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Integrating Clinical Officers into Primary Healthcare Delivery in Kenya: Challenges, Innovations, and Future Directions

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ABSTRACT

This narrative review delves into the pivotal role of Clinical Officers (COs) within Kenya's health system, with a particular focus on their integration into primary healthcare delivery. It traces the historical development of COs, examines their training and regulatory frameworks, and addresses the challenges and innovations in their practice. COs are central to improving healthcare accessibility and quality, especially in rural and underserved areas. However, they face significant challenges, including limited career advancement, high workloads, and inadequate resources. Ethical and professional issues also arise from their close collaboration with doctors and nurses, leading to occasional role conflicts.

The review highlights successful models from countries like Uganda, Ethiopia, and India, which underscore the importance of sound training, ongoing professional development, and the adoption of digital health technologies in enhancing CO performance. These models offer valuable insights for Kenya, suggesting that policy reforms, improved professional recognition, and career advancement opportunities are essential for optimizing the impact of COs. With these measures, COs can continue to play a crucial role in meeting Kenya's healthcare needs, particularly in remote and underserved regions, thereby contributing significantly to the overall improvement of the nation's health outcomes.

Keywords: Clinical Officers, primary healthcare, Kenya, healthcare accessibility, training, regulatory frameworks, role conflicts, task-shifting, digital health technologies, policy reforms, rural healthcare, professional development.

INTRODUCTION

Overview of the Kenyan health system

In Kenya, the care system boasts several levels. These levels are “apexed’ by the Ministry of Health. What follows, thereafter, is the countrywide, regional, or county and community-based healthcare facilities (HCFs) in that cascading order. The health ministry employs the trickle-down approach in its oversight and policy implementation [1]. More so, the care process branches into primary health care, then secondary and tertiary services, tasked with the treatment and prevention of diseases nationwide. That is enabled by a supportive workforce, consisting of doctors, health care officers like Clinical Officers (COs), nursing practitioners, and social or community workers. However, research conducted by Mbindyo in 2013 and Kivuli in 2016 [1][2] established a disproportionate distribution of this workforce in the country, with urban areas getting the lion’s share compared to rural areas. This trend is what the WHO in 2018 echoes, thereby proving why the country is still struggling to deliver quality care services. It boils down to the need to increase the workforce to meet the country’s care needs, especially in rural areas [3], [4]. That is where COs come in handy, as their training is tailored to meet both rural and urban demands of care on all three levels.

For the Kenyan healthcare system, as noted earlier, there is a lot to cover based on its multi-structured layout. However, for the scope of this paper, the lens is on the role of COs; their imminent integration into primary care throughout the country; and the possibilities, difficulties, and solutions [5]. Also, the advent of multifaceted continuous reformations, evidenced by the recent transition from the traditional National Hospital Insurance Fund (NHIF) to the Social Health Insurance Fund (SHIF), as covered by Nungo [6], places more emphasis on the importance of COs in the current and future care delivery in Kenya. Notwithstanding, the country's healthcare system is still struggling with disparities in the provision of care services in rural and urban areas, coupled with shortages of healthcare professionals and inadequate financial resources to meet the ever-increasing medical demands. Recent findings by the World Bank in 2022 showed that the [7], [8] Kenyan government is yet to meet the minimum budgetary requirements of a stable healthcare system, thus proving the existential workforce disparities and low quality of services in public and private medical institutions [9]–[11]. It calls for combined efforts, with the integration of COs as the key part, to address the said issues at the primary level of care in the healthcare system.

Introduction to COs: Definition and scope of practice

From the broader healthcare perspective, COs have a vital role, especially in addressing the medical workforce shortage in Kenya. They are a crucial human resource workforce for delivering healthcare in the country's remote areas and are primarily employed in HCFs [1]. Since the 1960s, COs have been trained in various functions, such as diagnosing and treating diseases or offering simple surgeries, due to the shortage of medical doctors [12]–[14]. Kenyan COs are crucial health workers trained through a three-year diploma program and compulsory internship to practice independently in various environments. The scope of practice for COs is very general and covers preventive, curative, and rehabilitative health care services [15], [16]. That is why they can prescribe medications, analyse and interpret data from numerous tests, and perform urgent treatment. COs in developing countries like Kenya, especially in rural parts, are increasingly responsible for attending to the sick due to shortages of physicians pointed out earlier [17]. This makes them critical in meeting healthcare needs in areas with inadequate access to HCFs [18]. However, integrating COs as healthcare providers has certain risks or limitations. These are the hard-core ethical concerns arising from the working professional concerns of identity, promotion, and practice borders that appear to encroach on nursing and physician professions in healthcare [17]. More so, such staff faces operational risks such as insufficient intraparty support, limited understudy opportunities, and "shelter lessens," which refers to limited access to resources for COs in workplaces [19]. Nevertheless, due to the challenges highlighted above, adding more COs to the provision of public health care has been a novelty. For instance, task-shifting measures have been applied to expand the responsibilities of COs and create employment in specialty careers and chronic diseases [19][20]. Moreover, they endeavour to build their capacity through their training and professional development with the support of international organisations going forward [21]. Therefore, the implications that come with the integration of COs can be viewed as having "plus points" in the development of Kenya's primary healthcare department. The country's Universal Health Care (UHC) vision requires accountability from policymakers, stakeholders, and healthcare institutions for this noble cause [22], [23].

