Addis Ababa is estimated to be 5 461 000, with a 4.46 % growth rate in 2023. The city has 98 public health centers, 40 private hospitals, and 14 governmental hospitals. Health centers are the hub of primary health care services and community health systems in Addis Ababa in particular and in Ethiopia in general. The study was carried out from September 1st to 30th, 2023.

### Study design and population

A facility-based cross-sectional study was conducted among randomly selected health care professionals who were working in the emergency outpatient department of selected public health centers in Addis Ababa.

### Eligibility criteria

All health care professionals who were working in the emergency department of the selected public health centers in the Addis Ababa city administration were included in the study. However, health care professionals who were seriously ill or unable to communicate during the time of data collection, those on maternal leave, annual leave, or working in free service, were excluded from the study.

### Sample size determination and sampling procedure

The sample size was calculated using a single population proportion formula, taking the following assumptions: the perception of health care professionals towards effective emergency healthcare services was considered 50 % due to the absence of similar previous literature with similar setting and to have a maximum sample size, a 95 % confidence interval, and a 5 % margin of error (0.05). Adding 10 % for the non-response rate, the final sample size required was 422.

Using a simple random sampling technique, four sub-cities were chosen among the eleven identified within the Addis Ababa city administration: Lideta, Arada, Nifas Silk Lafto, and Addis Ketema. In these four sub-cities, there were respectively 14, 11, 12, and 15 health centers, and 121, 143, 126, and 142 emergency outpatient department workers, respectively. From the selected sub-cities, health centers were selected using a simple random sampling technique and the study participants were assigned proportionally to each health center, based on the number of health care personnel working in each emergency department.

### The study variables and definition

The perception of healthcare professionals towards effectiveness of emergency medical care services was the outcome variable of this study and the independent variables were categorized as follows:

**Socio-demographic characteristics:** age, sex, educational qualification

**Profession-related characteristics:** profession, work load, performance

**Service and related characteristics:** communication process, implementation of ICT, training, resource availability, management support for the profession

**Emergency medical care** is any service provided within the first few hours following the emergence of acute medical or obstetric issues or the incidence of an injury [7].

**Perception of healthcare professionals towards effective emergency healthcare services:** were defined based on a tool incorporating the presence of a rapid response team, patient assessment, effective communication, safe and efficient transport, skilled medical intervention, and continuous improvement [26]. This questionnaire was formed in a likert scale incorporating 19 questions, those professionals that have a score above the mean or forty eight and above were considered effective.

### Data collection and quality assurance

A data collection tool was developed by reviewing several relevant pieces of literature and incorporating appropriate modifications [11,21, 27]. To ensure consistency, it was first written in English, then translated into Amharic, and then back into English. The data was gathered

**Table 1**  
Socio-demographic characteristics of the study participants.

Variables	Category	Frequency (n)	Percentage (%)
Age (in years)	< 25	103	24.4
	25–30	106	25.1
	31–35	22	5.2
	36–40	88	20.9
	> 40	103	24.4
Sex	Male	247	58.5
	Female	175	41.5
Level of education	Diploma	23	5.5
	Degree	230	54.5
	Masters and above	169	40.0

via an interviewer-administered questionnaire. The data collection tool is divided into four parts: socio-demographic characteristics of the study participants, profession and related characteristics, perception and related features, and the final portion assessed the service and its related characteristics. The validity of the questionnaire was assessed by subject-matter specialists and senior researchers. In addition, the reliability of the tool was checked using the Cronbach alpha coefficient, and the result was 0.74, meaning that the assumption was not violated.

The lead investigator gave training for both data collectors and a supervisor, focusing on the purpose of the study, procedures and methods of collecting data, and clarity on how to manage the data gathering process. One week before the data collection period, the questionnaire was pre-tested with 5 % of the study participants at Kirkos Health Center, and any necessary corrections were performed based on the pretest results. Every day, the collected data was examined and cross-checked for completeness and relevancy before being entered into the database.

#### Data processing and analysis

Data were entered into EpiData version 4.6, coded, cleaned, and exported for analysis to the Statistical Package for Social Science (SPSS) version 26. To summarize descriptive data, descriptive statistics such as measures of central tendency, frequency count, and proportion were used. To select appropriate variables for multivariable logistic regression analysis, bivariable logistic regression was used. To control the confounding variables and find independent factors linked with the perception towards the effectiveness of emergency healthcare services, multivariable logistic regression analysis was performed. In the final model, the statistical significance was measured using an adjusted odds ratio, a 95 % confidence interval (CI), and a  $p$ -value  $<0.05$ .

