Review Article

Critical Care in Sub-Saharan Africa, Where Are We? A Review

Abstract

Critical care services in sub-Saharan Africa have not gained much grounds despite becoming part of modern clinical practice in the 1950s. Managing patients with potentially recoverable illnesses and injuries is still not at par with evidence-based practices in developed climes, and most die from many preventable causes. Many hospitals in Africa do not have an intensive care unit, leaving critically ill patients being treated mostly in the general wards. A survey from Zambia indicated that only 7% of hospitals in the country have an intensive care unit, whereas a cross-sectional survey in Nigeria revealed that there were 30 public and private intensive care units serving a population of over 200 million, spread around all the geo-political zones, with most in the teaching hospitals. The situation is not generally better in most parts of the continent. This review focuses on why critical care is at the level it is in sub-Saharan Africa and provides suggestions on what should be done to change the narrative.

Keywords: *Critical care, gross domestic products, low- and middle-income countries, sub-Saharan Africa*

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Background

According to World Development Indicators of 2011–2022, 23 countries ranked by the World Bank as low-income countries are located in Africa.[1] In addition, the continent is part of 21 of the world's 55 lower middle-income countries. Some reasons for the low economic status in Africa include economic insecurity, political instability and corruption, civil wars, and terrorist insurrections, among others.

Most countries in Africa have a low gross domestic product (GDP) per capita and a low gross income per capita, the indicators of how affluent or poor a country is. This impact affects every stratum of life in Africa with a heavy burden on its health care delivery. One area where this is very noticeable is in the critical care services across the continent.

Critical care (also known as intensive care) refers to the specialised care of patients whose conditions are life-threatening and require comprehensive care and constant monitoring, usually in intensive care units (ICUs). It involves the monitoring and treatment of critically ill or injured patients, and the use of life-sustaining, high-technology medical equipment, catering to a patient population that extends to both extremes of age.[2] Critical care capability in low- and middle-income countries (LMICs) is largely unreported, particularly in sub-Saharan Africa. This review will undertake to look at where some LMICs stand with reference to some criteria that are indicative of the capacity of this important healthcare sector. It will also suggest ways to improve the practice and management of the critically ill in LMICs.

Where Are We in Sub-Saharan Africa?

Although intensive/critical care became part of modern clinical practice in the 1950s, it has remained in its infancy in most parts of sub-Saharan Africa.[3] Managing patients with potentially recoverable illnesses and injuries is still not perfect and most die from many preventable causes. Many hospitals in Africa do not have an ICU, leaving critically ill patients being treated in the general wards.[4] In Africa, the capacity for critical illness care is limited. A survey from Zambia indicated that only 7% of hospitals in the country have ICUs.[5] The situation is not much different in most parts of the continent.

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In Uganda, there is also limited ICU capacity with only 12 functional ICUs, and 55 ICU beds making up a ratio of 0.13 ICU beds per 100,000 population.[6] Most of these are located in the central region. According to Osinaike *et al*.,[7] in their survey, there are 385 ICU beds in Nigeria, giving a ratio of 0.19 beds per 100,000 population. Ethiopia, located in the horn of Africa and noted for early civilisation, according to a survey by Fitsum *et al*.,[8] has a total of 324 ICU beds for a population of 114 million (approximately 0.3 per 100,000 people). In Namibia, classified as a middle-income country with a population of less than 3 million, most of the regional hospitals cannot care for critically ill patients. Patients requiring ICU care from different parts of the country are transported to the capital city, which boasts of about 24-bed critical units in the government-owned hospitals. These are made up of the main ICU, surgical and trauma ICU, and acute care unit. Comparatively, high-income countries record between 5 and 30 ICU beds per 100,000 people.[9]

In centres with facilities for managing the critically ill, another challenge is that of skilled workforce, in terms of critical care physicians and critical care nurses to manage these patients. This is one of the variables for assessing critical care services being provided in facilities and countries, proposed by the World Federation of Societies of Intensive and Critical Care Medicine Task Force.[10] In Ethiopia, according to Fitsum *et al*.,[8] 37 of 72 critical care physicians are located in Addis Ababa, whereas in other regions, not all ICUs had critical care physicians. In Nigeria, according to Ogunbiyi,[11] manpower challenges of trained and skilled intensivists and other critical care personnel are also rife in the country, as most critical care physicians are located in urban centres. Efforts are, however, on to mitigate this. In Uganda, most of the ICUs have few ICU-trained staff, with most facilities being anaesthesiologists-led and the majority of the ICUs had a nurse-to-patient ratio of greater than or equal to 1.2.[12]

Why Are We Here?