Historical Context

Evolution of the Clinical Officer Role in Kenya

The careers of COs in Kenya have grown with the evolution of medical institutions since the 1960s. Initially, to address the severe scarcity of doctors, COs were prepared for many medical tasks, ranging from diagnosing diseases to treating patients and doing minor surgeries [24][1]. In the past years, they have evolved to take social responsibilities in disease control and treatment and disease prevention, health promotion, and administrative functions, including rehabilitation services, predominantly in rural and remote settings [25]. That explains why the reviews made by the Kenyan health policy reforms have stressed the importance of COs now and in the future. These reforms must embrace COs' valuable tools in delivering health services to increase their availability and competency, especially in underserved areas in the country [26]. For instance, changing from NHIF to SHIF stands as testimony to the government's readiness to enhance the function of COs in delivering primary healthcare services [6], [27]. This health finance policy puts COs at the forefront of care provision in both urban and rural parts of Kenya. It accompanies Kenya's overall vision of UHC by

improving the stretch and quality of medical services mainly regarding the primary healthcare setting [28]. In response to the increase in health needs, COs have been made to practice independently to make decisions on the healthcare plans for their patients. This increased autonomy is part of the task-shifting measures, which means that COs can handle tasks conventionally performed by physicians, hence cushioning the effects of the shortage of physicians [29]. It comes with creating clarity between cases that can or cannot be handled by COs, thereby defining their roles clearly. The definition means that the roles of COs will not be mixed with those of physicians or social workers. Thus, COs have evolved as an essential component of the health human resource in Kenya, providing a vast input to the public and private sectors in the country's health care system.

Training and Educational Pathways for Clinical Officers

In line with the improved training and education of COs in Kenya, health needs have become more complex. The initial COs' training is a three-year diploma course that can be taken in many medical training establishments within the country, including but not limited to the Kenya Medical Training College (KMTC) [30], [31]. This program comprises preclinical studies that cover a broad range of courses in basic medical sciences, health systems, and clinical clerkship, a practical entire course in health systems, and a mandatory clinical internship where the trainees get hands-on experience in diverse HCFs [24]. Over the last few years, some efforts have been made to improve the educational quality of COs. These programs have offered COs the chance to gain post-basic education in specialised courses like anaesthesia, ophthalmology, or paediatrics to enhance and develop the capabilities of COs in handling more complicated medical situations or conditions to promote positive patient outcomes and the scope of practice [1], [24], [32]. Many medical disciplines are imparted in their curricula to equip them for near-virtual clinical situations. Dedication to the on-going continuum of one's professional education is also highly valued; the possibilities to advance one's training and acquire focused specialisation are encouraged by governmental and international health-related organisations [33]. That defines the path to creating a robust COs workforce across the country. Even so, it is prudent to comprehend that COs are still confronted with several challenges in their professional development, even with the above progress. Factors like restricted resource availability, lack of proper care, and professional role instability must be further addressed going forward [1]. Addressing these challenges requires policy changes, improved funding, and integrated operations between healthcare institutions and training bodies. To sum up, changes and requirements for COs in Kenya demonstrate the development and 'adaptiveness' of the chosen path to meet the needs of the country's healthcare system. Therefore, with constant reinforcement and growth, COs will remain relevant in strategic healthcare positions in Kenya, especially in enhancing UHC and health provision for the disadvantaged regions in the country [34]–[36].

Regulatory and Policy Frameworks

Current regulations governing Clinical Officers

Regulation and Practice of COs in Kenya are under the Clinical Officers Council or COC, which is an Act of Parliament regulating the training, registration, and licensing in line with COs' (Training Registration and Licensing) Act Cap 260 of 1988 as amended in 2017. Through this body, the training, registration, and licensing of the beneficiaries who complete the course as qualified COs are overseen to ensure they possess the standard level of practice [37]. To operate professionally within a legal capacity, COs are required to be registered and licensed by the COC. In terms of registration, those wishing to practice in the country have to undergo an assessment that recognises their academic background, training, and experience, which mandates that one has to hold an accredited diploma or degree in a relevant field and must also have successfully undertaken an internship [24], [37]. One of the licensing criteria is that COs must conform to the mandatory COC standards, where they need to amass specific amounts of points from various training courses and seminars [33]. In addition to the knowledge above, COs are expected to follow a specific code of conduct and professional ethics for patients, colleagues, and the public. This code focuses on the moral and professional standards in the four core principles, namely, integrity, competence, confidentiality, and accountability [38]. The regulatory framework also lays down the nature of COs' services in health promotion or disease prevention and control at individual and community levels, as well as curative care and health rehabilitation services. COs can diagnose most diseases, give medicines, and perform simple surgical operations as pointed

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out earlier. However, if they cannot control the situation, they must recommend the patient to a higher-level institution or a specialist [39]–[41].

