This paper was presented at the 19th International Conference on Sustainable Development,
International Conference Center, Sorbonne University, Paris, France on August 26-27, 2024.
Top Ranked paper

Registered Nurses' Experiences in managing Priority programmes during the COVID 19 pandemic in Rural provinces of South Africa: A Primary health care case Study

Sheillah Hlamalani Mboweni
Department of Health Studies, University of South Africa, Preller Street, Muckleneuk, Pretoria, South Africa.
Corresponding author: mbowesh@unisa.ac.za

© Mboweni Sheillah Hlamalani
OIDA International Journal of Sustainable Development, Ontario International Development Agency, Canada.
ISSN 1923-6654 (print) ISSN 1923-6662 (online) www.oidaijsd.com
Also available at https://www.ssrn.com/index.cfm/en/oida-intl-journal-sustainable-dev/

Abstract: The COVID-19 pandemic has had a profound impact on healthcare systems worldwide, including the management of priority programmes aimed at achieving the United Nations' Sustainable Development Goal 3 (SDG 3) of good health and wellbeing. Primary Health Care Nurses (PHCNs) play a crucial role in the delivery of healthcare services, particularly in rural areas where access to specialised care may be limited. The abrupt onset of the COVID-19 pandemic resulted in the neglect and disruption of the management of key programmes, as attention swiftly pivoted towards infectious diseases. In South Africa, the national health department aims to reduce maternal, neonatal, and child mortality rates, prevent premature deaths due to non-communicable diseases (NCDs), achieve universal health coverage through national health insurance, control HIV and tuberculosis, and promote mental health and well-being as key programmes. Unfortunately, the advancement of these programs was interrupted by the COVID-19 pandemic, especially in rural provinces. These worsened the burden of diseases. The disruption of services at the Primary Healthcare level, which is the cornerstone of health services, is a cause for concern, particularly in Sub-Saharan Africa. This region is already burdened by diseases and faces resource shortages, exacerbating the challenges faced in providing adequate care. This situation prompts inquiries to obtain lived experiences of Registered Nurses (RNs) in primary healthcare regarding this matter. This research article aims to explore the experiences of RNs in managing priority programmes during the COVID-19 pandemic and examine their contribution to promoting sustainable rural development through primary health care in rural provinces of South Africa. A qualitative interpretive phenomenological research design was employed, utilising audiotaped semi-structured interviews with RNs who had been purposively selected from high-volume PHC facilities from rural areas. The study included 29 RNs, and with this sample, data saturation was attained. Thematic analysis was conducted, and the study revealed three themes: Challenges faced by RNs during the COVID-19 pandemic, innovative solutions in managing chronic diseases and other priority programmes, and the role of Primary Healthcare in promoting sustainable rural development.

The study emphasises the importance of the implementation of chronic care models, community engagement, health education and awareness, and multidisciplinary collaboration while embracing the spirit of ubuntu. The research concludes by highlighting the significance of supporting RNs in their efforts to manage priority programmes and advocating for the integration of primary healthcare services in rural development strategies to achieve the SDG 3, Universal health coverage and reduce health inequalities.

***Keywords*:** Primary healthcare, nurses, chronic diseases, COVID-19 pandemic, sustainable rural development

Introduction

The COVID-19 pandemic has had far-reaching implications for healthcare systems worldwide, challenging the management of priority programmes including chronic diseases in many settings [1]. Primary health care nurses (PHCNs), as frontline healthcare providers, have played a pivotal role in addressing the needs of individuals with chronic conditions and public collaboration during this crisis [2]. However, Registered nurses (RNs) in the Primary Health Care (PHC) , generally felt neglected with special focus to hospital staff [2]. A shift from reducing the burden of diseases through an integrated comprehensive care model to infectious diseases, disrupted the plan to reduce the burden of diseases globally, especially PHC in resource limited regions [3]. Therefore, RNs' experiences in managing priority programmes during the pandemic are of utmost importance to understand the unique challenges they face and the strategies they employ to ensure the continuity of care. PHC is a healthcare approach that prioritises universal access, equity, community participation, intersectoral collaboration, and comprehensive care, focusing on preventive care, health promotion, early detection and treatment, chronic condition management, and care coordination. Guided by principles of accessibility, affordability, acceptability, availability, and equity, PHC is delivered by primary care professionals in community-based settings, such as health centres and clinics. The ultimate goal of PHC is to provide person-centred care that addresses physical, mental, and social health determinants, leading to improved health outcomes and quality of life [2,3].

