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REVIEW

Review of the Current Situation of Postoperative Pain and Causes of Inadequate Pain Management in Africa

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Abstract: Postoperative pain is one of the most prevalent complications following surgery, and more than 47% of surgical patients endure postoperative discomfort worldwide. In Africa, due to resource shortages and other issues, postoperative pain is substantially more common when compared to developed countries. Severe postoperative pain has many negative effects, including possibly death, which can burden both individuals and society as a whole. Therefore, effectively controlling postoperative pain is becoming increasingly important. To enhance the effectiveness of future pain management, a thorough analysis of the current reasons for inadequate postoperative pain management is necessary. In this article, the present situations of occurring postoperative pain, children's postoperative pain, and pain management in Africa are reviewed, based on relevant and recent literature. In particular, the reasons for inadequate postoperative pain management in Africa are detailed in this article from five perspectives: the inadequate assessment of postoperative pain, the knowledge gap among medical professionals, the patients' misconceptions, the scarcity of resources, and the lack of medications. Additionally, we offer appropriate solutions following various factors.

Keywords: Africa, postoperative pain, pain management, analgesia, pain in children, pain assessment

Introduction

The number of surgeries performed worldwide has gradually increased as medical technology has advanced. Subsequently, postoperative problems have also increased, and the rate of postoperative suffering has reached more than 47%.[1–3] Therefore, effectively controlling postoperative pain is vital to improve patient outcomes. There are nearly 1.3 billion people living in Africa, populating more than 50 cities. Due to Africa's limitations in social economy and medical care, postoperative pain has become increasingly frequent in patients.[4,5]

Severe postoperative pain may delay the recovery of patients, cause physical and psychological damage, and even develop into chronic pain syndrome.[6] Despite these ramifications, the current state of postoperative pain management still leaves many patients with varying degrees of pain. Therefore, it's critical to identify the reasons behind the poor pain management. Subsequently, appropriate solutions may be undertaken to improve the quality of postoperative pain control. However, according to our findings, there is limited literature on postoperative pain in Africa, and there seems to be no review that comprehensively analyzes the current state of postoperative pain and the causes of inadequate pain management in Africa. Thus, in this article, we have compiled relevant literature and discuss a variety of reasons for this inadequacy, including incomplete postoperative pain assessment, knowledge gaps among medical professionals, patients' misconceptions about postoperative pain, a scarcity of resources and the restriction of medicine in Africa. This review will improve the reference basis for promoting both an improvement in pain management and a reduction in the occurrence of postoperative pain. In addition, two of the authors have worked in Africa as volunteers of the China

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medical team. They have an intimate understanding of the current situation of pain in Africa, they combine practical work experience with previous literature to complete this review.

Present State of Postoperative Pain in Africa

Postoperative Pain

In Africa, where up to 95.2% of patients suffer from postoperative pain, managing postoperative pain remains a significant challenge.[7] Postoperative pain is defined as the patient's experience of pain due to surgery that occurred in the recovery room, intensive care unit, or after returning to the ward.[8] Postoperative discomfort is the primary problem that surgical patients express anxiety about the most, even more so than the surgery itself.[9,10] A variety of surgical complications may result from postoperative pain, including an increased risk of thromboembolic events and respiratory impairment, prolonged hospital stay, and an overall declined quality of life. Consequently, pain that lasts for a long period without relief will eventually develop into chronic pain due to pathologic brain adaptation. When pain becomes chronic, it produces a whole new array of complications that impact patients, their society, and the healthcare system.[11–14]

A study of 281 patients by Ndebea et al[7] identified that 70% of patients had moderate to severe postoperative pain and that 14.2% of patients had numerical rating scale (NRS) scores higher than 7 (NRS 0–10). This is comparable to the findings of Tano et al who used the numerical rating scale (NRS) to examined the level of pain experienced by patients having abdominal surgery at a Ghanaian Teaching Hospital. The results showed that 73.1% had Moderate (NRS 4–7) persistent pain, 23.9% had Severe (NRS 8–10) persistent pain, and 3% had Mild (NRS 0–3) persistent pain.[2] This significantly higher rate of postoperative discomfort indicates a worse quality of pain management in the area.

