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A Review of the Training of Mid-level Health Cadres in South Africa

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Abstract
Shortage of human resources of health has resulted in the establishment of a cadre of healthcare workers called mid-level health care workers. In South Africa these mid-level workers are called Clinical Associates. Literature that focuses on the rationale behind the introduction of midlevel workers, the nature of the training, the challenges being faced in training and deployment as well as measures to address challenges was reviewed. Reference was drawn on the training of Clinical Associates in South Africa to assess the extent to which the cadre will address health care worker shortages. The findings show that if mid-level healthcare workers are sufficiently trained, sustained and incorporated soundly into the health care system they can essentially contribute to the development of the quality of healthcare and in the process address the critical shortage of health care workers. The growth of the cadre should have precedence amongst the policy preferences deliberated by nations facing deficiency and uneven distribution challenges. Enhanced education, administration, management and guideline practices and proper incorporation of the cadre into the health system have the prospective to make the best out of the advantages from utilising these cadres.

1. Background

The health sector in the majority of African countries is facing Human Resources for Health (HRH) challenges that have reached crisis magnitudes [1]. General shortage of health care workers over the countries combined with uneven distribution in regions within the countries, poor performance and overall lack of health workforce with relevant skills poses a constraint to achieving the three health related Sustainable Development Goals (SDGs) adopted in 2015 [2]. The World Health Organisation (WHO) noted that the workforce is crucial in advancing the core of the country's health system [3]. The WHO principles require that the standard ratio of patient to healthcare workers should ideally be 2.5 health workers for every 10 000 population to reach the SDGs [3].

The majority of African countries have their health systems governed by a health act that provides a framework on the structuring of the health system in line with constitutional requirements. The HRH crisis therefore disrupts the future direction on the precise path that has been envisioned by the various health acts [3]. For example, in South Africa, the Health Act of 2003 and the Health Charter process which both sought to bring together a segmented health system are both being undermined by the HRH crisis the country is currently facing [2, 5].

The past century saw an accelerated effort by many governments to advance the health sector. It is against this backdrop that Mid-level Healthcare Workers (MLHWs) were introduced and are being utilised to address and ease health worker deficiencies and advance access to and excellence of health services. A midlevel health care worker is a fundamental aspect of various health structures both in the developed and in the developing world [1, 2, 3].

2. Mid-level Health Workers Definition

MLHWs are defined as a category of a healthcare profession that undergoes 2-3 years training from an accredited institute. The training emphasizes the acquisition of hand-on clinical skills [15]. They are licensed to practice medicine under the supervision of a Doctor. MLHWs work closely with a doctor to examine patients, diagnose and treat illnesses, prescribe medicines, perform procedures, assist in surgery, and counsel patients [7, 8, 9]. They provide patient education and counselling, as well as many other prevention and wellness services [7]. They are a critical member in a healthcare team as their scope is not limited to a particular department in the healthcare facility.

3. Aim and Objectives

3.1. Aim

Against the backdrop of health worker shortages and maldistribution, the aim of this research is to review the training of Clinical Associates (ClinAs) as midlevel health workers in South Africa.

3.2. Objectives

To realise the above mentioned aim, the following specific objectives of the literature review are adopted:

I To document the prevalence of MLHWs worldwide.
II To examine the introduction of ClinAs in South Africa.
III To review and understand the nature of training and function of ClinAs in South Africa.
IV To examine the challenges being faced and make recommendations.

4. Methodology

An electronic database search was performed on articles on MLHWs that have been published to date. Grey literature was also captured from websites of HRH-related organizations and networks. Using the key search terms *midlevel health worker, HRH and Clinical Associates*, 26 relevant articles that reference MLHWs were selected and reviewed. Literature was searched in relevant journals from Jstor, Pubmed, Google Scholar and Medline data bases. The review assessed literature that focused on the rationale behind the introduction of this cadre, the nature of the training, the challenges being faced in training and deployment as well as measures to address challenges.