The COVID-19 pandemic has disrupted healthcare services globally, diverting attention and resources towards managing the virus. Individuals with chronic diseases, such as diabetes, hypertension, cardiovascular diseases, and respiratory conditions, are particularly vulnerable to severe outcomes if infected with COVID-19 [4,5]. The need for strict infection control measures, reduced access to healthcare facilities, and the strain on healthcare resources, have presented unprecedented challenges for PHCNs in managing chronic diseases effectively [6]. On the other hand, screening of chronic diseases, testing of HIV and TB, children's immunisations, antenatal care especially first bookings before 20 weeks, and access to contraceptives, were affected and disrupted [7]. Furthermore, the need for advancing telehealth, self-management support, proactive care for at-risk patients, community partnership, and consideration for reforming the funding model was key [8]. According to the World Health Organisation (WHO) [9], in 2020, 15 million people died from non-communicable diseases (NCDs) globally and 85% were from low- and middle-income countries (LMICs), and mostly, deaths were from cardiovascular diseases followed by cancer, respiratory diseases and Diabetes Mellitus. HIV/AIDS has become part of the category of chronic illnesses, including those that can be effectively controlled through long-term antiretroviral therapy (ART). Nevertheless, it remains a significant worldwide public health concern, resulting in the loss of numerous lives [10]. During the year 2022, HIV-related causes claimed the lives of 630,000 individuals, and an additional 1.3 million people contracted HIV. Unfortunately, a cure for the HIV infection is still not available [11]. Multi-chronic morbidity and co-infections related to the HIV disease, may impact healthy ageing and may overwhelm the health system, particularly in resource limited regions where an integrated chronic care model (ICCM) is not implemented effectively, and may hinder current global efforts to end the HIV pandemic and reduce premature death and disability by 2030 [11, 12]. Nevertheless, the implementation of strategies, such as early initiation and increased availability of ART, has led to a substantial reduction in the catastrophic consequences of the worldwide HIV outbreak. One such strategy is task shifting, which involves training nurses in PHC settings to provide HIV management services. The same level of dedication and resources can be utilised to effectively control other chronic diseases as well [12]. Approximately 287,000 women lost their lives during or after pregnancy and childbirth worldwide in 2020, with nearly 95% of these maternal deaths happening in LMICs, mainly due to infection, severe bleeding and pre-eclampsia, many of which were preventable [13].

The majority of adults in South Africa are affected by one or more chronic illnesses, including HIV. However, people living with HIV (PLHIV) receive better management and attention compared to those with cancer, hypertension, and diabetes, etc. [14]. Before the emergence of COVID-19 in LMICs, accessing healthcare services was a challenge, despite some countries' efforts. However, the pandemic exacerbated this issue, highlighting the existing inequalities and poor-quality care which were already prevalent in these regions [14].

The delivery of chronic services and the implementation of the comprehensive integrated care model in PHC were disrupted, which hindered progress in reducing the burden of diseases. This situation emphasised the importance of empowering RNs regarding the model and utilisation of telemedicine or virtual care. However, this posed a challenge in LMICs with lower levels of digital literacy [15]. Supply chain disruptions also contributed to poor supply and shortage of medication [16]. RNs in PHC not only experienced psychological challenges during COVID-19 but

witnessed a disruption of delivery of chronic care and other priority programmes, and unstable and ineffective functioning of the health system which is more reactive than proactive. This was also worsened by neglected PHC infrastructure and staffing levels and a lack of personal protective equipment (PPE) [14]. Vulnerable patients in rural areas, who solely depend on PHC services through mobile outreach services, were left unattended and frustrated [3,17]. Patients also experienced mental health challenges and felt neglected [18].

Registered Nurses are often the first point of contact for individuals seeking healthcare, especially in rural areas where access to specialised care may be limited [20]. They play a crucial role in the prevention, early detection, and management of chronic diseases, maternal and childcare, HIV and TB, and providing education, monitoring, and support to patients, and neglecting them may collapse the health system [21]. Their knowledge, skills, and commitment are essential in delivering comprehensive and holistic care to individuals in rural disadvantaged communities and should be strengthened during epidemics instead of being neglected [22,23]. It is incorrect to prioritise nurses in hospitals while neglecting those working in primary healthcare (PHC) settings. This is because the majority of patients who are admitted or referred to hospitals initially visit PHC facilities as part of the district health system. These healthcare workers in PHC should be protected and provided with support to effectively conduct their crucial roles [24].