Postoperative Pain in Children

A common misconception is that for infants and young children and who do not feel any pain or do not remember it, there are no negative effects. However this theory is incorrect. Pediatric postoperative pain research from 2020 found that in the first 48 hours following surgery, 74.2% of kids had mild to severe pain.[15] It is challenging for children to articulate their discomfort and request analgesia due to their neurodevelopmental immaturity and incoherent description of pain feeling. Although there are several valid and reliable tools for the evaluation of pain in children, almost half of the physicians used clinical judgement to assess pain, such as crying, requiring oxygen to maintain saturation >95%, and increased vital signs and expressions, which led to insufficient assessments and low-quality pain management following pediatric surgery.[16–19]

According to a survey of pediatric postoperative pain control in Rwanda, the median worst pain score for a patient within 48 hours following surgery was 6, on a scale of 1 (no pain) to 10 (most severe pain). With scores of 7 or higher, more than half of the children experienced severe pain. Additionally, only 24% of patients had their post-surgery pain levels evaluated by recovery room doctors.[20] In a recent article, it was reported that just 8% of children had their pain assessed by medical personnel upon admission; the article also noted that only 10% of the children had adequate analgesia administered while 59% had no analgesic therapy at all.[18] Research demonstrated that poor postoperative pain treatment in children can have serious negative effects, including changes in physiology, behavior, and cognition.[21,22] Therefore, it is crucial to prioritize pediatric postoperative pain treatment and strive to remove obstacles to these procedures.

Multi-modal analgesia has been shown to be effective in pediatric surgery.[23,24] For moderate to severe postoperative pain, opioids should be used in addition to non-pharmacologic therapies and non-steroidal anti-inflammatory medications (NSAIDs) (or paracetamol).[25] Essential analgesic medicines included in the World Health Organization (WHO) Model List of Essential Medicines for Children include ibuprofen, paracetamol, and morphine.[26] Clinicians should thus take reasonable actions to manage pain based on the various pharmacological effects and patients' postoperative pain levels.

Prescription and distribution of analgesics are important components of pediatric pain management. This process differs in children, placing them at larger threat of drug error. In a study done by Vanden et al[27] in South Africa, there was a significant percentage of mistakes in both the prescribing and the dispensing of pediatric analgesia. Also, in all prescription categories of analgesics, under-dosing was prevalent. This study is likened to another where

merely 50% of doctor-written paracetamol prescriptions had the correct dosage.[28] However, it appears that this phenomenon can be explained by clinicians' ignorance of pediatric medication administration and their fear of drug overdose. As a consequence, emphasis should be placed on raising the degree of knowledge of the various medical staffs in efforts to improve the quality of pediatric postoperative pain management.

Postoperative Pain Management in Africa

One of the fundamental concepts of postoperative pain management is that the patient's requirements and expectations for safe and efficient pain control should be met.[29] Effective postoperative pain management can lessen the psychological and physical stress that patients experience after surgery, ultimately decreasing the likelihood of postoperative complications while simultaneously increasing the body's ability to recover. However, according to recent literature, the management of postoperative pain in Africa are still insufficient. Due to inadequate postoperative pain management, about 70% of the 200 million postoperative patients every year experience moderate-to-severe pain.[30,31] A 2014 study by Woldehaimanot et al[1] in Ethiopia discovered that the incidence of postoperative pain was 91.4% and that 80.1% of the patients were under-treated. Moreover, only a small proportion of patients (2.5%) claimed they had received medication within 15 minutes of complaining of pain. Similarly, a study by Eshete et al[32] identified the prevalence of moderate to severe postoperative pain was 63%, with the prevalence of inadequately treated pain being 58.4%, and concluded that up to 55% of patients needed more analgesics.

