***Assessing the Emergency Response Capacity and Resource Availability in the Ahafo Ano North Primary Healthcare Facilities***

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# **ABSTRACT**

**Introduction**: Primary healthcare (PHC) provides emergency medical care because in rural areas, institutions are frequently the first—and occasionally the only—point of contact for people experiencing medical emergencies. The World Health Organization (WHO) states that these facilities must be capable of stabilizing patients, administering vital life-saving treatments, and quickly arranging referrals when necessary. Emergency care is the delivery of timely medical assistance within minutes or hours of situations requiring immediate action to avert death or harm.

**Objectives:** To investigate the capacity of rural primary healthcare facilities in Ahafo Ano North to respond to emergency medical cases.

**Methods:** A descriptive cross-sectional survey design was used in the study to gather quantitative information in the Ahafo Ano North District. A simple random sampling technique was employed to select 224 nursing professionals for participation in the study. The data were collected using a questionnaire and analyzed using IBM SPSS Statistics 27 and R 4.3.1.

**Results and findings:** The participants' ages ranged from 18 to 45 years, with an average age of 31.53 years. The standard deviation was 6.696, indicating a moderate level of variability in participants' ages. The variance, which represents the spread of the age data, was calculated as 44.833. The skewness value was -0.082 (standard error = 0.163), slightly skew, and the age distribution was approximately symmetrical. The kurtosis value was -0.152 (standard error = 0.324) with a slightly platykurtic distribution. The findings revealed that 43.5% (very poor), 62.8% (very poor ratings), 24.7% (moderately) good, 31.4% (moderately good) 56.5% (very poorly), respectively, for first aid kits, automated external defibrillators (aeds), stretchers oxygen supplies, and suction devices

**Conclusion:** The study concluded that developing strategies to enhance emergency preparedness in rural primary healthcare facilities. The study reviewed very important ways to improve primary health care, such as targeted training, standardized protocols, improved resource allocation, and strengthened referral systems.

**Keywords**: Emergency Response Capacity, Resource Availability, Ahafo Ano North, and Primary Healthcare Facilities.

**1.1 Background to the Study**

Primary healthcare (PHC) institutions are often the initial, and sometimes the only, point of contact for people in rural areas experiencing medical emergencies, and any successful healthcare system must include emergency medical care. According to the World Health Organization (WHO), these facilities must be able to stabilize patients, provide critical life-saving measures, and arrange prompt referrals when needed.

The provision of prompt medical attention within minutes or hours of circumstances necessitating quick action to prevent death or impairment is known as emergency care (1,2). Ailments that fall under the purview of emergency medical treatment include injuries, infectious and non-communicable diseases, acute decompensation of chronic illnesses, and pregnancy difficulties. These conditions necessitate prompt, high-quality care to prevent death or permanent impairment. Approximately 2.1 billion deaths and disability-adjusted life years occur worldwide each year as a result of these illnesses (3). In low- and middle-income countries (LMICs), where the burden of these conditions is largest and the results are disproportionately worse, the integration of emergency care systems into the broader health system has thus not lived up to its full potential, even though it is particularly life-saving (4).

The burden of medical, surgical, and traumatic emergency conditions is highest in LMICs worldwide (5). There is insufficient readiness to handle and treat emergencies when they arise because of deficiencies in organizational planning, human resource capabilities, and material resources (5–7). In Sub-Saharan Africa, 71% of the population reportedly resides within two hours of a hospital that may offer emergency medical services (EMS)(8). A highly effective emergency care service (ECS) can save more than half of all deaths in LMICs, according to Reynolds et al.(8).

However, the majority of Sub-Saharan African nations lack these services, and those that do have inadequate funding. For instance, emergency rooms account for 10–15% of the 1.6 million documented deaths in Nigeria each year.

Despite global progress in emergency care, many low- and middle-income countries (LMICs), including Ghana, continue to face significant challenges in ensuring that PHC facilities are adequately prepared to respond to emergencies. Common constraints include a shortage of trained personnel, a lack of essential drugs and equipment, poor infrastructure, and weak referral systems (9). These limitations are particularly acute in rural areas, where health system resources are often stretched thin and distances to higher-level care are vast.

In Ghana, rural districts such as Ahafo Ano North in the Ashanti Region rely heavily on Community-based Health Planning and Services (CHPS) compounds and health centers for emergency care. However, anecdotal reports and district health reviews suggest these facilities may not be adequately resourced or staffed to handle emergencies effectively. In such contexts, delayed or ineffective emergency care can lead to avoidable morbidity and mortality(10) (Afriyie et al., 2022).

The capacity to respond to emergencies encompasses both tangible resources (for example, emergency drugs, equipment, and vehicles) and intangible aspects such as staff knowledge, clinical preparedness, and protocol adherence. Assessing this capacity is essential for identifying gaps, informing policy, and guiding investments in rural health system strengthening (11).

This study, therefore, seeks to assess the emergency response capacity and resource availability in rural PHC facilities in the Ahafo Ano North District, focusing on equipment, drugs, staff training, and system readiness.

**1.2 Problem Statement**

In rural Ghana, when a patient has a medical emergency, such as trauma, cardiovascular events, respiratory distress, or pregnancy-related issues, primary healthcare facilities are usually the first place they go. However, the lack of staff, resources, and training that many of these facilities face may make it more difficult to handle such situations effectively.

The effectiveness of emergency medical response in rural Ghana is undermined by systemic deficiencies in health facility readiness and human resource capacity. In Ahafo Ano North District, where health infrastructure is limited and communities are dispersed across challenging terrains, the capacity of PHC facilities to manage medical emergencies is a pressing concern.

Despite being critical points of care, many rural PHC facilities reportedly lack basic emergency supplies, trained staff, and functional transport or communication systems. This situation leads to delays in care, poor clinical outcomes, and preventable deaths, especially in cases of trauma, obstetric emergencies, and acute medical illnesses(12). However, there is limited empirical data assessing the extent of these limitations in Ahafo Ano North, thereby making evidence-based planning difficult.

A comprehensive assessment of emergency response capacity and resource availability in these rural PHC facilities is urgently needed to inform district and national health strategies aimed at improving rural emergency care delivery.

**1.3 Research Objectives**

**Primary Objective:**

* To investigate the capacity of rural primary healthcare facilities in Ahafo Ano North to respond to emergency medical cases.