5. Prevalence of MLHWs Programmes

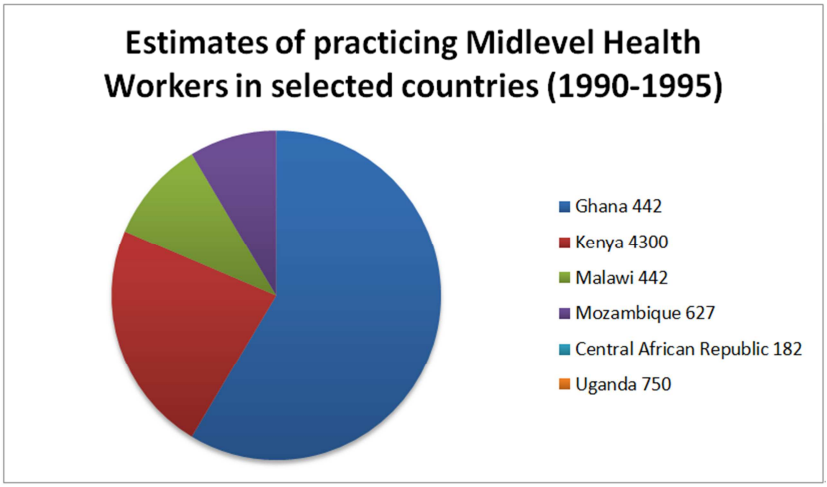

Figure 1. *MLHWs prevalence, Source: Dovlo, 2014.*

6. Selected Case Studies of Successful Implementation of MLHW Programmes

As already noted, many countries have recognized that the shortage of health professionals has negatively impacted on their ability to make progress in achieving health-related SDGs [2]. The experience from the United States of America and Tanzania is adopted to develop this cadre by many countries [10]. Different titles are used to identify this cadre depending on which country they work in [10]. In

Mozambique, Tanzania, Zambia and Malawi they are identified as Clinical Officers. In Ghana they are called Medical Assistants whilst in the USA they are called Physician Assistants [1]. In the UK they are called Physician Associates and in Ethiopia they are referred to as Health Officers [1].

In an attempt to fill the gap of health professionals, Tanzania implemented MLHWs aimed at targeting specifically prevention and health promotion in addressing malaria and HIV/AIDS which are the major causes of ill health in the country [11]. They have formed the backbone of primary healthcare with the numbers of trained MLHWs in Tanzania rising each year [10].

There is evidence from studies to show that this cadre contribute incomparable quality of care with that which is provided by Physicians. In a reflective cohort study of patients in an HIV/AIDS antiretroviral program in Mozambique, outcomes for quality of care were the same for MLHWs and physicians [9]. Reviewed records that were captured in the pharmacies showed that patients were most likely to have made a three-monthly call to the healthcare facility if they were initially managed by a MLHW and demonstrated best devotion to treatment six months after starting therapy [9]. In a recent study to assess the quality of Voluntary Medical Male Circumcision (VMMC) conducted by MLHWs/ClinAs in South Africa, it was found out that ClinAs quality of care in VMMC is comparable to that of doctors [11].

Another assessment study to understand the functioning of MLHWs in Mozambique did not show any substantial disparity in clinical results when matched to physician professionals [11]. In another study done in Malawi, results of surgery done by MLHWs showed similar conclusion as physicians whose training was ten times the cost of Clinical Officers [1].

Few other studies that have been conducted have revealed that MLHWs can offer exceptional care to improve health service coverage. In the USA for example, MLHWs have made a dramatic change in trauma care by making it more reachable in America and improved admission to reproductive health facilities [10]. In Africa where HIV is a major health problem, extended enrollment to HIV treatment has been attained through the use of MLHWs [10].

There is little published data on retention and migration of MLHWs but that, which is available, shows that midlevel workers have a high probability of remaining in service if compared to doctors [15]. In Mozambique, it was found out that seven years after graduation, more than half of MLHWs continued working at district hospitals yet all medical doctors who were deployed in the same areas had left within the first 3 years of placement [12]. MLHWs make the remote health centers favorable and welcoming as a dedicated Clinical Officer who has been working there for so many years mans them.