Promoting sustainable rural development is a critical aspect of improving overall health outcomes and reducing health disparities in rural communities as part of the five pillars of the agenda for 2030 [25-28]. PHC services, with their focus on preventive care, health education, collaboration and community engagement, have the potential to contribute significantly to sustainable rural development [29]. Each community is unique, and by addressing the unique needs of rural populations and creating an enabling environment for health, primary health care can enhance the overall well-being of rural communities and foster their social and economic development [30]. Community-engaged and family-based interventions are pivotal in promoting sustainable rural development at the PHC level [25,31]. Priority or essential programmes within the context of the South African Health Department refer to key initiatives and projects that are given special focus and resources due to their significance in addressing crucial health issues within the country. These programmes are typically aimed at tackling major health challenges, improving healthcare services, and promoting the well-being of the population. They often target areas such as maternal and child health, infectious disease control such as HIV and TB, non-communicable or chronic disease prevention, universal health coverage, mental health promotion, and other vital health concerns that are prioritized by the government for intervention and improvement [32].

Given the interplay between the experiences of RNs in managing priority programmes during the COVID-19 pandemic and the promotion of sustainable rural development, it is important to explore and understand the challenges faced by these nurses and identify strategies that can facilitate their efforts in ensuring optimal care for individuals with chronic conditions, HIV, TB, including maternal and childcare. Their contribution can play a major role in promoting sustainable rural development through primary healthcare, and inform policymakers, healthcare organisations, and stakeholders, about the importance of supporting PHCNs and integrating PHC services into rural development strategies in future epidemics.

Material and Methods

Research Design

A qualitative interpretive phenomenological research design was employed to explore the experiences of RNs in managing priority programmes during the COVID-19 pandemic, and their contribution to promoting sustainable rural development through primary healthcare. Qualitative methods allow for an in-depth understanding of the participants' perspectives, experiences, and the context in which they operate. Participants for this study were RNs working in rural areas. Purposive sampling was employed to select and include participants based on their firsthand experiences in implementing priority programmes both before, during, and post the COVID-19 pandemic. Semi-structured, face-to-face, individual interviews were conducted with the participants to gather rich and detailed information about their experiences. The interview guide was developed based on a comprehensive review of the literature and included open-ended questions on their experiences during the COVID-19 pandemic and the role of PHC in driving sustainable development. The interviews were audio recorded with participants' consent and later transcribed for analysis. The data collection process took place between April and August 2022. Data saturation was reached with 29 participants. According to Creswell and Creswell (2020) [33], and Polit and Beck (2021) [34], data saturation occurs when additional participants provide no new information and when themes that emerge become repetitive; this can be reached with 12-25 participants. The analysis involved six steps of thematic analysis, as described by Neem at al 2023 [35] and were supported by various methodology sources such as Brink et al 2018, Creswell and Cresswell 2020, Gray

et al, 2020 [33-35]. Step 1 involves transcribing audio-recorded interviews verbatim, followed by the researcher reading and re-reading the transcribed data to become familiar with it. The researcher then selects quotes that bring the data to life. In Step 2, the researcher identifies recurring patterns and designates them as key words that encapsulate participants' experiences and perceptions. These key words are directly derived from the data. Step 3 involves coding short phrases or words that capture the core message, significance, or theme, thereby transforming the data into a theoretical form. Key words play a crucial role in this coding process as they convert raw data into meaningful and manageable units. In Step 4, codes are organised into meaningful groups to identify patterns and relationships, offering insights into the research objectives and development. Step 5 involves conceptualisation through the interpretation of key words, codes, and themes. The researchers identify social patterns and redefine them into definitions that align with the research. This process is assessed based on the application of principles of trustworthiness in qualitative research. Lastly, in Step 6, a conceptual model is developed by creating a unique representation of the data that answers the research question and highlights the study's contribution to knowledge.

