



Postoperative mortality in Africa: are there any improvements in the last decade?

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Introduction

Surgical disorders continue to be a major global problem, despite recent breakthroughs in healthcare innovation and technology. Approximately five billion people worldwide lack access to surgical treatment, and unsurprisingly, most of them are in low- and middle-income countries (LMICs)^[1]. In Africa, more than 95% of the poorest and most vulnerable populations do not have access to surgical care, where only around 1% of those residing in Central Sub-Saharan Africa had access to safe, timely, and affordable surgical care^[1].

Furthermore, the risk of postoperative mortality (POM) in Africa doubled as compared to the global average^[2]. POM is amongst the top three global causes of death^[3]. Each year, more than 4.2 million of the global population die within 30 days following surgery, and 50% of them occur in the LMICs^[3]. However, many of them are preventable if prompt intervention is done, such as improving anesthesia and surgical services delivery. Therefore, this editorial aims to highlight the POM burden in Africa and the progress made over the years to improve surgical care, and provide recommendations to overcome the challenges in addressing the devastating POMR in Africa.

The POM burden in Africa

POM was one of the key challenges in surgical delivery that needed to be addressed, particularly in Africa. POMR has been found to be a significant predictor of high-quality surgical treatment^[4]. Several studies have found that surgical patients in Africa are at a significant risk of dying as a result of postoperative complications. Individuals who are normally at a lesser risk, such as younger patients, have uncomplicated procedures and are nonetheless at risk of postoperative death. In 2018, data was obtained from 11,193 patients undergoing surgery in 25 African nations, with 239 patients dying and 225 dying within 24 hours following operation. Postoperative complications were recorded in 1977 patients (18.2%) out of a total of 11,193 patients, implying that one out of every five patients experienced complications following surgery^[5]. A staggering 5.6% of patients died, which is more than double the rate in high-income countries, which is 2.8%^[5]. The major cause of death was infection, which accounted for 1156 of all fatalities^[5]. A comparable research, which ran from May 2019 to July 2020, collected data from 594 institutions in 33 African nations, with 28,892 patients taking part. There were 22,031 people at low risk and 5500 people at high risk. In low-risk patients, the death rate was 0.2% (45 patients), but in high-risk individuals, it was 5.6% (309 patients)^[6]. In addition, Wurdeman and colleagues revealed that the POMR in Tanzania for all procedures was 2.62%. The mortality rate after laparotomy was 3.92%, and 0.24% after cesarean section^[4]. In Eastern Uganda, 4773 individuals were enrolled in a study, where over 3501 surgeries were conducted. After surgery, 93 fatalities were documented, 49 of which happened within a day following operation^[7]. In August 2021, Waters *et al.*^[8] reported a 2.5% death rate after orthopedic procedures in 346 patients in South Africa. According to Paterson and colleagues, women in Africa are at a greater risk of suffering postoperative problems and dying. According to their findings, 48 individuals out of 1671 had postoperative problems. A shocking 23 (47.9%) of the 48 perished within a month^[9].

Aside from surgical infections, which have been identified as the leading cause of POMR^[5], there have been other concerning causes of PMOR in Africa. Postoperative blood loss has been a significant postoperative complication. POM cases have been exacerbated by a lack of immediate blood transfusions^[10]. In addition, general anesthesia increases the risk of POM. According to an Ethiopian study, patients who were under general anesthesia were four times more likely to die after surgery^[10]. A history of comorbidities is also a major issue that is fundamentally linked to POM. Several studies have shown that surgical patients

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with one or more comorbidities have a higher risk of death after surgery^[10]. Inadequate surgical checklists are another issue that is closely related to POM. A study in an Ethiopian hospital found that surgical patients who used a surgical checklist were 82% less likely to die after surgery than those who did not^[10].

Progress over the past decade?