Clinical Associates history in South Africa: rationale and perceived benefits of their introduction

The 2001 Pick report[8] available in the National Strategy for Human Resources for Health recommended that there be a creation of a "multi-skilled mid-level health worker" [8]. A resolution was made in 2003 and confirmed at a Minister and Members of Executive Council (Minmec) meeting on 8 January 2004 to move ahead with the establishment of a midlevel medical worker cadre in South Africa [5]. Visits were arranged to similar programs in Kenya, Tanzania and the USA. In 2004 the NDOH gathered a National Task Team to initiate a scope of practice, training syllabus, and exit outcomes for a new mid-level medical worker that resulted in the birth of the Clinical Associates programme [8].

Walter Sisulu University (WSU) launched the first ClinA training program in 2008, later joined by the University Of Pretoria (UP) and the University of the Witwatersrand (Wits) in 2009 [13].

Clinical Associates are obliged to receive a Bachelor in Clinical Medical Practice (BCMP) from an ascribed university to be eligible for registration with the Health Professions Council of South Africa (HPCSA) [13]. The BCMP program is done over 3-years and it stresses the acquirement of practical clinical skills that the cadre needs to qualify as vital members of district-level care players [13]. The thorough, uniform national curriculum is skill based and formulates ClinAs to provide any kind of health provision according to their scope of practice that is given to them by the overseeing health practitioner [8].

The National Department of Health (NDOH) gazetted the revised ClinA Scope of Practice on 25 May 2015. After a three-month period for public comment, HPCSA reviewed and updated the document which has been submitted to the NDOH for signature [13]. (Some questions remain about the language pertaining to supervision of Clinical Associates reflected in the current version of the Scope of Practice.) [7, 8].

The majority of the 516 ClinA graduates to date work in district hospitals, with some working in Community Health Centres, secondary and tertiary hospitals, NGOs, the military, private facilities and universities as lecturers/teachers. In district hospitals, Clinical Associates generally work in Outpatient Department, emergency/casualty, labour wards/maternity, HIV clinics, wards and antenatal clinics [13].

In 2010, the NDOH launched a "Revitalization of Primary Health Care" that seeks to re-engineer primary health care toward practical family and public-focused involvements [5]. This methodology incorporates advancement of living healthy lifestyles, preventing diseases, prompt recognition of health issues, management of diseases, and reintegration. Essentially, the approach includes ward outreach teams in the municipalities, district and school teams of health workers. The re-engineering of primary health care will support the introduction of National Health Insurance to offer entrance to excellent health amenities to all South Africans.

The ClinAs' scope of work, which is in the final stages of approval, focuses on Clinical Associate's role in district hospitals [5]. However, ClinAs' clinical skill set and patient-centered training may be a strong fit for the ward-based

teams that provide community-oriented care. Currently, UP ClinAs training department formally exposes ClinAs students to community-oriented primary care (COPC) training [13].

ClinAs accomplish duties that have been given to them by doctors, allowing doctors to attend to responsibilities for which they are distinctively trained for example investigative work and backing up the expansion of primary care facilities [6]. Their training is cheaper than doctors because their programme is completed over a shorter duration of time and represent a new means of entry for high school graduates into the medical field, providing training access in particular for people from marginalised communities [7].

Because they derive from the local community there will be no language barrier, and they will be more familiar to the norms of the communities [7, 10]. Mid-level health workers seem to reflect the truths of the indigenous communities and are able to respond to local needs and resources [8].

Keeping them in the community facilities will be simpler because they are willing work in the underserved societies that they come from. They therefore have a resilient obligation to these communities. ClinAs' movement for greener pastures will be restricted because their qualification is not recognised internationally [7, 10].

Clinical Associates are strengthening district-level health services, allowing different professionals to deliver improved superior care within their identifiable scopes of practice. In the process they will be enhancing health access for side-lined populations and decreasing the prerequisite for transfers.

7. Policies Governing Clinical Associates' Introduction in South Africa

The training of Clinical Associates in South Africa is made uniform across the Universities through a countrywide curriculum that determines the wide-ranging skills and knowledge outcomes that must be attained at the same time permitting partaking universities some flexibility in their courses [7]. To nurture close association between Clinical Associates and doctors and confer status on the new profession, the three-year degree is offered by medical schools with regulation coming from the Medical and Dental Board [7]. Students are required to pass a national examination to warranty similar regular teaching offered by the 3 universities [8].