Ethical Considerations

Ethical approval was obtained from the UNISA College of Human Sciences Research Ethics Committee (CREC), *Ref number 240816052,* before data collection. Permission to conduct the study was obtained from the Northwest Provincial Department of Health Institution Review Board. Informed written consent was obtained from all participants, ensuring their voluntary participation and confidentiality. Participants were informed about the purpose of the study, their rights as participants, and the anonymisation of their data. All data were securely stored in password-protected laptops in the share drive and accessible only to the research team. Numbers were used instead of the RNs' names; no personally identifiable information was used for the institution or the participants, to comply with ethical principles and the Protection of Personal Information (POPI) Act which came into effect in April 2020, in South Africa.

Trustworthiness In Qualitative Research

In this study several trustworthiness principles were applied to ensure reliability and validity, providing an accurate and comprehensive understanding of the experiences of RNs in managing priority programmes during the COVID-19 pandemic and their role in promoting sustainable rural development through primary healthcare. Trustworthiness in qualitative research refers to the credibility, transferability, dependability, and confirmability of the findings [33-35]. The following strategies were employed to enhance trustworthiness in this study: Credibility refers to the extent to which the findings accurately represent the experiences and perspectives of the participants [33]. The researcher used the following strategies to establish credibility: Multiple data sources, such as interviews with RNs from different rural health facilities were used to validate the findings. Member checking was done by giving participants the opportunity to review and verify the accuracy of the findings, ensuring that their voices were accurately represented. Peer debriefing was conducted by regular discussions with the research team to reflect on the interpretations and ensure they were supported by the data. Transferability refers to the extent in which the findings can be applicable to other contexts or settings [35]. To enhance transferability, detailed descriptions of the research context, participants, and data collection procedures were provided under methodology to allow readers to assess the applicability of the findings to the contexts where the study was conducted. Thick description was done by including rich and detailed descriptions of the participants' experiences in analysis, providing a comprehensive understanding of the phenomena under investigation. Dependability refers to the consistency and stability of the findings over time and across researchers [33]. To enhance dependability, the researcher clearly documented, in detail, all records of the research process, including data collection, analysis, and decision-making, and kept it safe, allowing for transparency and auditability. Researcher reflexivity was enhanced - a process whereby the researcher reflected on her own biases, assumptions, and preconceptions, throughout the research process to minimise potential influences on data collection, analysis, and interpretation. Confirmability refers to the objectivity and neutrality of the research findings [34]. The researcher ensures reflexivity by audit trail. An audit trail was maintained, by documenting the research decisions and procedures, allowing for an external experienced researcher to scrutinise and evaluate the process.

Results and Discussion

Characteristics of Study Participants

The study included a total of 29 participants, consisting of five males and 24 females. All participants were experienced RNs involved in managing priority programmes. Amongst the participants, five had five years of experience, seven had six to 11 years of experience, and 14 had 12 to 16 years of experience. Additionally, three participants had 17

years or more of experience. All participants worked in primary healthcare facilities that were predominantly located in rural areas, particularly farming and mining communities**.**

Results

Table 1 provides a summary of the study findings, presenting three primary themes along with multiple sub-themes that emerged from the study, namely: Challenges faced by RNs during the COVID-19 pandemic, innovative solutions in managing chronic diseases, and the role of PHC in promoting sustainable rural development.

Table 1: Themes and Sub-themes

Theme	Sub-themes
1. Challenges faced by RNs during the COVID-19 pandemic.	**1.1.** Limited resources **1.2.** Increased workload **1.3.** Inadequate training and support **1.4.** Disruption of healthcare services **1.5.** Digital divide and access to technology **1.6.** Psychological impact
2. Innovative solutions in managing chronic diseases.	**2.1.** Telehealth and remote monitoring **2.2.** Community health workers **2.3.** Health promotion and education **2.4.** Collaborative care networks **2.5.** Mobile clinics and outreach programmes **2.6.** Health technology applications
3. The role of PHC in promoting sustainable rural development.	**3.1** Access to essential health services **3.2** Health promotion and prevention **3.3** Community engagement and empowerment **3.4** Holistic and integrated care **3.5** Health system strengthening **3.6** Collaboration and partnerships