#### Ethical considerations

Ethical approval was obtained from the Addis Ababa Medical and Business College research and ethical committee with a reference

number of AAMBC 37/14/9/2023. A letter of permission was also obtained from higher officials of the selected health centers. The actual data collection was carried out after obtaining informed written consent from each study participant. All the necessary measures were taken to maintain and assure the confidentiality and benefits of the study participants.

## Results

### Socio-demographic characteristics

This study had a total of 422 study participants, yielding a response rate of 100 %. The study participants' minimum and maximum ages were 23 and 45 years, with a mean and standard deviation of 33 and 7 years, respectively. Almost one-fourth of the respondents (103, 24.4 %) were under the age of 25, and the majority (25.1 %) of the study participants was between the age of 25 and 30. In terms of education, 230 people (54.5 %) had a bachelor degree or higher (Table 1).

### Health facility and related characteristics

Most of the respondents, 335 (79.4 %), reported working for less than eight hours per day. Similarly, 346 (82 %) of respondents had a good yearly performance score. The vast majority, 334 (79.1 %), of health workers received patient safety training (Table 2).

### Perception and related characteristics

In all 229 respondents (54.3 %) agreed that trust influences the effectiveness of emergency care services. Similarly, 230 (54.5 %) of study participants recognized that convenience influences the effectiveness of emergency care services. Furthermore, 203 (48.1 %) of study participants believed that the communication process has an impact on the effectiveness of emergency care services (Table 3).

### Perception of health care professionals towards effectiveness of emergency healthcare services

In this study, the perceptions amongst healthcare workers of emergency health services in public health centers in Addis Ababa, Ethiopia were investigated. Among health care workers in public health centers in Addis Ababa, 322 (76.3 %) said that their center was effective in providing emergency health services (Table 4).

### Factors associated with the perception of health care providers towards effectiveness of emergency medical services

To identify significant factors for perception towards emergency service effectiveness, binary and multivariable logistic regression analyses were carried out. In the multivariable logistic regression analysis

**Table 2**  
Health facility and related characteristics of the study participants.

Variables	Category	Frequency (n)	Percentage (%)
Working hour/week	Lower than 40 hours	335	79.4
	More than 40 hours	87	20.6
Yearly performance evaluation results	Poor	147	4
	Satisfactory	59	14
	Good	346	82
Training on patient safety	Yes	334	79.1
	No	88	20.9
ICT service implementation	Yes	334	79.1
	No	88	20.9
Resource availability in emergency department	Yes	218	51.7
	No	204	48.3
Management supports	Yes	334	79.1
	No	88	20.9

**Table 3**

Perception and related characteristics of the study participants.

Assessment tool	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Trust affects the effectiveness of emergency care services.	14(3.3 %)	28(6.6 %)	44(10.4 %)	229(54.3 %)	107(25.4 %)
Convenience affects the effectiveness of emergency care services.	18(4.3 %)	54(12.8 %)	24(5.7 %)	230(54.5 %)	96(22.7 %)
The communication process affects the effectiveness of emergency care services.	33(7.8 %)	81(19.2 %)	22(5.2 %)	203(48.1 %)	83(19.7 %)

SD: strongly disagree; NA: neutral; and SA: strongly agree.

training, ICT service implementation, resource availability in the emergency department, management support professions, and perceived trust were identified as the determinants of the perception towards effectiveness of emergency healthcare services.

As a result, the odds of perception of healthcare professionals for effectiveness of emergency healthcare services among public health centers that deliver at least one training per year were nearly fourfold better as compared with their counterparts (AOR: 4.05; 95 % CI: 1.97, 8.32). Public health centers that implement ICT services have more than six fold better perception of health professionals on the effectiveness in emergency medical service utilization as compared with those that do not implement ICT services (AOR: 6.55; 95 % CI: 3.37, 12.73). Similarly, the perception of healthcare providers towards effectiveness of emergency service utilization was fivefold better among public health centers that have resources in the emergency department as compared with their counterparts (AOR: 5.07; 95 % CI: 2.51, 10.25). In addition, the professionals perception towards effectiveness of emergency service utilization among public health centers where the management support profession was 3.22 times better as compared with their counterparts, which have management that cannot support professionals (AOR: 3.22; 95 % CI: 1.66, 6.25) (Table 5).

**Table 4**

Effectiveness of emergency medical services.