**Specific Objectives:**

1. To determine the availability of emergency care resources (equipment, drugs, and personnel).
2. To assess the training and preparedness of nurses and midwives in managing emergencies.
3. To recommend strategies to enhance emergency preparedness at rural PHC facilities.

**1.4 Research Questions**

1. What emergency care resources (equipment, drugs, and staff) are available in rural PHC facilities in Ahafo Ano North?
2. How well-prepared and trained are nurses and midwives to handle medical emergencies?
3. What practical strategies can be implemented to improve emergency preparedness in these facilities?

**1.5 Significance of the Study**

This study will provide valuable insights into the emergency readiness of rural PHC facilities in Ghana, focusing on the Ahafo Ano North District. The findings will inform local and national health authorities, including the Ghana Health Service, the Ministry of Health, and non-governmental organizations, about the gaps that exist in emergency care provision at the grassroots level.

By highlighting specific resource and capacity deficiencies, the study can serve as a guide for targeted investments in training, infrastructure, and logistics. Moreover, it will contribute to broader health system strengthening efforts and help improve health outcomes in rural communities (11). Academically, the study adds to the limited body of literature on rural emergency health systems in West Africa.

**1.6 Scope of the Study**

This research is limited to rural Primary Health Care (PHC) facilities in the Ahafo Ano North District of the Ashanti Region. The study focuses on resource availability, staff training and preparedness, and emergency response systems. Secondary and tertiary hospitals are excluded from the scope.

**1.7 Operational Definitions**

* **Emergency Response Capacity:** The ability of a health facility to effectively manage medical emergencies through adequate infrastructure, equipment, trained personnel, and referral protocols.
* **Primary Healthcare Facility:** A health center or CHPS compound providing basic health services, often serving as the first point of contact in the health system.
* **Preparedness:** The readiness of healthcare workers and facilities to respond to emergencies, including training, protocols, and response plans.
* **Resource Availability:** The presence of essential inputs (e.g., drugs, equipment, and staff) required to deliver emergency healthcare services effectively.

## 1. 8. **Conceptual Framework**

### ****Introduction****

A conceptual framework illustrates the logical structure of the research by showing the key variables and their relationships. For this study, the framework is guided by the **WHO Health Systems Framework** (13)(WHO, 2010) and concepts from the **Emergency Care Systems Assessment Tool** (WHO, 2021), which emphasize six building blocks of health systems: service delivery, health workforce, information systems, medical products, financing, and leadership/governance.

This study adapts and simplifies these models to focus on emergency care in rural PHC facilities, using three main components:

* **Inputs**: Availability of emergency resources (equipment, drugs, and personnel)
* **Processes**: Staff training and preparedness (protocols, drills, supervision)
* **Outputs/Outcomes**: Emergency response capacity and recommendations for improvement.

**The Framework Components**

**A. Inputs**

These refer to the foundational resources required to respond to emergencies effectively:

* **Emergency Equipment**: Defibrillators, oxygen, IV fluids, monitoring devices
* **Essential Drugs**: Adrenaline, antibiotics, analgesics, anti-malarials
* **Personnel**: Number, type, and skill level of health professionals (nurses, physician assistants, midwives(9).

**B. Processes (Staff Preparedness)**

These include the actions and systems that determine how well the resources are used:

* Training and refresher courses.(11) (14)

**C. Output (Response Capacity)**

The degree to which PHC facilities can:

* Recognize and manage emergencies
* Stabilize patients
* Ensure timely referral and transport
* Maintain coordination and documentation

This is the primary outcome the study seeks to assess.

**D. Outcome (Recommendations/Improvements)**

These are the implications and strategies derived from the findings. Examples may include:

* Training programs for staff
* Procurement and distribution of critical supplies
* Strengthening referral systems
* Policy advocacy for rural emergency care investment

**Theoretical Underpinning**

This framework aligns with the **Donabedian Model** of healthcare quality, which emphasizes:

* **Structure** (inputs/resources),
* **Process** (training, care delivery), and
* **Outcomes** (response effectiveness and patient care results)
(15).

Donabedian developed a set of standards for evaluating the caliber of medical staff and facilities in his theories and publications from the 1960s to the 1980s. The Donabedian paradigm has three primary criteria: outcome, process, and structure.
But according to Donabedian, these standards were not what made anything good. Instead, they were classifications of data that were used to assess quality. Only when such data were thoroughly and jointly examined could a sound quality judgment be made. According to Donabedian, the definition of quality itself could vary based on the objectives and principles of the medical community as well as the larger society.

Structure is the basic type of information. The context of the care—more especially, the features of the healthcare organization—is referred to in this area. This category's content is frequently the easiest to see and understand. The structural category includes, for instance, the building's design and layout, as well as its furnishings and the number of rooms and beds it offers. This area also includes information about human resources, such as staff-to-patient ratios and average staff training, as well as other specifics, such as the many ways patients can pay their bills. Assessing the healthcare experience and identifying trouble spots that could compromise patient care and satisfaction can be accomplished with the aid of structural analysis.

The second category of information is process. Process is a broad category encompassing all interactions among patients and their health-care providers. It relates to the overall experience of health care. Donabedian considered process likely to be the most important measurement of quality because of how much information it includes. The process begins with the initial contact among patients and providers, including checkups and diagnoses of health problems. It extends through all related treatments, education imparted to patients and their families relating to self-treatment or preventative actions, and subsequent results. Evaluators at the process level may find information in many sources, including observation, interviews, or surveys of medical records.

Outcome is the third and last category. Outcome, like process, is a fairly broad concept. It covers every impact that medical treatment has on one or more individuals. These impacts could be short-term or long-term, and they could be mental, emotional, or physical. Whether the patient's condition was successfully treated is the most evident result. Additional results include whether the patient was happy with the care they received or whether they changed their health-related behavior. In contrast to structure, evaluating the outcome category can be somewhat challenging. Long-term case studies of health-related behaviors, changes, and attitudes may be included, as well as studies of sizable patient populations.

Furthermore, evaluators must distinguish results based on the health treatment in question from all other unrelated aspects of an individual's or group's life. Notwithstanding this challenge, the result category is perhaps the most significant since it pertains to a healthcare provider's actual overall efficacy.

**2.0 Methodology**

**2.1 Study Design**

A descriptive cross-sectional survey design was used in the study to gather quantitative information on the emergency capacity of rural primary healthcare facilities in Ahafo Ano North to respond to emergency medical cases medical services.