According to the clinical practice guidelines for postoperative pain management from the American Pain Society, doctors should use of a variety of medicines and procedures along with non-pharmacological measures, also known as multi-modal analgesia, for the management of post-operative pain in children and adults.[33] While simple analgesics such as paracetamol and NSAIDs are used to relieve mild pain, mild opioids can be utilized to alleviate moderate pain but stronger intravenous opioids are required to treat severe levels of pain.[18] However, Kintu et al[34] reported that a mere 14% of individuals who underwent cesarean sections received more than one type of analgesic drug and, astonishingly, 42% did not receive any analgesics.

A study conducted to assess patient satisfaction revealed that patients who received analgesia intravenously were considerably more likely to be satisfied with postoperative pain management than individuals who received it by intramuscular injection.[35] While the clinical practice guidelines for postoperative pain management strongly recommends against using analgesics intramuscularly to treat postoperative pain.[33] Numerous studies have shown that the majority of patients in Africa receive their analgesia solely through intramuscular injection; in those studies, the most commonly used medicine was pethidine, and NSAIDs were prescribed in <5% of cases illustrating that multi-modal analgesia is not being utilized to its fullest potential.[7,35,36] Additionally, it's worth mentioning that researchers compared the analgesic efficacy and adverse effects of pethidine with those of other medications in a narrative review. They revealed that pethidine is more closely associated with sedation and respiratory depression, concluding that pethidine should not be recommended for the treatment of acute postoperative pain.[37] However, this stands contrary to other study results demonstrating the need for further research to assess the effectiveness and safety of pethidine for postoperative analgesia.[38–40]

It is widely recognized that multimodal analgesia, including nerve blocks, achieves superior clinical results.[41] Additionally, for postoperative systemic analgesia, the clinical practice guidelines for postoperative pain management advise using patient-controlled analgesia (PCA).[33] Regardless, these techniques are not widely used for postoperative analgesia in Africa for several reasons, including lack of equipment, restricted technology, and cost-related concerns. This was demonstrated by a retrospective study conducted in Cape Town, in 2021, which showed that not only did very few patients received NSAIDs, but also that no additional blocks, wound infusion catheters, or PCA devices were used, violating the multimodal analgesia practices.[36] An inadequate pain management regimen after surgery results in that most patients experiencing at least some level of discomfort and opens the possibility for a succession of adverse reactions to occur, such as respiratory tract infection, atelectasis and myocardial infarction, which only further degrade quality of life.[42]

After thorough assessment, the primary barriers to postoperative pain management in Africa have been identified as inadequate assessment, staff knowledge gap, patients' misunderstanding, resource shortage, and medicine restriction.

Cause Analysis

Inadequate Postoperative Pain Assessment

One of the most crucial components of efficient pain treatment is the accurate assessment of postoperative pain. The basic objectives of pain evaluation are to identify the level of pain, choose the appropriate dosage and type of analgesic medication, and evaluate the effectiveness of the administered medication.[43] If the assessment is delayed or misinterpreted, the clinician is unable to correctly understand the patient's pain situation and will not be able to treat the pain right away.

The recommendations for treating moderate to severe post-operative pain involve pain monitoring every 15 minutes and adjusting analgesic treatment until the patient is pain-free during both rest and movement.[31] However, Murray et al conducted a study that revealed there was no postoperative pain team that regularly visited patients in the wards.[44] Similarly, Ana et al[6] in their research on anesthesia management in Rwanda, also found that the medical staff did not conduct regular postoperative pain assessments for their patients. It is also important to note that rather than using formal protocols for assessment and therapy, postoperative pain management relied heavily on body language, facial expressions and verbal clues from patients, and that other studies have shown that the usage of a pain assessment scale insufficient.[45–47] This lack of uniformity further hampers the efficiency of postoperative pain treatment, subsequently adding to the patient's physical burden.