Young people are enrolled from rural areas after finishing high school to be trained in a specific province and community to serve that community [7]. Language and culture are of key importance in the selection. The selection also aims at generating chances for young people who would face difficulties to get into tertiary training. The provincial department of health and the university will work with local communities to select the best candidates. Academic credentials, attitude and social aptitudes and readiness to serve will be benchmarks for being selected into the programme [7]. Choosing people who will be more likely to as MLHW and serve this team as proficient team members is important.

8. Key Role Players

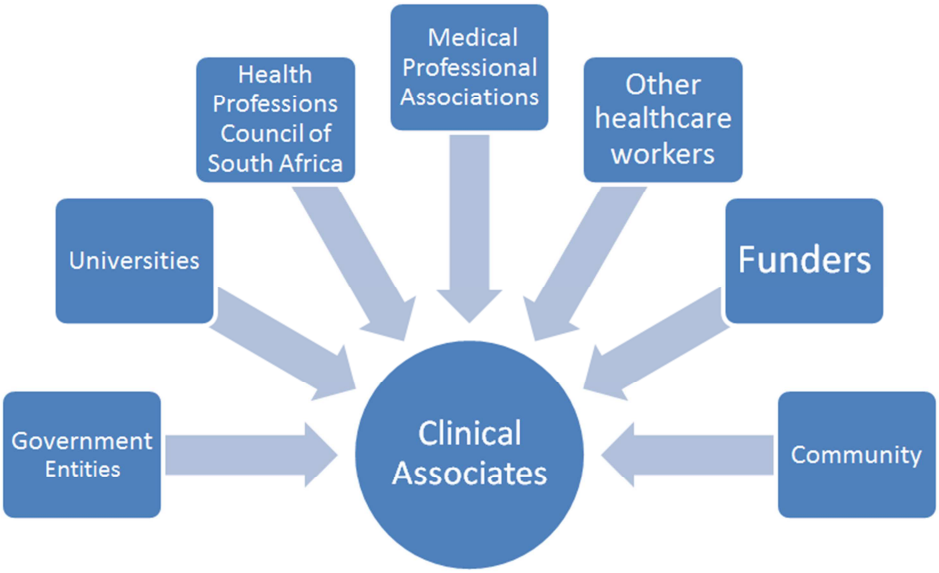

Figure 2. *Key role players in the introduction of Clinical Associates.*

A number of key stakeholders have a role to play in Clinical Associates as outlined in the diagram above. Government includes entities like the Departments of Health, Education, Finance and Labour. They all play a key role to ensure that the profession is adequately supported. The Department of Health through support from the Department of Finance provide bursaries for students to undertake the programme. The Department of Labour in conjunction with the Department of Health's Human Resources department ensure that adequate posts are created for the graduated

students. Universities work together with the Department of Education and the Department of Health to ensure the development of the curriculum content and that the curriculum of the programme is in line with the health needs of the country.

The health professions council regulates the profession to ensure that excellent standards of the training and education are maintained. Since ClinAs operate as part of the healthcare team, it is important that they maintain a cordial relationship with other health care workers that include nurses, pharmacists, dentists, physiotherapists, Occupational Therapists, Nutritionists, Speech Therapists, Radiographers, and Emergency care workers. Medical Associations are a key stakeholder as to guard the new profession's interests and needs.

The community is a key role player because Clinical Associates are there to serve the community's health needs. Funders are another fundamental stakeholder to add on the support from the different government entities. The US government through its health systems strengthening initiatives have managed to encompass Clinical Associates in the different continuous development trainings they are supporting the NDOH with [13].

9. Curriculum of Clinical Associates in South Africa

As already noted the training of Clinical Associates currently take place at 3 medical schools in the country and is set to expand to all the 9 medical schools in the coming future. Each medical school utilises different approaches but generally the training approach focuses on competence and capability learning. It was found out to be more ideal for the training to take place close to the place where the Clinical Associate will function. The majority of the education takes place in a district hospital or in training complexes attached to district hospitals. Ideally, properly structured district hospitals located in a family medicine training complex with training and housing facilities are being utilised for the training of Clinical Associates.