 **2.2 Study Area**

The study was carried out in Ghana's Ashanti Region in the Ahafo Ano North Municipality. This municipality is made up of both rural and urban areas, and the first line of treatment for medical crises is provided by many primary healthcare facilities. Ahafo Ano North Municipality is a predominantly rural district with a population of around 93,000–95,000 people. It features a municipal hospital supported by health centres, CHPS compounds, and private/maternity facilities. With a population of 92,742from the 2021 population census, with 107 communities and 6 sub-municipals: Tepa, Manfo, Anyinasuso, Betiako, Subriso, and Twabidi, with a distribution of rural–urban distribution of 71% rural and 29% urban. The Ahafo Ano North Municipality has 26 health facilities in total, with 1 Government-run municipal hospital located in Tepa, 8 Government health centres, 3 Mission/CHAG facilities, 9 Private clinics/hospitals, and 4 Maternity homes/clinics. The key facilities are Ahafo Ano North Municipal Hospital, in Anyinasuso, Betiako, Manfo, Subriso, and Twabidi, Akwasiase, and CHPS compounds: ~39 zones covering community-level primary care

**2.3 Study Population**

Primary healthcare nurses, midwives, community health nurses, and other nursing professionals employed in primary healthcare facilities located within the municipality comprise the research population. To acquire a deeper understanding of the systemic issues confronting the health sector, all categories of nurses in these facilities were asked to answer the questionnaire.

**2.4 Sampling Method and Size**

Nurses and midwives who provide primary care were chosen, using a simple random sampling technique. A sample size of **224 respondents from a total population of 246** represents approximately **91%** of the population. At this high proportion, the **probability sampling method was the** most appropriate to reduce bias and ensure representativeness. About 224 nursing professionals participated in the study; these were nurses and midwives who work at the primary healthcare centers. The target population consists of all **nurses and midwives (N = 246)** working in the Ahafo Ano North District. **A Sampling Frame was** obtained from the District Health Directorate with a **complete and accurate list** of all 246 nurses and midwives. A **unique identification number (1 to 246)** was assigned to each person. Census Sampling was considered to help in generalization, and 224 out of 246 is **91% of the population**. This is statistically very robust and often eliminates the need for margin of error adjustments. **A random selection number generator method was used to generate 224 unique numbers between 1 and 246. The randomly** selected numbers of the individuals on the sampling frame were matched, and the individuals became the selected respondents for the study. The selected individuals were contacted, and the purpose was explained, consent obtained, and we proceeded with data collection.

**2.5 Data Collection tool and procedure**

**Questionnaires:** Structured questionnaires were administered to nurses and midwives to assess the availability of emergency care resources (equipment, drugs, and personnel), to assess the training and preparedness of nurses and midwives in managing emergencies, and to provide possible recommendations to enhance emergency preparedness at rural PHC facilities

Data were collected at the primary health care facilities from September 2024 to January 2025. The assessment covered the health care facilities' preparedness capacity (equipment and medications) and EMS, focusing on the availability of emergency care resources (equipment, drugs, and personnel).to assess the training and preparedness of nurses and midwives in managing emergencies. The nurses' perception of the availability of emergency equipment at their various facilities.

Equipment and medications were all assessed and rated using the checklist by the Ministry of Health – Ghana (MoH) policy guideline document(11) (16), This was done by observation and rating the availability and adequacy of equipment and medications. The emergency equipment was assessed with selected items from the 63-item checklist focusing on airways, breathing, circulation, and disability. The emergency medications were assessed with a 52-item checklist (17).

**2.6 Data Analysis**

The quantitative data was studied using descriptive statistics.

Data was collected on paper forms, KoboTool, and analyzed using Microsoft Excel (version 14). The data was cleaned under various objectives, and the demographics of the respondents. On the Availability of Emergency Equipment in the Health Institutions, the variables were evaluated on a scale of 1-5 based on their availability and adequacy (*Availability & Adequacy*: 1 – Very Poor (Absent); 2 – Poor (Inadequate (available to less than half of those who need it); 3 – Moderate (Partially adequate (available to more than half, but not to most who need it); 4 – Good (Adequate (present and readily available to almost everyone in need and used when needed) 5- Very Good (Very adequate and availiable with extra in stock) (18)

Emergency Preparedness and Challenges among nurses and midwives were assessed with questions on their confidence in handling cases with the ABCDE assessment tool, no of training on emergencies, how easily emergency cases can be accessed, and how often drills or simulations execeis that are performed.

 Finally, on recommending strategies to enhance emergency preparedness at rural PHC facilities, respondents were allow to select suggested options ( More medical equipment and supplies, regular training for healthcare staff, better referral system and transportation, increased staffing, improved communicated system) and also make individual suggestion that will help to improve emergency case management in the Primary Health Care.

**2.7. Ethical Considerations**

The Ghana Health Service of the Ahafo Ano North Municipal Health Directorate was consulted to obtain approval for the study. All volunteers were given their informed consent before beginning the study, and participation was entirely voluntary. Anonymity and confidentiality were closely upheld during the entire research procedure.

### ****3.0 DATA ANALYSIS AND RESULTS****

### ****3.1 Descriptive Analysis of Participants’ Age****

A total of 224 participants took part in the study, and their ages were examined to understand the sample's demographic profile. The participants' ages ranged from 18 to 45 years, with an average age of 31.53 years. This indicates that the typical participant was a young adult in their early thirties.

The **standard deviation** was **6.696**, indicating **a moderate level of variability** in participants' ages. Most of the participants' ages were within approximately **±6.7 years** of the mean, implying that the majority were between **approximately 25 and 38 years old.** The **variance**, which represents the spread of the age data, was calculated as **44.833**.

The **skewness value was -0.082** (standard error = 0.163), indicating a very slight negative skew. However, this value is close to zero, suggesting that the age distribution was **approximately symmetrical**. Likewise, the **kurtosis value was -0.152** (standard error = 0.324), suggesting a **slightly platykurtic distribution**, meaning the distribution is slightly flatter than a normal curve. However, like skewness, the kurtosis value is also very close to zero, reinforcing that the age data was **approximately normally distributed**.