Some reasons why the care of the critically ill still lags behind in sub-Saharan Africa have been proffered. One such reason is an abysmal healthcare financing, with a low budgetary allocation to the health sector. For example, in Nigeria, the total health sector budget for the last 20 years has averaged below 6% of the total Federal budget. The 2022 health sector budget is 4.97% of the total budget.[13] This is miles away from the 15% for health out of the nation's annual budget, stipulated by the Abuja Declaration on health, to which Nigeria is a signatory, alongside some other African Union countries.[14] In addition, there is poor implementation of the health budget due to corrupt practices and non-involvement of the end users in the procurement process of ICU equipment. Although in Nigeria, one of the pillars in healthcare financing is the national health insurance, clients still pay out-of-pocket for ICU services because critical care is not captured as a bouquet in the National Health Insurance scheme of the country.

Another challenge is the irregular electricity supply associated with frequent power cuts, leading to equipment damage poor maintenance and operability of expensive ICU equipment in most African countries. Associated with this is the restricted availability of maintenance (biomedical) staff and replacement parts, which leaves most of the ICU equipment often non-functioning or unused to its full potential following the damage caused by the frequent power cuts.

Furthermore, there is a paucity of appropriately trained ICU staff saddled with the day-to-day running of the unit. Many sub-Saharan African countries rely on foreign-based ICU practitioners' expertise. A survey conducted in Nigeria by Ogunbiyi *et al*.,[15] showed a low ICU bed capacity and deficits in basic and advanced haemodynamic monitoring equipment. It also revealed a shortage of trained ICU physicians. As a result, critical care services remain under-served in many parts of the country, with a population of over 200 million people.

Most countries in sub-Saharan Africa cannot afford the cost of running a proper ICU. This is due to factors such as a low GDP and gross national income, as alluded to earlier. Costing studies conducted in high-income countries have reported average ICU care costs between US$1700 and $4500 per day, these being 2014 prices.[16] Due to the high cost, the quality of care received by many critically ill patients in Africa may remain far from global strategies and evidence-based practice.

Furthermore, in many countries in the continent, national protocol for the care of critically ill patients are absent or, at best, not followed.[17] Thus, the care that critically ill patients receive in most of our hospitals is mostly informal and may be uncoordinated. Often, there are avoidable delays in initiating emergency treatment.[18]

What Can We Do?

There is still much to be done to provide affordable standard care for critically ill patients in sub-Saharan Africa. First, there is a need to prioritise the care of the critically ill across the continent. This will involve the provision of resources through adequate funding of the health sector much more than hitherto. Less money is spent on the total health budgets in many low-income countries than that spent on just intensive care medicine in industrialised countries.[4]

Second, there is a need for the provision of a comprehensive health insurance scheme that will include critical care management as a bouquet in the scheme. This will address the challenge of those that may not be able to afford the relatively high cost of intensive care especially in many sub-Saharan African countries, where patients pay for

their care "out-of-pocket." In Burkina Faso, an emergency caesarean section costs the equivalent of 1.5 months' salary for a civil servant.[19] It is, therefore, clear that an average patient who needs critical care services cannot afford them even when such services are available. In Rwanda, a Community-Based Health Insurance Scheme was started and was found to significantly reduce annual per capita out-of-pocket spending by about 3600 Rwandan Franc (about US$12) or about 83% of average per capita healthcare expenditure compared with the baseline level in 2000.[20] This is a positive development, from which other African countries can take a cue.