As noted by Doherty, 2012 the curriculum is directed by the precise results expected of the cadre [7]. The content of the course is geared on acquiring skills and knowledge that will make the cadre work in a district facility with close supervision from a physician in team [7]. The precise process of education is based on the university's requirements, the training centre's needs/policies as well as the environmental factors [7]. Generally the methodology involves manageable group assimilated education with concentrated acquaintance to actual patients. A connection with the university remotely through eLearning is maintained. Approximately 70-90% of the training takes place in the practical setting of district hospitals, not university classroom settings [7].

Enlisting the Clinical Associate only in the district hospital restricts the extent of hesitation that they have to deal with. This implies a restricted amount of information, abilities and capabilities making the person well-designed in a team and as an associate, though not as an autonomous physician. A vital capability of the cadre is to assess a patient [6]. The Clinical Associate has to be able to follow all the steps for to consult a patient which includes history taking, medical examination and investigations. If they are unclear on a certain issue, they will communicate with the supervising to make a joint assessment and plan [6]. Additional skills that include counselling, prescription and procedures are required of a Clinical Associate.

10. Clinical Associate Function

Health care in a district hospital is all about teamwork. This team consists of different professionals and other health workers. It is important that the midlevel health care worker fits into this team as a functional team member. The Clinical Associate will do many of the responsibilities presently shifted to nurses and much in the same way as an intern or senior medical student [8]. In terms of reporting structure, the ClinA reports to the Medical Manager.

The key is that it is work under supervision and in a team. The exact functioning depends on the situation, the skills and experience of the Clinical Associate and the doctor and the relationship between them [7]. The work of the midlevel health care worker will be guided by a primary health care all-inclusive approach as is trained and taught in family medicine and primary health care [6].

The Clinical Associate is part of the team in different units in the district hospital. For example, in the Emergency Unit, the Clinical Associate assists the doctor when it is busy. The Clinical Associate consult patients, initiate resuscitation and do procedures like suturing. When it is not busy, they will be with the nursing staff and deal with all the patients [8, 7]. When there is uncertainty about a patient, the Clinical Associate will phone the doctor and decide together with the doctor on a management plan and whether it is necessary for the doctor to come. In the Maternity Unit, the Clinical Associate will function like an advanced midwife assessing complicated patients; undertake assisted deliveries and neonatal resuscitation [8]. The Clinical Associate also does ward rounds, manage patients and do discharges. This is all done under supervision of the doctor and calling the doctor when necessary. In theatre the Clinical Associate assist with caesarean sections, anaesthetics, neonatal resuscitation and other procedures [8].

At the Out Patient Department (OPD) the Clinical Associate consults patients and deal with them independently where possible. The doctor will be available in the OPD or in the hospital to assist with complicated and difficult cases. The doctor will have enough time to deal with the referrals from primary health care nurses and other doctors. In the medical and paediatric units the midlevel health care worker does regular ward rounds, manage patients and do procedures like putting up drips, doing venesections and lumbar punctures [8]. The doctor can focus more on a problematic and do few other rounds in all the other wards to ensure that

patients get good ongoing care and that wards are well managed. All of this is done in a team with the nursing staff [6].

In the Surgical Unit the Clinical Associate does regular ward rounds, manage patients, prepare patients for theatre and do small procedures. The doctor will be available for consultation. In the theatre the Clinical Associate assists the doctor and does small procedures like incision and drainage and evacuations autonomously [6]. The doctor will be available in the theatre department most of the time to assist and support.