### **Table: 1 Descriptive Statistics for Age**

| **Statistic** | **Value** |
| --- | --- |
| **N (Valid)** | 224 |
| **Minimum Age** | 18 |
| **Maximum Age** | 45 |
| **Mean Age** | 31.53 |
| **Standard Deviation** | 6.696 |
| **Variance** | 44.833 |
| **Skewness** | -0.082 |
| **Skewness Std. Error** | 0.163 |
| **Kurtosis** | -0.152 |
| **Kurtosis Std. Error** | 0.324 |

**Correlational Analysis among the demographics of Participants and key Variables.**

**Table 2: Pearson Correlations among Key Variables (N = 224)**

| **Variables** | **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |
| 1. Confidence level | .71\*\*\* | — |  |  |  |  |  |
| 2. Participation in emergency drills | .47\*\*\* | .41\*\*\* | — |  |  |  |  |
| 3. Formal emergency training (past 2 years) | .35\*\*\* | .48\*\*\* | .07 | — |  |  |  |
| 4. Frequency of emergency case exposure | –.52\*\*\* | –.34\*\*\* | –.54\*\*\* | –.03 | — |  |  |
| 5. Educational level | .47\*\*\* | .19\*\* | .58\*\*\* | –.13 | –.46\*\*\* | — |  |
| 6. Confidence in assessing ABCs | .00 | .28\*\*\* | .18\*\* | .26\*\*\* | –.11 | –.32\*\*\* | — |

**Note**: *p* < .05\*, **p** < .01\*\*, ***p*** < .001 (2-tailed).

**Correlational Analysis**

A Pearson product-moment correlation coefficient was computed to examine the relationships between demographic factors, emergency-related training and exposure, and the participants' confidence levels in managing emergency cases. The results showed several significant associations, as outlined below.

**Confidence Level**

Confidence level was also positively and strongly associated with participation in emergency drills, *r* (222) = .41, *p* < .001, and formal emergency training within the past two years, *r* (222) = .48, *p* < .001. Confidence in assessing airway, breathing, and circulation (ABCs) had a significant positive relationship with overall confidence level, *r* (222) = .28, *p* < .001.

Confidence level was moderately correlated with knowledge, *r* (222) = .71, *p* < .001, and frequency of emergency skill practice, *r* (222) = –.50, *p* < .001 (note: this negative correlation may require contextual interpretation or checking for reverse-coded items). Age had a negative correlation with confidence level, *r* (222) = –.24, *p* < .001, indicating that older participants tended to report lower confidence levels.

**Additional Relationships**

Educational level was positively correlated with participation in emergency drills, *r*(222) = .58, p < .001, and the frequency of emergency skill practice, r(222) = –.42, *p* < .001. Gender showed strong associations with several variables, including a negative correlation with educational level, *r* (222) = –.49, *p* < .001, and a positive correlation with frequency of emergency cases, *r*(222) = .48, *p* < .001.

Taken together, the results indicate that training exposure, educational background, and institutional factors have a significant influence on confidence in emergency management. These findings underscore the importance of structured emergency training and regular practice in enhancing preparedness among healthcare professionals.

**3.2 To determine the availability of emergency care resources (equipment, drugs, and personnel).**

Figure1

**The Availability of Emergency Equipment in the Health Institutions**

Source of Data: Field

The above table illustrates the nurses' perception of the availability of emergency equipment at their various facilities. Two hundred and twenty (223) nurses rated the availability of key emergency equipment across their respective health institutions. The equipment evaluated included First Aid Kits, Automated External Defibrillators (AEDs), Stretchers, Oxygen Supplies (such as tanks and masks), and Suction Devices. Participants were asked to rate the availability of each item using five categories: *Very Poor*, *Poor*, *Moderately Good*, *Good*, and *Very Good*. The findings are presented below in a narrative format, accompanied by corresponding percentages.

Firstly, it is observed that First Aid Kits have the largest proportion of nurses (43.5%) who rated their availability as *very poor*. A smaller percentage (12.6%) rated them as *poor*, while 18.8% felt the availability was *moderately good*. Additionally, 12.6% rated them as *good*, and another 12.6% considered their availability to be *very good*.

Secondly, regarding Automated External Defibrillators (AEDs), 62.8% of participants indicated *very poor* availability, making it the equipment with the highest negative response. None of the respondents rated AED availability as *poor*. About 12.1% reported *moderately good* availability, and 6.3% each rated them as *good* and *very good*.

For Stretchers, 25.1% of respondents rated their availability as *very poor*, while 18.8% indicated it was *poor*. Nearly a quarter (24.7%) considered stretcher availability to be *moderately good*. None of the respondents rated this equipment as *good*, but 12.6% rated it as *very good*.

In terms of Oxygen Supplies, 25.1% of the nurses rated their availability as *very poor*. No one selected *poor*. A notable 31.4% of respondents rated oxygen supply availability as *moderately good*, and the same proportion (31.4%) rated it as *very good*. A smaller group (6.3%) felt the availability was *good*.

With regard to Suction Devices, more than half of the participants (56.5%) reported *very poor* availability. None of the respondents selected *poor*. About 12.6% rated suction device availability as *moderately good*, 18.8% rated it as *good*, and 6.3% indicated it was *very good*.

These findings highlight differing levels of emergency equipment availability across institutions. While oxygen supplies showed relatively better availability, equipment such as AEDs and suction devices were most frequently reported as being *very poorly* available.

**Figure 2**

**Availability of essential emergency supplies**

Source: Field Data, 2025.

**Humanised Analysis of Emergency Supply Availability Based on Nurses’ Responses**

As part of a broader look into the readiness of health institutions to handle emergencies, nurses were asked to share their experiences regarding the availability of key clinical medical supplies. Specifically, they rated the availability of IV Fluids, IV Equipment, Oxygen Supplies, and Blood Products in their workplaces. Their responses shed light on how often these critical supplies are accessible when needed.

Starting with **IV Fluids**, only 70 nurses (about 31.4%) said these were always available, while a concerning 84 nurses (37.7%) stated they were never available. The rest were split between sometimes available (12.6%) and rarely available (18.4%). This suggests that although some facilities are reliably stocked, a significant number are not, which could delay or compromise patient care during fluid resuscitation or emergencies.

Responses about **IV Equipment** showed a slightly different pattern. Only 56 nurses (25.1%) indicated it was always available, while 56 others (25.1%) said it was never available. Meanwhile, 42 (18.8%) reported it as sometimes available, and 69 (30.9%) said it was rarely available. These findings imply that inconsistency in IV equipment access is a widespread issue, affecting nurses' ability to start or maintain IV therapy efficiently.