Policy Changes Over the Years and Their Impact On Practice

Some of the policy reforms include the following, over the years, to improve the position and efficiency of COs in health care facilities in Kenya. All these changes have had fundamental implications for their practice and the country's health care system.

Amendment of the Clinical Officers Act (2017)

The revision of the Clinical Officers (Training, Registration, and Licensing) Act was another critical policy change that placed the regulatory landscape for COs on a different footing beginning in 2017. It reinforced the COC's function and implemented enhanced criteria for learning or career programs and practicing professionals [42]. This amendment intended to increase the quality of healthcare benefits from COs and guarantee that only qualified and competent personnel were licensed [24], [37]. This has had a positive effect regarding the restructuring of the current regulations and standards that have increased professionalism in the medical marketplace. Thus, the subsequent focus in the formal training of COs by offering diploma and degree programs offers a focus on their training. These programs have allowed COs to have at least a little specialisation in different specialties in medicine such as anaesthesia, ophthalmology, and paediatrics [24], [37]. In this regard, a given specialisation has bolstered the potentiality of COs to handle complex medical conditions, thus improving patients' general health conditions and the efficient prevention of the congestion of the higher-level HCFs.

Task-shifting Policies

Task-shifting, which the WHO endorses, has been adopted in the Kenyan health sector to attain healthier human resources as labour mobility augments the capability of one employee while reducing the workload of the other or the volume of work the organisation can handle. This policy has shifted the role of COs immensely as they are eligible to practice other functions that are usually for doctors, such as surgery and care for chronic diseases [43], [44]. The impact has been monumental, particularly in rural and less developed areas, where physical touch with healthcare personnel is still a dream [29]. Such shifting, therefore, has raised the accessibility of the services offered by COs besides decreasing the loads on the doctors.

UHC Initiatives

In the case of Kenya, the need for UHC has led to the formulation and implementation of policies that enhance investment in primary health care delivery that requires COs. It has been established that the integration of healthcare professions like COs into UHC is poised to staff and provide new-age medical care services to support the goals of global health [6], [27]. This policy has implemented and supported preventive and promotive health services in line with the overall practice of COs on the world stage, as mentioned earlier by the World Bank. The net result has been improving the general policy and practice of health care, particularly in the domain of preventive health, as well as in the management of chronic health conditions.

CPD Requirement

Another of the policy changes made is that the COC has formulated and introduced mandatory continuing professional development (CPD) terms for COs. This policy assumes that COs are up-to-date based on present findings in medical science and practice [33]. COs have regarded the two ideas of continuing education and lifelong learning as helpful, which has enhanced the quality of healthcare services offered in HCFs and their general development in the medical field.

Health Financing Reforms

A drastic change of policy direction in health financing is evident when one goes from the NHIF to the SHIF. This reform is believed to provide the Kenyan people with proper health insurance, and, in addition, cover COs through the receipt of relative retribution, and effective and satisfactory working conditions [45]. The policy

demands COs to be paid enough, as well as supported to be an asset in the health sector now and in the future [6], [27]. Hence, the evidence indicates that the paradigm of organising the practice of COs in Kenya has evolved in terms of its regulatory and policy environment. It has also significantly improved the training methods, professional development, and practice of COs. Notably, the advancements of Kenya's UHC agenda and the enhancement of its healthcare systems can only be complete with the involvement of COs in the country, which boasts of sound regulatory and policy frameworks in place.

Role in Primary Healthcare Delivery

Clinical Officers as Primary Care Providers

In Kenya, COs are strategic in providing quality primary health care. First-line caregivers are expected to carry out numerous tasks, including diagnosing and treating ailments, performing minor surgeries, administering care to prevailing diseases, and delivering preventive and community health services. Their education, making them undergo a three-year diploma or degree program followed by an obligatory internship, prepares them for the variety of health challenges that people of all ages may have and the different medical conditions they may face [46], [47][24]. COs play a significant role in health care delivery in Kenya, especially in present-day scenarios where there is a scarcity of physicians but high needs and demands for medical care. It is important to understand that they are, therefore, the initial contact for patients requiring medical attention, particularly in enterprise-level primary healthcare centres. They are also responsible for managing outpatient services, emergency treatment, maternal and child health, and other immunisation programs and health education [48]. One of the key advantages of utilising COs as primary care providers is that they can boast of providing the population with affordable and convenient healthcare services. They are nowadays educated to practice in well-equipped contexts, as well as centres with scarce facilities. Thus, they are very useful in tackling the issues of inadequate healthcare systems, something they have proven over time. That is why the task-shifting policies have evolved to give COs the authority to execute roles that have hitherto been performed by physicians, making their contribution to primary care further valuable [29], [49]. In summation, they remain a crucial component of providing primary healthcare solutions throughout Kenya. They undergo extensive training, are versatile, and are committed to duty, thus proving their integration in the primary care sector in Kenya.