11. Challenges Faced by MLHWs

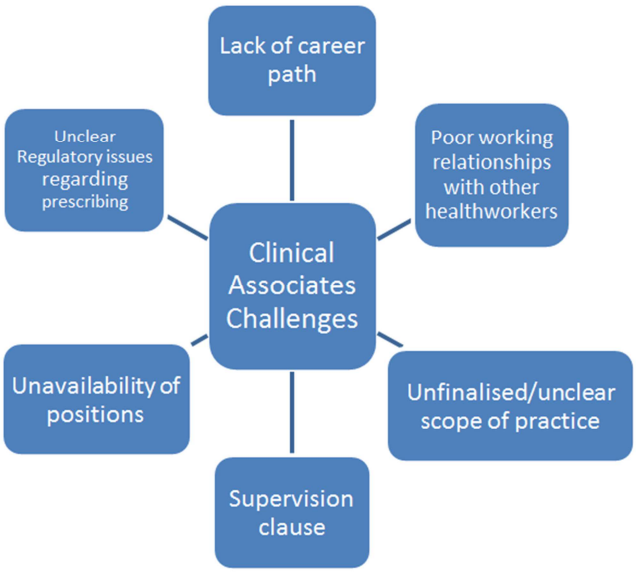

Figure 3. *Challenges faced by MLHWs.*

As illustrated in figure 2, the introduction of the MLHW comes with its own challenges. These challenges are common phenomena in all countries even those that have the cadre in existence for several number of years. Career path still lacks for MLHWs in some African countries like Tanzania where the program is over 30 years old [14]. In the same way, Clinical Associates in South Africa are facing the challenge of unavailability of a clear career path. They cannot progress to high levels at the workplace nor do they qualify to do further studies. Additionally, the degree of their proficiency and qualifications is not related to their salary grades. According to Lehmann, 2008 this affect their enthusiasm which can lead to the deterioration in the quality of care these cadres will offer as they are demotivated [14].

Worldwide, the growth of MLHWs has been characterised by massive resistance from dominant groups and associations who question and doubt the ability of this cadre to deliver quality standards of health care and the fear of having the traditional cadres being replaced [15]. Clinical Associates in South Africa face the same challenge as there have been reported cases of their roles being not fully appreciated in some health institutions. At the moment, training of the cadre is only confined to 3 Medical Schools out of the 9 Medical Schools in the country as others are hesitant to start the programme due to these challenges. The most commonly cited objection to the introduction of MLHW as noted by Lehmann et al, 1998 is that their short length training and lesser qualifications might compromise the worthiness of the service they will offer.

Poor teamwork with other members of the healthcare team is another challenge that faces the cadre. Literature suggests that mid-level worker programmes fail as a result of weaknesses relating to poor teamwork [10]. As noted by Doherty, 2012, poor working relationship with doctors and nurses, particularly if levels of responsibility and post levels are not resolved properly, as this new relationship is not yet well defined [7]. Other health workers have not been fully sensitised on this cadre such that they do not have a clear understanding of their role in the health care works force team.

Regulatory issues, in particular those pertaining to prescribing rights have already emerged as an issue for Clinical Associates. Dovlo, 2004 noted that regulation and accreditation issues for MLHWs in the majority of African countries were inconsistent or even not there in some cases [1]. This has also been a neglected area in the case of the Clinical Associates. The scope of practice document has not yet been finalized yet the profession is entering its 10th anniversary. Some health professionals are uncomfortable with the competency-based scope of practice of Clinical Associates. This is leading to undermining of the Clinical Associates' usefulness by some health professionals using this unclear regulatory issue as a scapegoat.

12. Efforts to Overcome Challenges

Globally, there has been a great deal of effort to address the challenges that the MLHW profession faces. Just like in Mozambique where there have been an effort to improved motivation and preserve MLHWs by the government by creating better career prospects and pathways, in South Africa there has also been the same effort on this. According to the Global Health Workforce paper, in Mozambique there was the formation of a High Institute of Health Science in 2003 for the training of Clinical Officers to obtain a bachelor's degree in surgery [12]. The setting up of opportunities for career progression has been acknowledged as important in refining the supply, enthusiasm and retention of MLHWs in Mozambique

In South Africa, some universities have allowed Clinical Associates to undertake postgraduate studies in the health sciences faculty, for example the Postgraduate Diploma and subsequently the Masters in Public Health programme at the University of Pretoria. At the University of Witwatersrand, Clinical Associates can enrol in the Postgraduate Diploma in Health Education. Clinical Associates can enrol for postgraduate studies in some Universities, e.g. postgraduate diploma in public health and subsequently the Masters in public health at UP, the postgraduate diploma in health education at the University of Witwatersrand as well as the

postgraduate diploma in HIV/AIDS management offered by Stellenbosch University.