The American Society of Anesthesiologists guidelines advise clinicians to modify postoperative pain management plans based on how effectively pain is relieved, which is assessed using a validated pain assessment tool.[48] Currently, instruments used to gauge pain severity include the Visual Analog Scale (VAS), the Numerical Rating Scale (NRS), the McGill Pain Questionnaire (MPQ) and the Brief Pain Inventory (BPI).[36,49] The VAS and NRS are unidimensional and only assess pain intensity. The two tools use a score based on the patient's self-reports of the presence and severity of their pain. Conversely, MPQ and BPI are multidimensional and measure pain by including both the physical and emotional characteristics.[50] Even though there are several ways to measure pain, there is no concrete data to identify which approach is the most accurate.

Since pain is such subjective experience, the gold standard for pain assessment is self-reporting.[17] Consequently, in addition to professionals', patients' own evaluations of their postoperative pain also play a crucial role in management. To increase accuracy of self-reporting, patients should be properly informed about pertinent information by medical professionals, including how to utilize pain assessment instruments and when to report pain.[33] The physician then can adjust pain management following the patient's feedback to increase its effectiveness. Sometimes, however, medical professionals may underrate the degree of patients' pain, not believe the patient's account of how terrible their pain is, or think they are faking it to obtain medication.[44,51] Therefore, it is vital to minimize the misunderstandings between patients and providers, and increase the routine evaluation by medical professionals instead, to improve the efficiency and accuracy in managing postoperative pain.

In addition, we should place emphasis on postoperative pain assessment in children. Effective pain management in children can be improved by increasing adequate pain evaluation. Many of the assessment tools that have been approved for use in developed countries are inappropriate for use in the multicultural circumstances in African hospitals. For example, there are 11 official languages and cultures in South Africa. In a survey of parents who speak Xhosa, it was indicated that they had trouble comprehending doctors when their children were treated in Cape Town, South Africa because of the language barrier, alluding to an inadequate evaluation of pain as a root cause.[52]

However, there are still some tools accessible for measuring children's pain, including the Oucher Scale, Visual Analogue Scale (VAS), Numeric Rating Scale (NRS), Neonatal/Infant pain assessment tools (NIPS), Face, Legs, Activity, Cry, Consolability scale (FLACC), Face Pain Scale-Revised (FPS-R) and Wong-Baker FACES Pain Rating Scale (WBFPRS).[15,53–55] Therefore, for effective pain control, it is crucial that healthcare professionals utilize the proper scales for assessing pediatric pain.[56]

Although there are several valid and reliable scales, the clinicians do not generally use them. In 2018, a study was conducted to understand the pediatric pain management at four Ghanaian hospitals and it reported that there were two pain assessment scales (Faces Pain Scale and FLACC) in only one out of the four hospitals.[57] Also, other studies

demonstrated that the application of pediatric pain scales in African hospitals is still limited.[57,58] Future initiatives should concentrate on creating scales that are appropriate for various cultures and advocate for medical professionals to use those scales.

Insufficient Knowledge of Medical Staff

Clinicians and nurses must possess sufficient knowledge to manage postoperative pain appropriately and effectively, yet a significant portion of certain African hospital staff still practice ineffective pain management.[59,60] A prospective cross-sectional study conducted by Paul et al revealed that 77.6% of physicians regarded their level of knowledge as "poor".[46] In other studies, researchers noted that the extent of "good knowledge" of postoperative pain management among nurses was 66.9% in Northwest Ethiopia, and 61.1% in northern Ghana.[59,61] In addition, according to the study, there was a discrepancy between what medical staff members claimed they did and what they actually did regarding postoperative pain treatment. For example, very few staff members said they would give an analgesic to a child suffering from postoperative pain, despite the fact that many respondents said adequate analgesia is a crucial component of pain care.[62] This demonstrates that medical professionals lack a thorough awareness of the significance of postoperative pain management and that there is a lack of training in pertinent courses in Africa.