Specific Contributions to Rural and Underserved Areas

COs are most important for zonal areas where patients are in far-off villages where they cannot afford to traverse long distances or lack enough money to pay for various health care services. In these regions, COs provide health care, which is the first, and, in many instances, solitary health care offered [48]. Therefore, they enable health care to be delivered to unreachable population groups. Moreover, Community Health Centre (CHC) hospitals, having a team of COs, serve the key purpose of delivering preventive and primary care to patients currently, including those with chronic diseases who must attend frequent medical appointments. In such a framework, COs deliver multiple care services that play an important role in improving the population's overall health. Some of their responsibilities include offering antenatal and postnatal care, diagnosing and treating minor infections and some chronic illnesses, doing minor surgeries, and overseeing immunisation programs. They also have an important informative function to prevent individuals from getting sick, as they explain how to avoid illnesses and live a healthy life [50]–[52]. That is a clear secondary and tertiary level of care delivery. As directly involved in the medical practice, COs also engage in health promotion and education; they conduct lectures on proper nutrition, hygiene, and sanitation, leading to a health-informed community. It means that they may also work with other caregivers and public health officers to counteract broad health threats and extend community health programs. Moreover, for their multitasking roles, COs supervise and coordinate the affairs of the CHC, procure and supply essential medicines and materials, and monitor the patient flow and interventions. It is proof that they predispose a proactive function for social determinants related to health, advocating for community resources and helping patients connect with needed services at all levels of care. The influence of COs goes beyond the health care delivery in these domains by supporting clients. They support healthcare systems in the bigger picture by partnering and working with community providers, participating in population health development, and holding management and administrator positions. This top-down approach, therefore, goes a long way in enhancing the health systems to

deliver quality healthcare services effectively in rural areas, thus enhancing the health of communities [48]. It explains the current COs' partnership with public health epidemiologists to understand and rectify the healthcare issues of rural residents. They jointly contribute to the health of the target communities and enhance the health status of these regions. Also, through enhanced cooperation with other healthcare stakeholders, COs are responsible for promoting policy advocacy on health policy change that impacts the well-being of rural inhabitants positively. They are inclined to ensure the members of the community engage in discussions that yield or determine matters that relate to their health; thus, they act as the bridge between the community and the authorities, thereby calling for their increased integration.

Case Studies Showcasing Their Impact on Community Health

The detrimental effects that medical strikes have on the community's health at this point show how important COs are to the health sector. A noteworthy illustration is the case study of Kilifi County, where the lengthy 2017 strike had a significant impact on health services and the overall health status of the populace in numerous counties [53], [54]. Protesters and others expressed their dissatisfaction with low pay and unfavourable working conditions, which have been made worse by political upheaval and an increasing trend toward union formation. More preventive actions were required because of the health system's reactive response and lack of planning for the consequences of the strike. Nevertheless, despite their complaints, COs were essential to the strike and may have even provided essential services during the government standoff.

Kenyans greatly benefit from the work of COs, as evidenced by the numerous studies conducted on the effect of strikes on HCF mortality. Kaguthi in 2020 looked at care services in hospitals in Kijabe, Kenyatta, Mbagathi, and Siaya during the health workers' strike that took place between 2016 and 2018 in another case study conducted nationally. They found that patient mortality rates decreased at hospitals where doctors and nurses were on strike (the rationale being that patients fled owing to a lack of services); they concluded that initiatives to expand healthcare access improved the standard of care whenever possible. Because of duty shifting and service limitations resulting from COs' absence, infections were more common as a result of their strikes. It explains why, in primary care settings where they are frequently the initial point of contact for communities in Kenya, COs are so important to maintaining the continuity of patient care [55][56]. To sustain the healthcare system and enhance population health in Kenya, tangible steps must be taken to enhance the working environment, resolve concerns about strikes, and guarantee the best possible use of equipment.

The case point presented here is that county offices (COs) in Kenya are concerned about enhancing community health, particularly in light of the new constitution's decentralised structure of governance, which places the majority of the human resources for healthcare under county governments. When analysing human resource management, the efficiency with which county health systems may run their operations has an impact on the management's performance [57]. To counter current and future strikes, stakeholders need to address COs' persisting grievances such as inadequate funding, restrictive human resources, and no medical specialists, which means that healthcare quality is poor. These problems are further aggravated by imbalanced staff distribution and payment delays, resulting in demotivation and consequently, a negative impact on patients' healthcare outcomes as observed by Bakibinga in 2020. It calls for Kenya to provide more funding and optimise health policing to deal with high health costs, delayed salaries, and staff organisation issues, hence improving COs' integration in the country's healthcare system.

Challenges Faced by Clinical Officers

Professional Recognition and Career Advancement

A major issue that has received much attention and raised concern frequently in connection with the employment of COs in Kenya is the issue of professional development. Thus, the responsibilities of COs are to afford high-quality care in a healthcare institution; at the same time, they are consistently underpaid and often even treated disrespectfully within the medical field. This need for recognition is based on traditional hierarchical employment in the line of healthcare practice establishment with physicians and specialists occupying supremacy [1]. COs have been observed to have challenges in career paths, particularly in terms of mode of employment. The career ladder is less evident and more flexible than it is for physicians in most cases. Thus, the attempts to provide more progressive training offering additional specialisations meet specific