Regarding **Oxygen Supplies**, the availability picture was more balanced. Seventy nurses (31.4%) reported always having access to oxygen, while 42 (18.8%) said it was never available. The remaining responses were distributed between sometimes available (25.1%) and rarely available (24.7%). This mixed response may reflect differences in supply levels across various departments or facilities, with some institutions better equipped than others.

The most positive feedback came from the availability of **Blood Products**, where a majority—145 nurses (65.0%)—reported that they were always available. Only 14 nurses each (6.3%) said blood products were sometimes or rarely available, and 28 (12.6%) said they were never available. This suggests that, despite challenges in other areas, most institutions seem to prioritise and maintain access to blood for transfusion, which is critical in trauma, surgery, and obstetric care.

**3.3 To assess the training and preparedness of nurses and midwives in managing emergencies.**

### ****Analysis of Emergency Preparedness and Challenges among nurses and midwives****

The demographic profile of the study respondents reveals that the majority were female (81.3%), with males representing only 18.8%. This gender distribution is reflective of the broader composition of the healthcare workforce in many primary care settings, where women predominantly serve in frontline roles. Regarding educational qualifications, half of the respondents (50%) possessed diploma-level training, 37.5% held certificates, and only 12.5% had attained a bachelor’s degree. This indicates that while most respondents have formal healthcare training, a relatively small proportion have had exposure to higher academic training that could influence advanced clinical decision-making.

In terms of work experience, half of the participants (50%) had been in service for 1 to 5 years. A notable 31.3% had more than 10 years of experience, while 12.5% had worked for 6 to 10 years, and only 6.3% had less than one year of experience. These figures suggest a reasonably experienced workforce, which may contribute positively to emergency care delivery, although continued professional development remains essential.

Concerning the level of health facility, a significant majority (87.5%) worked at health centers, while 12.5% were stationed at community health posts. Daily encounters with emergency cases were reported by more than half of the respondents (55.4%), with 32.1% managing emergencies weekly and 12.5% rarely involved in such cases. This frequency of exposure underscores the importance of emergency preparedness among frontline health workers.

Despite frequent encounters with emergencies, only 18.8% of respondents reported having received any form of emergency care training. A concerning 81.3% had not undergone formal emergency training. Nevertheless, half of the respondents (50%) described themselves as very confident in handling emergencies, while 31.3% were somewhat confident, and 18.8% remained neutral. This disconnect between high confidence and low training coverage raises concerns about overestimation of capabilities or informal learning without structured support.

When assessed on their ability to evaluate airway, breathing, and circulation (ABCs), 49.2% reported being confident or very confident. However, 44.6% remained neutral, and 6.3% indicated a lack of confidence. Familiarity with the ABCDEs of emergency care was reported by 62.5% of respondents, while 37.5% were only somewhat familiar. These figures suggest that while general awareness of emergency procedures exists, there are significant gaps in depth of knowledge and consistent application.

Availability of emergency care guidelines and protocols was inconsistent. While 44.6% confirmed the presence of such resources, 42.9% indicated they were unavailable, and 12.5% were uncertain. This lack of clarity and accessibility may contribute to variability in emergency care practices. The practice of emergency skills was infrequent, with only 6.3% reporting regular (at least monthly) practice. More than one-third (37.5%) never practiced emergency skills, 31.3% did so occasionally, and 25% rarely. Limited hands-on practice opportunities may hinder the ability of healthcare workers to respond effectively during real emergencies.

Emergency assessments were conducted daily by 31.3% of respondents and weekly by 30.4%, while 25% reported rare assessments and 13.4% assessed emergencies monthly. Although a majority appeared to conduct assessments regularly, one-quarter rarely engaged in this critical activity.

Regarding satisfaction with available support and resources during emergencies, the largest proportion (61.6%) expressed neutrality. Only 25.9% were satisfied or very satisfied, while 12.6% reported dissatisfaction. These findings highlight a general sense of inadequacy or uncertainty regarding emergency response infrastructure.

Transportation challenges during emergencies were common. Approximately 63.4% of respondents noted occasional delays, while 24.1% reported frequent delays. Only 12.5% experienced such delays rarely. Furthermore, an overwhelming 87.5% of respondents reported facing challenges when referring patients to higher-level facilities. The key challenges identified included a lack of ambulance services (49.1%), distance to referral hospitals (25%), poor communication between facilities (13.4%), and other unspecified issues (12.5%).

### 3.4 To recommend strategies to enhance emergency preparedness at rural PHC facilities

### ****Analysis of Emergency Care Management: Recommendations, Challenges, and Types of Emergencies Managed****

**To obtain appropriate information on** strategies to enhance emergency preparedness at rural PHC facilities, respondents were as question on the types of Emergencies Commonly Managed, Barriers Faced in Managing Emergencies, and Participants’ Opinions on Key Factors for Improving Emergency Care.

**Types of Emergencies Commonly Managed**

Participants reported managing a variety of emergencies. As shown in Figure 3, the most frequent were **trauma-related accidents**, cited by 208 participants, reflecting the high incidence of injuries likely related to road traffic accidents and workplace incidents. **Obstetric emergencies**, particularly labor complications, were also common (154 respondents), as were **pediatric emergencies** (126) and **cardiac emergencies** (84). An additional 30 participants noted managing other types of emergencies not specifically listed. This distribution of cases highlights the broad scope of emergency care responsibilities at the primary healthcare level.

**Barriers Faced in Managing Emergencies**

A number of barriers hinder the effective management of emergencies in healthcare settings. As shown in Figure 4, the most significant challenge identified was **staff shortages**, reported by 196 participants. This was followed by **inadequate medical equipment in hospitals** (182 respondents) and a **lack of training** (128). **Communication issues** (72) and **delayed access to specialist care** (114) were also noted. These barriers align closely with the participants' suggestions for improvement, underlining recurring challenges related to workforce capacity, equipment availability, and inter-facility coordination.

**Participants’ Opinions on Key Factors for Improving Emergency Care**

Consistent with the recommendations, participants expressed strong opinions about what is needed to improve emergency services. As shown in Figure 5, again, additional training and education topped the list with 210 endorsements, as did increased staffing and better access to emergency equipment, each also cited by 210 participants. Improving communication systems was mentioned by 142 respondents, and regular emergency drills received support from 168 participants. These opinions reinforce the view that effective emergency care is dependent on a well-trained, adequately resourced, and coordinated healthcare workforce.