As noted by Gibbs, 2016, there is however still need to consider specialisation programmes for Clinical Associates who would like to specialise in a certain area, for example Paediatrics, Obstetrics or anaesthesia. University of Witwatersrand is in the process of getting senate approval for a specialised Honours programme in Emergency Medicine for Clinical Associates [17].

NDOH has formed a task team to look at challenges being faced including the finalisation of the scope of practise, career pathing, and salary grade issues. The Task Team has made it possible for the revised scope of practice document to get gazetted for public comment. After a 3-month period, the HPCSA reviewed and updated the document which has now been submitted to the NDOH for signature [13]. The scope of practice document is therefore in its final stages of approval. Its approval is hoped to open closed doors which have been hindering the progress of the profession. A Clinical Associate seats in the Dental board of the HPCSA.

The formation of a Professional Association of Clinical Associates (PACASA) to advocate for the profession is one notable effort to that has been put into place to address the interests of the profession. According to the PACASA website, The vision of PACASA is to a be a representative body of Clinical Associate that aim to advocate for Clinical Associates graduates and students to bring impact to South Africa's health system [17]. PACASA through funding from a US government funded organisation called American International Health Alliance has held several Continual Professional Development courses for practising Clinical Associates in the different provinces to make sure that Clinical Associates have up-to-date knowledge and skills. They have also spearheaded various outreach and marketing campaigns to sensitise communities and stakeholders of the profession [17].

13. Recommendations

After reviewing the literature, the following recommendations are made:

a Strong analysis is required to remove the cynicism, disbelief and resistance of the old-style professions and other dominant groups in the society to effective use of MLHWs.

b There is need for proper research using empirical evidence. There is limited information available related to the impact of Clinical Associates cadres on common conditions like HIV and TB clinical outcomes or Human Resources for Health (HRH) in South Africa. In the context of developing the 2030 HRH strategy in South Africa and the 2017-2022 National Strategic Plan for HIV/TB/STIs for a sustainable disease response, there is a crucial need to better understand best practices, effectiveness and added value of Clinical Associates within the public health system. While data is available from a variety of sources, a synthesis of findings with a focus on role clarity and cadre utilization is particularly critical.

c Enhanced training, regulation, supervision and guidelines and proper incorporation of the cadre into the health system have the likelihood to make the most of the advantages from using these cadres. There is need for policy makers to address the challenges being faced by the profession which include the absence of career progression, unclear scope of practice, prescribing rights as well as their acceptability by other health workers and the community.

d The setting up of opportunities for career progression needs to be acknowledged as important in refining the supply, enthusiasm and retention of MLHW

e Strategies must be devised to ensure that MLHWs serve public health needs. There must be policy coherence between producing MLHWs and ensuring clearly defined scope of work for them to practice efficiently, particularly in under-served areas.

f This review points to the need for further research specifically assessing the contributions made by MLHWs in order to examine their benefits.

14. Conclusion

In a nutshell, the review has shown evidence that the use of MLHW is an essential option in addressing health worker shortages. If MLHWs are properly trained and supported, they can offer equivalent and improved quality health care within their scope of practice. In South Africa the introduction of Clinical Associates plays a key role in Primary Health Care execution as it extents access and coverage of healthcare and warrants health service delivery to underserved areas. However, there is lack of detailed empirical evidence of studies that attempt to assess and document the impact of Clinical Associates in health care delivery. Well designed and well-funded studies are needed. This review has helped to formally identify evidence gaps that will help inform a more robust research to assess the impact of this cadre.

Appendix

ACRONYMS	
WHO	World Health Organisation
HRH	Human Resources for Health
ClinA/s	Clinical Associate/s
SDGs	Sustainable Development Goals
MLHW	Mid-Level Health Worker
VMMC	Voluntary Medical Male Circumcision
UP	University of Pretoria
WSU	Walter Sisulu University
HPCSA	Health Professions Council of South Africa
BCMP	Bachelor in Clinical Medical Practice
NDOH	National Department of Health
COPC	Community Oriented Primary Care
OPD	Out Patient Department
PACASA	Professional Association of Clinical Associates in South Africa

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