demands, but these opportunities remain limited and open to competition. This situation can cause dissatisfaction and lack of motivation among COs and influence their performance and continuation within the healthcare pyramid [55]. Furthermore, there is a conflict of interest in the access to professional development. To advance to the next level of education, such as enhanced training, additional certification courses, and specialisation in their expertise, they might need better financial resources, limited enrolment in training programs, and institutional endorsement. This effectively confines them in terms of the competence and knowledge they can display, consequently impacting the quality of care they give [13], [14], [29]. There needs to be accreditation of the progress of COs to the advanced levels, effectively contributing to healthcare delivery. This is made worse because the policies regulating COs are relatively decentralised – these policies have vital differences depending on the county or region in Kenya. Thus, COs have several challenges in practicing independently and competing with other healthcare professionals, restricting job progression. Moreover, Kaguthi et al. (2020) also demonstrated how the strike of healthcare workers, including COs, affects mortality in HCFs in Kenya. However, this can be argued as a negative indicator showing how important the role played by COs in the health sector is to warrant better working conditions and career status to increase their morale and commitment to patients' care.

Workload and Resource Constraints

COs in Kenyan healthcare organisations practice in facilities with high patient turnover and restricted HCFs and technologies. It is exceptionally experienced in rural and less developed regions where they are the first and sometimes the only caregivers [58]. Such a patient-to-CO ratio will likely result in CO burnout or stress, fatigue, or diminished quality of healthcare services. Usually, resources in many HCFs have reached critical levels in many ways, which makes the conditions of COs challenging, coupled with the lack of supply, poor infrastructure, and lack of diagnostic equipment. Such drawbacks complicate the provision of adequate care and the treatment of various diseases in their present forms. For instance, a shortage of critical drugs and equipment hampers the ability of COs to provide efficient treatment. Instead, they are likely to resort to less efficient treatment methods or refer the patient to other facilities that may be far from their location [56], [57]. Further, the lack of task clarity in many administrative and bureaucratic activities may strain COs and reduce the time spent carrying out clinical tasks. Moreover, they frequently have to multitask and perform secretarial, clerical, and community relations to support staff tasks that overwhelm them in addition to diluting their available time and attention for direct patient care [2], [59]. COs are frequently overworked and asked to work the so-called ‘back-to-back shifts,' being exposed to different types of patients with simple health complaints to severe complications on the same day. Yet such workloads overwhelm the health workforce with several negative implications on their physical and mental well-being, as well as the quality of care offered to the patients [1], [57]. The move toward decentralisation in Kenya's healthcare sector also needs help. While the devolved system intended to enhance delivery access and focus of healthcare services, thereby bridging the inequality in healthcare service provision, it has also posed some inequalities concerning the distribution and utilisation of healthcare resources and assets at the county level, affecting COs working under different county's structure.

Ethical and Professional Boundaries

One concern related to social workers’ job responsibilities and conflicts of interest is the fact that ethical and professional boundary issues are another formidable obstacle faced by COs. Due to the adequacy of practice areas, COs may need to help rationalise tasks or roles expected of physicians or specialists. This can create professional rivalry and ethical conflicts, where they must address cases beyond their educational programs [18], [49]. One concern regarding the ethical implications is the possibility that COs may, at some point, cross their professional boundaries by providing more care to the patients in light of the looming shortage of physicians. This can lead to some situations wherein COs conduct or develop evidential actions beyond their training level; this is dangerous to patient safety and expensive for malpractice insurance [53]. Moreover, the confusion with hierarchical roles between COs, the nurses, and the physicians leads to role conflicts and less effective teamwork. Inter-professional collaboration is crucial for delivering safe patient care and using practical teamwork approaches due to complex healthcare needs and professional supervision challenges, but role confusion may affect this collaboration. This is especially the case in areas of limited resources because when clarifying assignments and duties of personnel, it is necessary to avoid overlaps that may contribute to

inefficient use of resources [48]. Lastly, the ethical issues with the rights and wrongs of decisions over resource management and priorities or treatment and patient care priorities are other areas of moral concern affecting the clinical practice of COs. Since resources are often scarce in COs-assigned regions, the decision to manage the available medical supplies and services becomes problematic, having questioned the moral integrity of COs. When presenting the nature of CO responsibilities, one can identify several scenarios where the provision of care might be compromised by resource availability. This often results in moral stress and professional burnout and shows the importance of enhancing support mechanisms and having clear guidance for COs on how to tackle these ethical dilemmas [48], [51], [52], [54]. In addition, adopting digital health systems in public hospitals provides a clue that, despite technology helping enhance the delivery of services, the absence of due preparation and mentoring of COs in availing of these technologies creates ethical and operational issues [57]. Mitigating these challenges demands cooperation from policymakers, healthcare organisations, and professional associations to improve the rectification, recognition, and promotion of COs. In this way, it is possible to enhance the use of identified critical positions by the healthcare system and increase the focus on COs and their essential function in providing sufficient healthcare to the population, especially those residents in rural areas.