**Recommendations to Improve Emergency Management**

Respondents offered several key recommendations aimed at enhancing emergency care delivery. As shown in Figure 6, he most frequently cited suggestion was the provision of more medical equipment and supplies, indicated by 210 participants. This was closely followed by the need for regular training of nurses and midwives(184 responses) and the establishment of better referral systems and transportation networks (182 responses). Increased staffing was also highlighted by 170 participants as a critical requirement, while improved communication systems were mentioned by 86 respondents. These recommendations point to systemic gaps in emergency preparedness, infrastructure, and workforce support.

**Figure 3**

Source: Field Data, 2025

**Figure 4.**

Source: Field Data, 2025

**Figure 5**

Source: Field Data, 2025

**Figure 5**

Source: Field Data, 2025

**4.0 Discussion**

**Assessing the Emergency Response Capacity and Resource Availability in Rural Primary Healthcare Facilities in Ahafo Ano North**

The primary objective of this study was to evaluate the ability of resources at rural primary healthcare facilities in the Ahafo Ano North District to effectively manage emergency medical situations. A critical aspect of this assessment involved determining the availability of emergency care resources, including equipment, essential medications, and adequately trained personnel. The interpretation of participants' demographic characteristics, particularly age, provides essential context for understanding the distribution and experiences of the healthcare workforce engaged in emergency response in these rural settings. Hence, the discussion of participants' demographics was done as fellows.

**4.1 Descriptive Analysis of Participants’ Age**

The age distribution of the 224 study participants offered valuable insights into the workforce profile within the rural healthcare facilities assessed. The mean age of 31.53 years, with a standard deviation of 6.696, indicates a relatively young workforce, predominantly in their early thirties. This demographic feature may have implications for both the physical and cognitive readiness of staff to respond to emergencies. Young adult healthcare workers are typically in a phase of their professional lives where energy levels and the ability to adapt to fast-paced, high-pressure environments, such as emergencies, are high (19).

The statistical measures of skewness (-0.082) and kurtosis (-0.152), both of which are close to zero, confirm that the age distribution of the sample is approximately normal. This normal distribution implies that there is no significant concentration of either older or very young personnel, ensuring a balanced representation across the age spectrum. A symmetrical age distribution can also reflect a stable employment pattern and retention strategy within these rural health facilities, which may indirectly influence the availability and sustainability of emergency care services (20).

However, while age is not a direct measure of competence or capacity, it serves as a proxy for experience and potential adaptability. Younger professionals may be more open to adopting newer emergency protocols and technologies, yet may lack the years of clinical exposure that shape rapid decision-making under pressure. Therefore, it becomes crucial to consider complementary data on the training, years of experience, and continuous professional development of staff, which, together with age, will offer a fuller picture of emergency response capacity.

The descriptive statistics of age align with the broader research objective by highlighting the demographic preparedness of personnel to handle emergencies. Emergency response in rural areas not only relies on physical resources like defibrillators, oxygen cylinders, and essential drugs but also on the human resource factor—how available, competent, and resilient nurses and midwives are when responding to crises. Previous research has shown that younger health workers often dominate rural postings due to transfer patterns and mandatory national service, which aligns with the current findings (Lehmann, Dieleman, & Martineau, 2008). This raises questions about mentorship, supervision, and continuous training in emergency care for relatively inexperienced staff.

**4.2.1 Availability of Essential Emergency Supplies (**equipment**) in Rural Primary Healthcare Facilities**

The availability of essential emergency equipment is a cornerstone of effective emergency medical response, especially in rural and underserved areas where delays in referrals can be life-threatening. The findings from this study offer a revealing picture of the challenges faced by primary healthcare facilities in Ahafo Ano North in responding to emergency medical cases. The data shows considerable gaps in the availability of critical emergency tools such as Automated External Defibrillators (AEDs), suction devices, and even basic items like first aid kits, all of which are essential for initial stabilization of critically ill or injured patients. These are further discussed as fellows:

**First Aid Kits**

The finding that **43.5%** of participants rated the availability of first aid kits as *very poor* raises significant concerns. First aid kits are the most basic form of emergency readiness, containing essential supplies for controlling bleeding, preventing infection, and stabilizing minor injuries before definitive care. The absence of such a fundamental resource could delay timely interventions and compromise patient outcomes(21) fact that only **12.6%** of respondents considered their availability as *very good* underlines the uneven distribution of basic emergency care tools in rural settings.

**Automated External Defibrillators (AEDs)**

AEDs had the highest percentage (**62.8%**) of *very poor* ratings, and no respondents selected *poor*, highlighting a particularly stark inadequacy. AEDs are life-saving devices in cases of sudden cardiac arrest, and their absence significantly diminishes a facility's capacity to manage cardiovascular emergencies(22). The low levels of moderate to good ratings suggest that most rural facilities are not equipped to respond to one of the most common emergency scenarios, particularly in older adults.

**Stretchers**

While **24.7%** of respondents reported *moderately good* availability of stretchers, the lack of ratings under *'good' (0%) and the presence of high percentages for 'very poor' (25.1%) and 'poor' (18.8%) categories indicate* limitations in patient mobility and transport within facilities. Stretchers are vital for safely moving patients, especially those with trauma, respiratory distress, or unconsciousness. Inadequate access to stretchers may not only delay care but also increase the risk of further injury during patient handling (23).

**Oxygen Supplies**

Interestingly, oxygen supplies showed relatively better availability, with **31.4%** rating them as *moderately good* and *very good*. This may reflect recent national or donor-supported initiatives to improve oxygen infrastructure, especially in the wake of COVID-19, which exposed critical gaps in respiratory care readiness. However, **25.1%** of participants still rated oxygen availability as *very poor*, suggesting that while some progress has been made, supply chain inconsistencies or equipment maintenance issues remain problematic.

**Suction Devices**

Suction devices, essential for clearing airways in patients with obstructed breathing or excessive secretions, were reported by **56.5%** of respondents as *very poorly* available. This finding is particularly troubling because the inability to maintain a patent airway can lead to rapid deterioration, especially in pediatric emergencies or cases of trauma. The data emphasizes a clear need for prioritizing the procurement and maintenance of suction equipment across rural facilities.

These findings collectively indicate a systemic weakness in emergency preparedness at the rural primary healthcare level. Despite the role these facilities play as frontline responders, they appear significantly under-resourced, which compromises their ability to manage acute medical events effectively. Previous literature supports these findings, pointing to structural inequalities in rural health systems, lack of consistent funding, and poor maintenance cultures as contributing factors (11,24).