Due to severe financial distress, healthcare organizations in Africa are offering fewer and shorter medical staff education programs and consequently, postoperative pain management is taught as a component of other courses rather than as a stand-alone course at all levels of education like industrialized nations teach.[63] For instance, institutions in Canada, the United States, and other nations offer for medical staff to specialize in postoperative pain management methods and techniques.[48] This gap explains why many anesthesiologists in Africa only attend one or two years of training courses, and only 48% of anesthesiologists had access to a textbook on anesthesia.[4] Furthermore, according to the residents, there was minimal official training in postoperative pain management, particularly concerning practical application.[6]

Lack of training in pain management resulted in doctors and nurses evaluating patients too late following surgery and providing insufficient pain management.[64] The International Association for the Study of Pain, which includes members representing >200 countries, has determined the necessity for healthcare professionals to increase their knowledge of postoperative pain management. Therefore, rearranging the priority of resource allocation and conducting pertinent organizational seminars regularly is important in a clinical setting with heavily constrained resources in order to ensure that medical workers are up to date with the current trends.[61–63,65]

Patients' Misunderstanding

Most patients are not sufficiently informed about the significance of postoperative pain management. Instead of reporting pain when it occurs, they choose to endure it, adjust their posture, or use various non-pharmacological approaches to manage, which could potentially be a result of local culture.[1,66] Nico et al[67] conducted a qualitative study on people from Nguni and Sotho cultures in South Africa which showed that distinct cultures have different ways of expressing and experiencing pain. In both cultures, people are taught to endure pain with stoicism and resilience. Expressing pain in any manner (either physically or emotionally) is strictly forbidden as doing so is seen as showing weakness and lack of confidence, especially in males.[52] Any culture should be respected and everyone has the right to have their cultural care values acknowledged, honored, and properly applied in nursing and in other healthcare services.[68] Therefore, further exploration is required to determine whether other evaluation criteria can be created to gather more accurate patient pain information while still respecting cultural standards.[69,70]

It is worth noting that neonates undergo invasive, culturally-defined procedures like male circumcision and ear-piercing in Nigeria and many other African countries. The cultural belief is that going through pain is necessary for growing and developing courage and manliness. When male infants cry, the parents often "you are a man, do not cry". As a result, they are exposed to more persistent postoperative pain that will significantly impact how they will develop in the future.[71]

The majority of patients have limited knowledge of their pain management, particularly in areas of medicines and addiction risks.[72] In addition, they are rarely informed by medical staff before surgery about postoperative pain control, leading to an increase in misconceptions.[1,32] For example, the adverse effects of opioids can include severe sedation and

respiratory depression. To lessen adverse effects, patients may self-regulate their opioid intake, but this can often result in insufficient analgesia.[73] Likewise, a study reported 46.25% of parents failed to give their kids analgesic medication because they confused it for an antipyretic and decided not to give it to their kids when they were not sick with a fever. The parents were unaware of the analgesic effects of ibuprofen and paracetamol.[15]

Some patients expressed the belief that postoperative pain was inevitable and cannot be relieved. There was a strong belief that medications were addictive and that the body developed a tolerance to their effects, and numerous studies have supported that a significant barrier to postoperative pain management is patients' fear of addiction.[74–76] However, according to the literature, addiction seldom happens in postoperative patients as opioids are generally given for merely 24 to 48 hours.[77] To be specific, a Cochrane review of opioids for non-cancer pain stated that the incidence of addiction was around 0.27%.[78] Also, for a patient taking opioids for pain management, the mere existence of physical dependency or tolerance is insufficient for addiction diagnosis according to WHO guidelines.[79]

In line with the South African Society of Anesthesiologists Acute Pain Guidelines, a patient has the right to be educated on effective pain management strategies.[36] Hence, clinicians must communicate with patients or parents before surgery, to ensure that they receive accurate information. Patients and parents should strive to eliminate these misunderstandings and should obtain education on suitable ways to assess pain as well as get counselling on appropriate administration of analgesic and modalities.