Innovations and Best Practices

Successful Models of CO Integration in Healthcare Systems

Many countries have incorporated other mid-level health practitioners into their healthcare systems. These models offer lessons on best practices, which, if emulated, are poised to reinforce the position and performance of COs in Kenya. First, Uganda has understudied the health workers known as COs, who are vital to the healthcare system and the rural sector. The Ugandan task-shifting model focuses on the fact that due to the scarcity of physicians, COs perform tasks that traditionally fall under the physicians' domain [60]. This has been made possible through sufficient training and viable policies and regulations that have endowed COs with the control of primary and secondary facilities in delivering health services. Interestingly, this specific model has improved not only the range of options for patients but also the availability of health outcomes in the facilities of the previously understaffed areas. Second, is another type of model of primary health care in Ethiopia. All-in-one paraprofessionals for primary healthcare in an entire community are referred to as Health Extension Workers or HEWs. HEWs are professional and perform important and initial care services, which are based in the community, and are oriented to prevent, promote, and cure in a very brief term [61]. The previous research has revealed that this program has improved the intended objectives of the Ministry of Health geared at reducing maternal mortality, and child health and improving healthcare access in rural regions [61][62], [63]. This model explains that promptness to build an efficient facility for delivering health care to the community with a support system is important and designing a professional development program for mid-level health personnel in Ethiopia is significant. Finally, India has evolved the concept of a cluster of Health Officers, which is known as CHO under the auspiciousness of Ayushman Bharat to improve the primary healthcare facility. CHOs are expected to perform first- and second-line managers, all doctors, and nurses by enhancing primary education while also being assumed to be equipped to screen and treat diseases and minor ailments [64]. This model has adequate training of CHOs and their access to further training necessary to be efficient in the tasks. The initiative has been observed to have brought positive changes to managing healthcare services in regions that are challenging to reach and lack adequate HCFs.

Training and Continuous Professional Development Initiatives

For COs in Kenya to operate at their best, some fundamental needs include recruitment for CPD and other training initiatives. The initiatives that have been implemented in the recent past have aimed at improving skills and knowledge content, especially in meeting the increasing healthcare requirements. First, there are advanced diploma programs; Kenya has developed courses of study like the advanced diploma programs in ophthalmology, orthopaedics, and anaesthesia among COs. These programs are designed to train COs to manage more complicated medical cases, relieving the pressures usually experienced by the higher hierarchy of HCFs and enhancing patient's well-being [42]. Second, with generic CPD being streamlined through online and blended learning models, COs have been offered a viable means for developing their proficiencies. Some of these institutions include KMTC, where learners can undertake courses online in clinical practice, public

health, healthcare management, and many more; this offers COs an opportunity to upgrade their skills from the workplace without necessarily coming to class [65][66]. Finally, using the university's policies in organisational capacity building and other cooperative relations with international institutions and organisations has enabled knowledge sharing and the use of best practices [66]. For instance, collaborations with other institutions enable COs to undertake their higher education and research, enhancing their growth and capacity.

Technological and Organisational Innovations

There is rapid advancement in technology and organisation practices in healthcare delivery in Kenya, and the promotion of healthcare COs provides them with technological tools and systems to enhance operations. Regarding the realisation of high-level digital solutions such as EMRs and telemedicine, the provision of COs' care has enhanced proficiency and productivity. While these two have the disadvantage of improper record keeping by nurses, they have fewer written documents, and they play a great role in the smooth flow of care. The use of telecommunication in the delivery of medical services ensures that COs can effectively deal with complicated patients offline, especially in rural or less-endowed provinces [67]. As well, mobile health applications have also been designed to assist COs in their roles and duties. These include clinical references, diagnosis tools, and patient care technologies. Classified among these applications are the following: For instance, the mUzima mobile app assists COs in keeping electronic patient files and appointment calendars and monitors patients outside the clinic, enhancing COs' efficiency in patient nursing [68]. Additionally, facility-based measures and the creation of new roles and care delivery models continue to be important in improving the application of COs. It means exchanging one medical task with another and enabling COs to assume functions that have been performed only by doctors. Apart from addressing the challenge of shortage of physicians, this model will also ensure that patients are attended to on time. COs assert that practices of integrated care approach facilitate care coordination among the medical practice players, including the nurse and doctors, to align toward a coherent care delivery framework.

Perspectives and Perceptions

Views from Patients, Communities, and Healthcare Professionals

Views and impressions of different stakeholders, such as individuals, society, and clinicians, regarding the roles and significance of COs in the Kenyan health system are critical. People, especially patients and community members, mostly have positive perceptions toward contract operators, especially in rural and isolated areas where they provide most healthcare services. For instance, an observation made in Nakuru County was that patients were much more satisfied with the services rendered by medical practitioners. They valued the services offered by the family planning program due to their cheap cost and easy access to care, where the service providers demonstrated a capacity to solve almost any presented health problem [69]. As well, communities have also reposed their confidence in COs they are more familiar with and always present. This trust is crucial, especially for exercising and promoting public health and other community-related health-related approaches. This was illustrated by Kilifi County, another case study, where findings stressed COs' role in improving community health, and reducing clients' long distances in search of medical care in urban facilities [18][33]. Alternatively, those who are involved in the healthcare industry have different perceptions toward COs. Their position is vital because they address gaps created by physician shortages. Still, at the same time, there are questions regarding the blurring of responsibilities and ensuing role confusion [18][33]. Most COs understand that they are operating in a developing field, and some physicians and nurses feel that lower-skilled COs are encroaching on professional niches, which creates tension in work teams. However, positive perception is also evident, mainly regarding the role of COs in implementing task-shifting programs, as noted earlier.