Assessment tool	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
All emergency medical health care professionals have adequate knowledge of the service they provide.	17(4.0 %)	72(17.1 %)	20(4.7 %)	187(44.3 %)	126(29.9 %)
Emergency medical health services provided in the center are largely effective.	11(2.6 %)	118(28.0 %)	12(2.8 %)	171(40.5 %)	110(26.1 %)
The emergency department is well equipped with medical equipment.	14(3.3 %)	94(22.3 %)	19(4.5 %)	180(42.7 %)	115(27.3 %)
The emergency department is well equipped with non-medical facilities.	9(2.1 %)	72(17.1 %)	13(3.1 %)	154(36.5 %)	174(41.2 %)
Ambulance is readily available all the time for emergency services.	5(1.2 %)	73(17.3 %)	6(1.4 %)	246(58.3 %)	92(21.8 %)
Depending on the nature of the emergency, health services are provided in the ambulance.	13(3.1 %)	88(20.9 %)	17(4.0 %)	219(51.9 %)	85(20.1 %)
Management communicates with emergency care providers.	8(1.9 %)	78(18.5 %)	11(2.6 %)	240(56.9 %)	85(20.1 %)
Management regularly monitors the emergency service it provides.	11(2.6 %)	85(20.1 %)	16(3.8 %)	151(35.8 %)	159(37.7 %)
There are well-established communication channels in the health facility for emergency-case-related problems.	16(3.8 %)	83(19.7 %)	17(4.0 %)	161(38.2 %)	145(34.4 %)
The information that flows across the channels enables emergency care providers to discharge their duties effectively.	9(2.1 %)	85(20.1 %)	87(20.6 %)	131(31.0 %)	110(26.1 %)
The workload of health professionals in the department affects emergency health service delivery.	10(2.4 %)	80(19.0 %)	83(19.7 %)	230(54.5 %)	19(4.5 %)
The effectiveness of emergency service delivery is largely affected by the scarcity of emergency medical equipment.	21(5.0 %)	65(15.4 %)	114(27.0 %)	202(47.9 %)	20(4.7 %)
The emergency department is staffed with adequate numbers.	23(5.5 %)	105(24.9 %)	50(11.8 %)	106(25.1 %)	138(32.7 %)
The performance of health professionals affects the effectiveness of emergency service delivery.	13(3.1 %)	76(18.0 %)	82(19.4 %)	217(51.4 %)	34(8.1 %)
The drug supply is adequately available for emergency services.	14(3.3 %)	96(22.7 %)	97(23.0 %)	92(21.8 %)	123(29.1 %)
The effectiveness of emergency services is hampered by a lack of drug supplies.	7(1.7 %)	86(20.4 %)	42(10.0 %)	117(27.7 %)	170(40.3 %)
Skill improvement or training is provided for emergency health care workers.	19(4.5 %)	79(18.7 %)	31(7.3 %)	138(32.7 %)	155(36.7 %)
The emergency department staffs have adequate training and/or skills to deliver effective services.	38(9.0 %)	183(43.4 %)	71(16.8 %)	66(15.6 %)	64(15.2 %)
Patients receive instant emergency health care as soon as they arrive at the health facility.	38(9.0 %)	183(43.4 %)	71(16.8 %)	66(15.6 %)	64(15.2 %)

## Discussion

In this study, the perception of health care providers towards effectiveness of emergency health services among public health centers in Addis Ababa, Ethiopia, were investigated. Consequently, 76.3 % (95 % CI: 72.3, 80.6) of the respondents reported that their institutions were effective in providing emergency health services. This study's finding was higher than the one conducted in Taiwan, which reported 66.9 % [27,28]. This could be due to a difference in study duration, with the Taiwanese study taking place before five years. Furthermore, it may be tied to the health system's ability to appropriately recognize emergency risks and provide access to good service, which is frequently impacted by different situations such as geographic accessibility to health facilities, availability of an adequate health workforce, health facility infrastructure, electricity, water supply, and availability of budget [11,20].

Training was found to be a factor linked to the perception of emergency healthcare services effectiveness at Addis Ababa public health centers. The likelihood of positive perception towards effectiveness of emergency healthcare services was four times higher in public health centers that provided at least one training per year than in their counterparts (AOR: 4.05; 95 % CI: 1.97, 8.32). This study finding is consistent

**Table 5**

Factors associated with providers' perception of effective emergency care services.