Prior to the introduction of global efforts to address surgical care inequities, such as the Lancet Commission on Global Surgery (LCoGS), there was a severe lack of information from poor-country surgical care systems that could be used to thoroughly investigate the issue^[1,11]. The LCoGS was founded in 2014 with the primary purpose of increasing surgical access and results throughout the world^[12]. A lack of data gathering resources was most likely one of several factors for the data shortage. Chu *et al*^[11] further stated that data collecting challenges were caused by limited postoperative follow-up.

It is clearly evident that over the past decade, there has been significant progress in addressing surgical access and improvements in LMICs, specifically Africa owing to global efforts. Thus, research studies are constantly evolving in order to critically assess the problem regarding surgical access and perioperative mortality rate in Africa. There has been the establishment of the African Surgical Outcomes Study (ASOS) investigators looking into perioperative cases and mortality on the continent^[2]. As a result, the ASOS has been adopted by many for a number of surgical outcomes research in Africa. An unquestionably rational study design is a distinct feature of the ASOS. That is, in their bid to recruit more hospitals in their study, they employed the use of expedient sampling. Also, their consistent collection of clinical variables from these hospitals assisted them in obtaining a continental estimate on the POMR^[2].

LCoGS instituted the National Surgical, Obstetric, and Anesthesia Plan (NSOAP) to steer the surgical development globally. African countries such as Zambia and Tanzania have successfully implemented NSOAP-based interventions and policies, and the majority of SSA countries hope to follow suit by 2030. Infrastructure, workforce, service delivery, finance/governance, and information management are all components of the NSOAP regarding the health system^[4,13].

Challenges and recommendations

Despite these efforts, there are several obstacles hindering progress in addressing the high POMR in Africa, which include insufficient postoperative care resources, poor hospital volume, a shortage of surgical professionals, and many more^[14]. Another key problem in addressing POM in Africa is a lack of understanding and education among surgeons regarding the importance of rehabilitation services, particularly following surgery^[12]. Most Africans are unable to afford postoperative treatment because of economic challenges and lack cash. Patients' nutritional status, for example, cannot be evaluated in LMICs following surgery due to the high cost of indicators^[15]. Other challenges include late presentation of patients, abysmal reports of complex surgery, dilapidated modes of transport leading to untimely admissions of surgical patients, and poor compliance with prescribed treatment on the part of the patient^[12].

Due to the growing burden of complications and postsurgery mortality, prompt and suitable steps are crucial for scaling up surgical treatment in LMICs, particularly in Africa. Efforts to lower postoperative infections are essential to reduce POM in Africa, as infection is the major cause of death postsurgery. The World Health Organization (WHO) has introduced the Surgical Safety Checklist (SSC) in 2009^[16], and studies have proved that implementation of the SSC resulted in a significantly lower POMR^[17,18]. Furthermore, a study in Central SSA concluded that a nationwide scale-up of the SSC is very cost-effective and therefore should be implemented through NSOAP^[19]. However, a cross-sectional study in East Africa found that only 25% of the anesthetists interviewed regularly used the SSC^[20]. Therefore, African institutions should promote the utilization of SSC and enhance the compliance to SSC to ensure the realization of safer operating rooms.

Diverse stakeholders should be included in establishing robust surgical systems, particularly in African nations. A national strategy for correctly planning surgical education, surgical workforce training, and patient care should be devised based on the WHO Guidelines for Safe Surgery^[16], and it should be incorporated in all African countries' strategies for strengthening surgical services delivery and improving surgical outcomes. More strategic investments in the health system, as well as the establishment of new sustainable development goals to eradicate poverty, promote balanced economic growth, and cure post-operative infectious illnesses, should be made to minimize post-operative morbidity in Africa. Inequities in African healthcare systems must be addressed on a continuous basis, and a global health agenda must be put in place to meet existing health concerns. Furthermore, regional research focusing on surgical outcomes, predictors of postoperative complications and mortality should be accelerated by financing and partnership with international societies. Global surgery research should be promoted more to develop answers for safety, disease determinants, finance, and surgical quality.

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