Comparative Analysis with Other Mid-Level Healthcare Providers Globally

Comparing these models, on-going education of the professionals, precise guidelines and definition of responsibilities, and integration of community-delivered healthcare are the critical factors that play an essential role in implementing enhanced CO practice. As with Uganda, Ethiopia, and India, there is nothing peculiar about the roles of current COs in Kenya, especially in reaching out to rural and other underserved

communities. However, the general roles and responsibilities acquired in training and CPD per Muthui in 2018 are effective good practices that Kenya can learn from the specific training and professional development seen in India and Ethiopia, as documented by Kotwani in 2021 and Tesfau in 2020, respectively. Expanding the preventive and promotive health services offered in COs training and roles already practiced in Ethiopia may increase community health improvement. Also, emulating what India is doing with common and standard training programs and practice development will help overcome the problems of professional recognition and career progression for COs encountered in Kenya. In summary, the country should embrace and adapt portions of the best practices from other nations to enhance the achievement of its long-term goals in the healthcare sector [54], [55], [62][70].

Future Directions

Recommendations for policy and practice

For the improvement of the role of COs in the country, it can be inferred from the analysis that several detailed policy and practice interventions need to be developed in Kenya, keeping in mind the experiences of other similar countries. Several detailed policy and practice interventions commit to practicing effective health regulation, which will involve preparing a sound policy offered by COs on the understanding of their roles and responsibilities. These changes should be reviewed routinely to capture dynamics in the healthcare field and accommodate factors such as task delegation and clinical focus. To support this, Uganda has pragmatic regulations that have favoured the smooth running of COs to do their intended functions, which has immensely supported health care delivery in rural areas [60]. First, there is enhancing training and professional development that calls for implementing comprehensive CO professional development, including postgraduate training, targeted education, and focused educational activities. This should also involve the possibility of allowing specialisation on specific diseases like non-infectious diseases, child and maternal health, and certain surgical operations, among others. Training and continuous education have been enhanced among the CHOs in India, so they are more competent and diligent in providing their services [64]. Second, there is a community-based healthcare initiative, whose policy recommendation involves enhancing community-focused healthcare endeavours for people by incorporating COs even further into such projects. This may comprise increasing the responsibilities of a CO in the scope of practice, where they explore how they can offer preventive care, health education, and outreach services. For the evidence, an excellent example of this is that HEWs have helped to drastically transform healthcare delivery through community healthcare in Ethiopia by offering preventive and promotive care [61]. Third, leveraging technology is another recommendation. It involves investing in and building up digitisation of daily work environments for COs with the help of health IT tools like EMRs and telemedicine applications [57]. The effective implementation of digital health systems in Kenyan public hospitals is the way to improve healthcare delivery.

Potential areas for further research

To further improve the service delivery of COs, several vital areas require additional research. The impact of specialisation requires examining the consequences of advanced specialisation training of COs in healthcare. This can involve knowing how specific training on professionalism like surgeons, anaesthesiologists, and non-communicable diseases can improve CO standards of practice. Some specialised training can enhance the role and the impact of COs in the countries and can be the focus of future career developments [69]. Second, the cost-effectiveness of task-shifting calls for conducting analyses of the cost implications of shifting tasks by COs to supplement or deputise physicians in specific vital tasks. Task shifting is beneficial in solving physician shortages and increasing access to health care, but the economic implications of the task must be well understood for future utilisation [18]. Third, patient outcomes in digital health are poised to identify the advantages and potential disadvantages of implementing digital health technologies, including EMRs, and subsequently examine their effects on patients' outcomes and the efficiency of COs. The study by Muinga et al. (2020) posited that digital health systems hold much potential. However, there needs to be more empirical evidence on how they have supplemented or transformed healthcare delivery and patient results in Kenya [67].

Strategies to Enhance the Role of Clinical Officers in the Health System

Several strategic initiatives can be undertaken to enhance the impact of COs in Kenya's health system, like expanding training programs. Policymakers in the medical industry should also adopt end-to-end training programs for their COs that cater to basic and advanced medical education. They should preferably be developed in consultation with international organisations to capture the best practices worldwide. The second strategy is to mitigate the challenge of workload and resources by staffing enough personnel, availing all essential tools like medical equipment, and enhancing infrastructure in HCFs, among others, where COs work. Studies have revealed a gap that needs to be filled by improving working conditions to build the efficiency of COs [55]. The third strategy of strengthening career pathways entails organisational career advancement, which is a crucial driver of motivation and job satisfaction; therefore, human resources must develop clear promotion channels for COs, educational advancement opportunities, and career-track specialisation. It will also enhance the understanding of working conditions, raising staff morale and reducing turnover. One of the critical barriers to implementing effective CO strategies has been the non-recognition and absence of professional promotions for managers in this field [71]. Fourth, enhancing community engagement as another strategy encompasses more campaigns to positively involve community members in society and address negative attitudes toward the involvement of COs. This encompasses general health promotion in the population through health promotion activities and implementation by contracted-out coordinators (COs). The level of trust individuals place in that Community outlet determines the outcome of healthcare activities, as evidenced in several community-based projects [61], [64]. The final and most important strategy is leveraging technology; it requires persistence with resources that have already been endorsed and consider leveraging digital health technologies like EMRs and m-health applications for use by COs in their clinical practice. Most of the above-highlighted key issues indicate that integrating digital health systems positively impacts healthcare delivery as it enhances efficiency and accuracy [67]. According to these recommendations and strategies, Kenya should bolster the contribution of COs, strengthen healthcare delivery, and, overall, attain better population health.