Resource Shortage

Since Africa is a low-income nation, there are limited resources available to dedicate to healthcare relative to developed countries, and the surgical infrastructure in particular is extremely insufficient.[80,81] Dell et al[82] compiled a descriptive analysis of the number of hospitals, hospital beds, and surgical wards in South Africa. The findings showed that for every 100,000 people, there was only one hospital, 186.64 hospital beds, 41.55 surgical beds, and 3.59 operating theatres. These figures significantly deviated from accepted global standards.[83] Africa bears an astonishing 25% of the worldwide burden of disease, but employs only 2% of the total healthcare force and totals a paltry 1% of global financial resources for healthcare. For instance, only 1.5% of Nigeria's national budget is allocated to health due to an overall lack of funding and resources.[84,85]

In developed countries, acetaminophen, non-steroidal anti-inflammatory drugs, and other adjuncts such as ultrasound-guided localized treatments are frequently used for postoperative analgesia. However, considering the lack of medications, the high cost of equipment and training, and the overburdened medical institutions, these practices are rarely exercised in sub-Saharan Africa.[86,87] Additionally, because of the high prevalence of cancer, AIDS, and other infectious diseases in Africa, national resources are being diverted away from therapies like postoperative pain management, toward the prevention and treatment of those diseases.

It is generally accepted that surgeons and anesthesiologists hold the majority of the responsibility for postoperative pain management.[7] The Lancet Commission on Global Surgery has set a target concentration of surgeons, anesthesiologists, and obstetricians (SAO) of 20 per 100,000 people to fulfill these demands. However, Kenya for example now has 1.9 providers per 100,000 residents, around 40 times lower than the SAO density in the United States, and just 0.44 anesthesiologists per 100,000 residents. Similarly, in contrast to more than 30 general surgeons per 100,00 people in the UK, there are only 1.78 general surgeons and 1.6 anesthesiologists per 100,000 inhabitants in South Africa.[88,89]

Inadequate staffing, huge workload, and heavy burden reduce the time spent by medical staff with their patients, and as a result, postoperative pain is not identified in time to be handled adequately.[90,91] Therefore, if Africa is genuinely interested in increasing its medical and surgical capabilities in the future, a significant financial and educational investment should be made to attract physicians into the disciplines of surgery and anesthesiology. For this issue to be permanently resolved, further time, effort, and research should be dedicated to understanding and correcting the root causes of this problem.

Medicine Shortage and Restriction

Morphine, the powerful opioid of choice, has long been listed on the World Health Organization's (WHO) model list of essential medications and is the most effective medication to treat moderate to severe pain, including extremely painful

postoperative side effects.[92,93] However, Africa has the lowest percentage of consumption of opiates, not just solely morphine, specifically Ethiopia where opiate intake per person is almost zero.[94–96] The primary causes for this are the staggering medication costs and significant national burden. The average cost of a 30-day opioid prescription (for all opioid varieties) was found to be $53 CDN in developed countries, however the cost in low- and middle-income countries was $112, which was higher than the typical family income.[86]

The use of opioids is governed by stringent regulations, leading to only about 1% of the opioids used worldwide being distributed to low-income countries.[97–99] Due to this, Africa in particular lacks sufficient effective medications to treat moderate to severe postoperative pain. However, research conducted recently has revealed that the consumption of both prescription and over-The-counter opioids has grown in several African nations, particularly South Africa both at the hospital and community levels.[100] Although the World Health Organization and the International Narcotics Control Board recommend that all patients with moderate to severe pain have access to opioids, South Africa's health and substance use treatment systems are insufficiently equipped to deal with the opioid pandemic.[101] In order to prevent drug abuse and while still effectively treating patients' postoperative pain, the relevant departments must maintain a difficult balance between the usage and restriction of opioids.