To build resilience in rural emergency care, targeted investment in essential medical equipment is crucial. Moreover, the availability of equipment must be matched with appropriate training and operational guidelines to ensure proper use and maintenance. Policies aimed at strengthening rural healthcare systems must not only focus on staffing and infrastructure but also ensure that emergency care kits, oxygen systems, and basic life-support tools are accessible and functional.

**4.2.2 Availability of Essential Clinical Medical Supplies in Rural Primary Healthcare Facilities**

The availability of emergency clinical supplies is a critical determinant of a healthcare facility’s ability to respond effectively to medical emergencies. In the context of rural primary healthcare facilities in Ahafo Ano North, the findings of this study reveal significant disparities and inconsistencies in the availability of key medical supplies such as IV fluids, IV equipment, oxygen, and blood products. These disparities have direct implications for timely and effective patient care, particularly in emergencies where every minute counts.

**Intravenous (IV) Fluids**

The availability of IV fluids—a cornerstone in emergency resuscitation, dehydration management, and shock treatment—was concerning. Only **31.4%** of nurses reported that IV fluids were always available, while a larger proportion (**37.7%**) indicated they were never available. This gap is alarming, as IV fluid therapy is often the first-line intervention in many emergency scenarios. The inconsistency in availability undermines the capacity of frontline health workers to stabilize critically ill patients and can lead to adverse outcomes. According to the(25), ensuring uninterrupted access to essential emergency supplies, including IV fluids, is a basic requirement for effective emergency care systems, particularly in rural settings where referral delays are common.

**IV Equipment**

A similar trend of inconsistency was noted with IV equipment, such as cannulas, giving sets, and infusion lines. Only **25.1%** of respondents stated that this equipment was always available, while another **25.1%** reported it was never available. The rest indicated that it was sometimes (**18.8%**) or rarely (**30.9%**) available. These findings reflect operational vulnerabilities in supply chain management and inventory control. Inadequate access to IV equipment compromises the delivery of essential therapies, even when fluids are available, and delays critical interventions. Studies by Aderaw and Getinet (2023) have emphasized that the unavailability of basic medical tools in rural African facilities is a major barrier to achieving universal health coverage and emergency responsiveness(26).

**Oxygen Supplies**

Oxygen therapy is vital in managing respiratory distress, cardiac arrest, trauma, and neonatal emergencies. The results showed that **31.4%** of nurses had consistent access to oxygen supplies, while **18.8%** reported no access at all. The remaining participants indicated varying degrees of irregular availability. These findings suggest a partial success in improving oxygen infrastructure, possibly influenced by global health initiatives post-COVID-19. However, the persistent gap in access underlines the need for further investment in oxygen concentrators, cylinder supplies, and maintenance systems. According to the *Lancet Global Health Commission on High-Quality Health Systems* (11) consistent oxygen availability is a critical quality metric for any emergency-capable facility.

**Blood Products**

Encouragingly, blood products showed the most favorable availability pattern. A substantial **65.0%** of nurses reported that blood products were always available. This is a promising indicator of the prioritization of transfusion services, which are essential for managing obstetric hemorrhage, severe anemia, trauma, and surgical emergencies. This finding may reflect the effectiveness of partnerships between Ghana's National Blood Service and local health directorates in ensuring stock availability, even in rural areas. Nevertheless, the **12.6%** of nurses who stated that blood products were never available still indicate that not all facilities benefit equally from these systems. As shown by Lowalekar and Ravichandran (2017) even modest gaps in blood availability can lead to preventable deaths in emergency situations, especially in low-resource settings(27).

These findings collectively highlight that while some progress has been made—particularly in the availability of blood products—rural health facilities in Ahafo Ano North still face substantial gaps in the consistent availability of critical emergency supplies. The irregular access to IV fluids and equipment, in particular, suggests a fragile emergency care foundation. This compromises patient stabilization at the primary care level, increasing the risk of deterioration during referrals or transit.

Addressing these challenges requires a multi-faceted approach involving improved supply chain logistics, strengthened facility-level inventory management, and policy support for equitable resource allocation. The World Health Organization’s *Emergency Care Systems Framework* (2019) recommends integrating emergency preparedness into primary care systems, especially in rural and resource-limited contexts, as part of broader health systems strengthening.

 **4.3.0 Strategies to Enhance Emergency Preparedness in Rural Primary Healthcare Facilities**

The capacity of rural primary healthcare (PHC) facilities to manage emergency cases in Ahafo Ano North is influenced by a complex interplay of systemic, infrastructural, and workforce-related factors. Findings from this study offer a rich understanding of current challenges and reveal practical, frontline-informed strategies to strengthen emergency preparedness in these settings. The recommendations and opinions shared by healthcare workers—those most directly involved in care delivery—are particularly insightful for informing future interventions and policy.

### 4.3.1. ****Provision of Medical Equipment and Supplies****

The most widely recommended strategy was the **provision of more medical equipment and supplies**, cited by **210 participants**. This aligns with earlier findings from the study that revealed severe deficits in emergency equipment such as Automated External Defibrillators (AEDs), suction machines, IV fluids, and oxygen. Without adequate tools, healthcare workers are unable to provide basic life-saving interventions. The World Health Organization (WHO, 2021) identifies equipment readiness as one of the key pillars of emergency care capacity, particularly in resource-limited settings. Bridging these gaps would require strengthened procurement systems, routine inventory audits, and preventive maintenance protocols(25).

### 4.3.2. ****Regular Training and Emergency Drills****

The need for **continuous professional development and emergency training** was emphasized by **210 respondents**, with **168** also advocating for **regular emergency drills**. These findings highlight a recognition among healthcare workers that knowledge and procedural readiness are as important as infrastructure. Regular training ensures that clinical staff remain confident and competent in applying emergency protocols, triaging patients, and responding to diverse cases such as trauma, obstetric complications, and pediatric crises. As noted by Boateng-Osei et al (2023), training builds resilience, fosters clinical decision-making in high-pressure environments, and enhances teamwork during emergencies(8).

### 4.3.3. ****Improved Referral and Transportation Systems****

The call for **better referral systems and transportation networks** by **182 participants** reflects the operational realities of rural care. In emergencies, timely referral to higher-level facilities can be the difference between life and death. However, delays are common in rural areas due to poor road infrastructure, lack of ambulances, and weak communication between facilities. As Kruk et al. (2018) assert, an integrated emergency referral system—including mobile communication tools and well-coordinated transport—is essential to achieving equitable emergency care(11).