CONCLUSION

Summary of key findings

Appointment of COs in Kenya dates back to the 1960s, and ever since, they have changed dramatically. Initially, they were developed with a shortage of medical doctors in mind, and they have since gained wide recognition as vital members of healthcare teams, particularly in rural and hard-to-fill settings. The qualifications they attain through training and education emulate them for various courses of medical practices and tasks, including the diagnosis, treatment, and minor surgery internships, which are mandatory after completing a three-year diploma program. Due to the various COs in Kenya, the regulatory environment has experienced significant transformations over time. Today, there are existing general standards instrumented by the COC that delimit the field of activity for COs and the high level of their professional performance. The understanding of the changes in COs' tasks is as follows: These changes, like the task-shifting initiatives, have helped extend the roles attributed to COs to include responsibilities that were once performed by doctors, ensuring better access to quality health care. COs work hand in hand with government, policymakers, and other stakeholders in the delivery of primary health care in Kenya. They play a central role in delivering primary healthcare, particularly in the rural and hard-to-reach areas home to a large proportion of the population in developing countries, focusing on maternal and child health, non-communicable diseases, and emergencies. The case of COs in different areas like Nakuru and Kilifi showcases how the community's overall health has been enhanced because of proper and timely healthcare service delivery. However, working as a critical yet often unrecognised professional cadre, COs endure several obstacles, such as misconduct within their career advancement, high workload, and inadequate resource allocation. Another essential aspect remains ethical and professional requirements since COs work closely with doctors and nurses, interfering with the implementation of tasks typically entrusted to other professionals. Indeed, solving these problems is crucial to achieving the best scenarios for developing COs in the healthcare system. More so, COs in education in other countries, including Uganda, Ethiopia, and India, have already been implemented successfully, and these models are relevant to Kenya's case. These models highlight the need for sound orientation and training procedures, on-going practice sessions, and, more specifically, defined guidelines within the framework of laws, rules, and standards. Moreover, other technological advancements, including health systems and telemedicine, can help COs work better and gain significantly improved performance. Alternatively, the

opinions of the patients, community, and healthcare workers also support the role of COs in Kenya's comprehensive healthcare system. Patients and communities have relatively good attitudes and perceptions of COs, but perceptions of the healthcare profession are mixed, with some worried about role conflicts among COs. The decision to compare the operations of mid-level healthcare providers in other countries and make recommendations on how Kenya can borrow something from different countries to improve the position of COs explored the relative potentialities of COs positively in the context of Kenya.

Final thoughts on the future of Clinical Officers in Kenya

The future of COs in Kenya looks promising, provided that the challenges they face are addressed through comprehensive policy and practice reforms. The following are critical areas for future focus: Enhancing professional recognition and career advancement; future career ladder and educational advancement, which are important determinants for the sustainability of many COs, must be established. This can contribute to decision-making criteria linked to professional recognition and job satisfaction concerns. Another thought is to urge concerned parties to purchase knowledge-based training and on-going professional development should be provided to give knowledge and abilities focused on technical and medical competencies to manage COs' duties. Information from other institutions is helpful in training opportunities and implying better and globally accredited standards. More so, the use of EMRs, telemedicine, and other digital technologies can significantly improve the efficacy of COs and provide better results in auditing. Applying these technologies can also enhance patient satisfaction and healthcare provision in rural areas and other hard-to-reach areas. For community engagement and preventative actions, there is enhancing the professionalism of COs and incorporating preventive and promotive health services into their existing responsibility, which can also improve desired health outcomes. Stakeholders are essential in the success of implemented projects, especially in public health programs. Besides, there is a continued need for policy and regulatory measures to clarify roles and responsibilities for COs and sustain the effort toward task-shifting strategies. However, a better approach to regulating COs will help set ethical and professional standards for delivering this care. Of importance is that the compensation of COs is a vital cog that sustains the healthcare system within targeted regions in Kenya, which are incredibly remote and sparsely populated areas. In delivering their primary health care assessments and versatile utilisation in performing several health care tasks, they are deemed necessary for meeting the country's health care needs. However, to unlock the optimum potential, it is critical to overcome the obstacles of effective implementation by creating new policies for human rights, increasing training, continuing education, and embracing technological advancements. By emulating successful experiences in other countries and integrating them to advance the current COs in Kenya, desirable results and healthcare achievements could be realised for the whole populace.

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