Relevant research had demonstrated that tramadol, rather than other more powerful opioid medications, can also have some desirable postoperative analgesic effects but with fewer side effects.[102–104] The Royal College of Anesthetists claims that 67 mg of tramadol offers the same analgesic effective as 10 mg of morphine.[105] Consequently, tramadol is often utilized in low- and middle-income nations.[104] However, the United National Office on Drug and Crime raised the alarm in its annual World Drug Report, stating "… about addiction to tramadol, rates of which are soaring in parts of Africa. This puts further strain on already overburdened healthcare systems".[51]

In recent years, studies on ketamine's usage as an analgesic have become increasingly popular. Numerous studies have demonstrated that using ketamine immediately following surgery can delay the time when initial postoperative analgesia is requested and can decrease the use of morphine, tramadol, and other opioids.[106–108] In addition, the price of ketamine is significantly lower in Africa, where a 500-mg vial of ketamine costs $4 in Rwanda, compared to $40 in Canada. Lastly, severe hemodynamic disorders rarely occur with ketamine, and as a result, ketamine might be considered for managing postoperative discomfort.[89,109] However, one study revealed a South African ketamine shortage and noted that alternative treatments proved challenging, since that required difficult judgments to be made on which patient populations would be given priority for a medication in short supply.[110] Overall, the occurrence of postoperative pain in Africa may be worsened by the fact that there is currently a lack of medicine that prevents severe pain. In light of this, it is still necessary to find powerful, effective medications that can consistently be obtained in sufficient quantities.

Conclusion

In Africa, medical workers lack adequate assessment and sufficient knowledge of postoperative pain, patients and parents have a misconception of postoperative pain, and the medical system lacks sufficient resources, medical staff, medications, and equipment. These factors contribute to insufficient postoperative pain management in Africa, which makes it difficult to guarantee the local population's health. We should be aware that reducing the occurrence of postoperative pain is equivalent to improving patient outcomes. The international community is making efforts to improve the quality of medical systems and pain management in Africa including training personnel and providing drugs and equipment. For example, international organizations dispatch medical treatment teams to Africa regularly, giving lectures to local medical personnel, and providing free medical services to local people. The Non-governmental Organization (NGO) and the private sector provide budgetary investments in medical research.[111] As an NGO, the African Palliative Care Association is working to promote and support the integration of palliative care, including pain and symptom management, into health systems throughout Africa.[112] While the short-term work and personnel training can play a vital role, it is still difficult to meet the overall quality control standards long-term for pain management. Meanwhile, the supplementation of medicine and equipment can easily be impacted by transportation factors, resulting in significant shortages. Additionally, the climate in Africa is humid and hot which increases some machines rates of failure, and there is a lack of maintenance personnel and necessary parts for repairs.

Analyzing and understanding the causes of inadequate postoperative pain management can ultimately generate a recommendations for future actions that will significantly enhance treatments. Implementing real solutions to improve the quality of pain management in Africa will aid in decreasing the physical and psychological trauma that patients experience after surgery, and will improve their overall quality of life.

Abbreviations

NRS, Numerical Rating Scale; NSAIDs, non-steroidal anti-inflammatory medications; VAS, Visual Analog Scale; MPQ, McGill Pain Questionnaire; BPI, Brief Pain Inventory; PCA, patient-controlled analgesia; SAO, surgeons, anesthesiologists, and obstetricians; NIPS, Neonatal/Infant pain assessment tools; FLACC, Face, Legs, Activity, Cry, Consolability scale; FPS-R, Face Pain Scale-Revised; WBFPRS, Wong-Baker FACES Pain Rating Scale; WHO, the World Health Organization; NGO, Non-governmental Organization.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Disclosure

The authors report no conflicts of interest in this work.

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