### 4.3.4. ****Increased Staffing and Human Resource Support****

**Staff shortages** emerged both as a barrier (identified by **196 participants**) and as a recommendation (**170 responses** calling for increased staffing). In rural Ghana, nurse-to-patient ratios are often stretched, and limited numbers of clinical staff are expected to manage a wide range of emergency scenarios. The WHO (2020) notes that sufficient and well-distributed human resources are critical to achieving Universal Health Coverage (UHC) goals. Strategic deployment, rural incentives, and supportive supervision may help attract and retain more skilled professionals in underserved districts like Ahafo Ano North.

### 4.3.5. ****Enhanced Communication and Coordination****

**Improved communication systems** were recommended by **86 participants** and identified as a barrier by **72** others. Communication lapses—whether between departments, facilities, or referral hospitals—can cause critical delays in care. Incorporating reliable mobile health (mHealth) solutions, two-way radios, or simple hotline systems could significantly enhance coordination during emergencies. As suggested by recent innovations in rural health delivery (Roberts et al., 2016), digital tools can bridge geographic and logistical divides, especially in low-resource areas(28).

### 4.3.6. ****Diverse Emergency Case Profiles and Implications****

Participants reported encountering a broad spectrum of emergencies: **trauma cases** (208), **obstetric emergencies** (154), **pediatric cases** (126), and **cardiac emergencies** (84). This diversity in caseloads illustrates that rural PHC facilities are not limited to treating minor illnesses; rather, they serve as the first line of defense for critical and often life-threatening conditions.

**5.0 CONCLUSION AND RECOMMENDATION**

**5.1 CONCLUSION**

The study sample exhibits a youthful age profile with a relatively normal distribution. These findings collectively indicate a systemic weakness in emergency preparedness at the rural primary healthcare level. Despite the role these facilities play as frontline responders, they appear significantly under-resourced, which compromises their ability to manage acute medical events effectively.

These findings collectively highlight that while some progress has been made—particularly in the availability of blood products—rural health facilities in Ahafo Ano North still face substantial gaps in the consistent availability of critical emergency supplies. The irregular access to IV fluids and equipment, in particular, suggests a fragile emergency care foundation. This compromises patient stabilization at the primary care level, increasing the risk of deterioration during referrals or transit.

The survey responses highlight uneven access to emergency supplies across health institutions. While blood products appear to be reliably available in many settings, essential items like IV fluids and IV equipment are lacking or inconsistently stocked in a considerable number of facilities. Oxygen supply, although more evenly spread, still shows gaps in availability. These findings call for urgent attention from healthcare administrators and policymakers to ensure consistent access to life-saving supplies, enabling nurses to provide safe and timely care to patients.

The study was clear, while many healthcare workers frequently encounter emergency cases and express confidence in their ability to manage them, the lack of formal training, limited practical application, and inadequate infrastructure—especially in transportation and referral systems—pose significant threats to effective emergency care delivery.

The findings suggest that while frontline healthcare providers are frequently involved in managing a diverse range of emergencies, they are often constrained by insufficient training, inadequate equipment, staffing shortages, and poor communication systems. Participants’ recommendations for improving emergency care—such as enhanced training, better referral mechanisms, and increased resources—should inform policy decisions and capacity-building initiatives. Addressing these systemic issues is essential to ensuring timely, efficient, and effective emergency responses, ultimately improving patient outcomes at all levels of care.

The findings demonstrate that enhancing emergency preparedness in rural PHC facilities requires a holistic approach—combining improved infrastructure, continuous staff training, functional referral systems, and adequate human resources. These priorities are not only echoed by the data but are consistent with international frameworks such as the WHO’s Emergency Care Systems Assessment Tool and the Lancet Global Health Commission on high-quality health systems.

**5.2 Recommendation to enhance emergency preparedness at rural PHC facilities**

**5.2.1 Recommendation to the Municipal Health Directorate**

**Training of staff:** As the study sample exhibits a youthful age profile with a relatively normal distribution, it underscores the need for ongoing investment in skills development, adequate supervision, and retention strategies to enhance the emergency care capacity of rural healthcare facilities. These can be addressed through targeted training,

**Further Research**: To investigate how to integrate age demographics with variables such as qualification level, years of service, and emergency-specific training to better understand the true readiness of the rural health workforce.It is crucial to consider complementary data on the training, years of experience, and continuous professional development of staff, which, together with age, will offer a fuller picture of emergency response capacity.

**Supportive Work Environment:** Ensure adequate staffing, functional equipment, and emotional support systems to reduce burnout.

**Recognition and Motivation:** Establish recognition programs to reward dedication and excellence in rural service

**Supervision:** Adequate supervision and retention strategies to enhance the emergency care capacity of rural healthcare facilities

**Proper Referral system**: Strengthened referral systems is essential for improving outcomes in emergency health situations.

**5.2.2 Ghana Health Service**

**Career Development:** Provide continuous professional development, increasing quota for emergency care training, and opportunities for specialization.

**Policy development**: Policies and standardized protocols aimed at strengthening rural healthcare systems.

**Availability of equipment:** The need to ensure fair distribution of equipment is based on the needs assessment of the PHC facilities

**5.2.3 Ministry of Health**

**Improved infrastructure**: To ensure that emergency care kits, oxygen systems, and basic life-support tools are made available, accessible, and functional.

**Increased resource allocation:** To build resilience in rural emergency care, targeted investment by the central government is important, with essential medical equipment being crucial, and the need for ongoing investment in skills development.

**Incentive Packages:** Offer rural hardship allowances, housing support, and performance-based bonuses.

**A multi-faceted approach,** which involves improved supply chain logistics, strengthened facility-level inventory management, and policy support for equitable resource allocation. As the World Health Organization’s *Emergency Care Systems Framework* (2019) recommends, integrating emergency preparedness into primary care systems, especially in rural and resource-limited contexts, as part of broader health systems strengthening.

Moreover, the availability of equipment must be matched with appropriate training and operational guidelines to ensure proper use and maintenance.

**5.3 Summary:**

A holistic approach is needed to combine an improved infrastructure with continuous staff training, functional referral systems, and adequate human resources.

By translating these recommendations into targeted interventions, policymakers and health administrators can significantly improve emergency care delivery, reduce preventable deaths, and strengthen the overall resilience of rural health systems in Ghana and similar contexts.

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