Another vital step that needs to be taken to improve critical care service in sub-Saharan Africa is improved training and retraining on the principles of critical care. The development of training and capacity-building programs is significant—not only for ICU physicians but also for nurses and other clinical personnel.[21] Training programs should include specific ICU clinical skills such as bedside USS, invasive monitoring, and basic management and organisational aspects of critical care. Train-the-trainer and peer-to-peer programs that have been shown to be successful could be further expanded.[22] There are very few institutions that train ICU physicians. One such centre is Anaesthesiology and Critical Care Education at Stellenbosch University in South Africa. According to their website, the Department offers specialists interested in sub-specialty training the opportunity to train to become sub-specialists in critical care. Critical care fellows are offered expertise training by experts in the field and have broad exposure to multiple areas of critical care practice.[23] Presently and very importantly, the essential emergency critical care training that is fast gaining ground in Africa and other LMICs and tailored to looking into the care of the critically ill may be adopted by physicians and other healthcare workers in sub-Saharan Africa.[24]

The coronavirus disease 2019 pandemic led to surges of critical illnesses that threatened to overwhelm the health systems in LMICs. Many countries in Africa had, however, improved their health support system as an aftermath of the pandemic. For instance, Nigeria has committed funds to build a 10-bedded and fully equipped ICU in each of the government's public tertiary centres [Figure 1].

One area of major concern in LMICs has always been the challenge of corruption in the procurement process of most government ministries, departments, and agencies. The government at all levels should involve civil society organisations in ensuring transparency in government's health-financing procurement policy. This will go a long way in reducing the purchase of sub-standard or malfunctioning Medicare equipment.

Another option for mitigating the challenge of abysmal critical care management in LMICs is to conduct implementation trials to assess the effectiveness and feasibility of using new digital technologies and treatment modalities for critical care in low-income countries.[25] Going forward, there is an urgent need for research into the most cost-effective treatments and methods of caring for critically ill patients, that is, tailor-made management of common critical illnesses using locally sourced therapies.

Conclusion

Critical care remains a neglected area of health care delivery in most countries in Africa. This results in large numbers of deaths from potentially treatable and recoverable conditions. Therefore, there is an urgent need

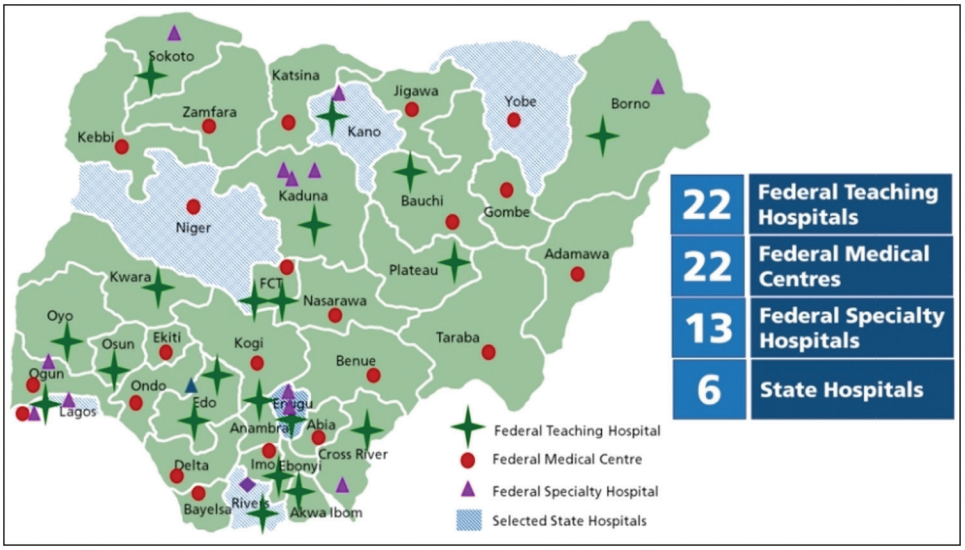

Figure 1: Distribution of Federal Tertiary Health Institutions across the 36 states of Nigeria and Abuja, the capital
Source: Vesta Healthcare Research and Analysis, 2019

to improve the quality and availability of critical care in sub-Saharan Africa and to develop locally grown training, therapies, and technologies.

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Conflicts of interest

There are no conflicts of interest.

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