Variables	Category	Effective		COR (95 %CI)	AOR (95 %CI)
		Yes	No		
Training	Yes	203	34	3.31(2.07, 5.31)*	4.05(1.97, 8.32)*
	No	119	66	1	1
ICT service implementation	Yes	283	51	6.97(4.16, 11.68)*	6.55(3.37, 12.73)**
	No	39	49	1	1
Resources available in the emergency department	Yes	199	19	6.89(3.99, 11.93)*	5.07(2.51, 10.25)**
	No	123	81	1	1
Management supports	Yes	272	62	3.33(2.01, 5.52)*	3.22(1.66, 6.25)*
	No	50	38	1	1
Perceived trust	No	65	48	1	1
	Yes	257	52	3.65(2.26, 5.88)*	3.39(1.81, 6.35)**
Working hour	Less than 8 h per day	261	74	1.50(0.89, 2.55)*	0.91(0.44, 1.87)
	More than 8 h per day	61	26	1	1
The last performance evaluation result	Poor	10	7	1	1
	Satisfactory	46	13	2.48(0.79, 7.79)*	3.09(0.72, 13.30)
	Good and above	266	80	2.33(0.86, 6.31)*	1.95(0.55, 6.87)

\*indicates variables with a *p*-value <0.05, and \*\* indicates variables having a *p*-value <0.01.

with a study conducted in Connaught Hospital, Sierra Leone [29]. This might be related to achieving current and future performance expectations, which are mainly effective through training and development for boosting employee caliber and competency. Management seeks to change the behavioral patterns of people in order to achieve organizational success, sustainability, and growth via training [30].

Implementation of ICT services was identified as a factor associated with the perception of effective emergency medical care services. When compared to those who have not adopted ICT services, public health centers that have implemented ICT services were six times more effective in terms of emergency medical care (AOR: 6.55; 95 %CI: 3.37, 12.73). This study finding is in line with a study conducted in Portugal and Israel [31]. ICT for health is described as the use of information and communication technologies in a variety of roles influencing the health sector. This could be attributed to improving the quality, accessibility, and efficiency of healthcare for citizens through information communication and health technologies that further enhance service effectiveness and efficiency in emergency health care centers.

Another element related to the effectiveness of emergency care services perception was found to be the availability of resources in the emergency department. The perception of effectiveness in emergency service utilization was five times higher in public health centers with adequate emergency department resources compared to public health centers without emergency department capabilities. This could be attributable to the fact that when there are insufficient resources, professionals might have trouble finishing their tasks and become dissatisfied [25]. For any company to function properly, appropriate resources in terms of space, equipment, and personnel are required. A previously conducted study also mentioned that the infrastructure and equipment must be adequate and appropriate for specific jobs and must be fitted for individual workers.

The perception towards effectiveness of emergency medical service use in public health institutions where appropriate management supports their professions was 3.22 times greater than in equivalents where management does not support the profession. According to a previously published study, the primary activities of a manager are planning, organizing, directing, and controlling, with the goal of achieving specific objectives and goals within an organization [32]. Furthermore, management positions command jobs to which one is assigned or recruited to direct others and the responsibility to ensure that particular activities inside the firm are accomplished effectively and efficiently [31].

### Strengths and limitations of the study

The maximum possible response rate was one of this study's strength. The study might have failed to show a causal relationship

between the independent factors and the perception towards effectiveness of emergency medical services because it employed a cross-sectional design, and this paper has used opinions from healthcare workers. This might be biased and prone to inaccuracy. It can only be used to draw conclusions about perceptions and opinions. Finally, although the study adds much to the knowledge of emergency medical services effectiveness in Ethiopia, the use of longitudinal or experimental designs could provide stronger evidence of causal relationships.

### Conclusion

According to the findings of this study, healthcare workers perceive that 3/4 of public health centers were effective. Moreover, patient service delivery training, ICT service implementation, resource availability, and management support professionals were independent characteristics linked to the effectiveness of emergency health care. As a result, taking these elements into account may improve the effectiveness of emergency healthcare services.

### Dissemination of results

The results of this study were first presented to the Addis Ababa Medical and Business College academic community and staff members. Once that was done, the findings were submitted to the African Journal of Emergency Medicine for publication.

### Authors' contribution

Authors contributed as follows 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: GKG 25%, AS 25%, WAA 15%, EMD 15%, and MYB 20%. All authors approved the version to be published and agreed to be accountable for all aspects of the work.

### Declaration of Competing Interest

The authors declared no conflicts of interest.

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