Theme 1: Challenges Faced by RNs during the COVID-19 Pandemic

During the COVID-19 pandemic, RNs faced several challenges in promoting sustainable rural development through primary healthcare. Nurses reported that they were caught off guard and unprepared for the situation. They made considerable efforts to prevent infections, despite limited resources, which had a psychological impact on them. Nevertheless, they demonstrated resilience by doing their utmost and acquiring knowledge through practical experience. Research conducted by Jerome-D'Emilia et al [36], supported the notion that while the arrival of COVID-19 was unexpected, nurses bravely faced the challenges head-on. They took on the responsibility and tackled the situation with determination. These challenges included:

Limited Resources

The participants reported that rural areas often have limited healthcare infrastructure, including a shortage of healthcare facilities, medical supplies, and trained healthcare professionals, such as doctors or specialists. The participants revealed that the pandemic further exacerbated these resource constraints, making it difficult for RNs to provide adequate care and support for maternal and child health, especially chronic disease management. Participants highlighted the following with anger:

"*Personal protective clothing was a drug (not easily accessible, scarce) in PHC, hospital staff was a priority."*

" Yhuuu!!*Social distancing and ventilation were not possible in the small, dilapidated clinic, with one small wind."*

A study conducted by Nielsen [37], confirmed that rural areas often experience a scarcity of healthcare professionals and limited training opportunities. This is primarily because many professionals prefer not to work in rural settings. Therefore, it is essential to prioritise the development of enhanced recruitment strategies, enhance infrastructure, and ensure the proper distribution of supplies.

Increased Workload

Registered nurses experienced an increased workload due to the surge in COVID-19 cases and the need to provide care for individuals with chronic diseases and maternal and child health services. They had to balance the demands of managing COVID-19 cases, while other staff members were sick due to COVID-19 and again, ensuring the continuity of care for patients with chronic conditions, antenatal care, delivery, and immunisations, leading to an overwhelming workload and potential burnout. Participants expressed this with sadness:

"It was tough, I have to work alone, manage minor ailments, review chronic patients, assess and deliver pregnant while in fear of also contracting the virus."

According to a study conducted in Austria by Halcomb in 2020 [38], RNs faced significant challenges such as heavy workloads and job insecurity, which had an impact on the quality of care they provided. Despite these difficulties, they remained resolute in supporting their communities.

Inadequate Training and Support

Many of the participants reported a lack of specific training and knowledge on managing infectious diseases like COVID-19. They faced challenges in understanding and implementing infection control measures, conducting proper risk assessments, and effectively communicating with patients about preventive measures. They lacked adequate support and guidance which further intensified the difficulties faced by nurses in managing priority programmes during the pandemic. Participants highlighted with emotions:

"We were not trained. We just received written guidelines later and we did not understand and needed clarity."

"The training was online and we were without data and network in rural areas."

"I have not seen district or provincial managers visiting our PHC facility during COVID-19 - we were just alone without support."

Nielsen's study conducted in 2017 [39] highlights that PHC professionals did not receive sufficient training and were not prioritised as the first point of contact for care. RNs were not prioritised even before the COVID-19 pandemic. This issue needs to be addressed. Furthermore, Shami's research in 2023 [40] indicates that the role of PHCNs in managing infectious diseases during epidemics was unclear, despite their position at the forefront, as the entry point of care in the community.

Disruption of Healthcare Services

The participants highlighted that the pandemic did not only disrupt priority programmes but also led to the disruption of routine healthcare services, including cancellations of elective procedures, limited access to specialist consultations, and reduced availability of diagnostic tests. These disruptions impacted the ability of RNs to provide comprehensive care and timely interventions for individuals with chronic diseases, or pregnancy complications, hindering the promotion of sustainable rural development.

"Doctors no longer visit our PHC facilities as usual and specialized services and most elective procedures were not done like review, the focus was on COVID-19 only."

"Outreach teams and CHWs, including mobile services, were no longer going out to provide preventive and promotive services, including distribution of medications or tracing defaulters."

Tessema's scoping review study in 2021 [41], validates that service disruptions result in significant setbacks, necessitating the repurposing of PHC services, including mobile services. The study emphasises the importance of developing integrated guidelines to effectively guide RNs in the future.

Digital Divide and Access to Technology

The participants reported that rural areas often face challenges related to limited access to technology and internet connectivity, even before the COVID-19 pandemic. The shift towards telehealth and remote consultations, during the pandemic, posed significant barriers for RNs and patients in rural areas. Lack of access to necessary technology and reliable internet connections limited the provision of virtual care, attending online training and remote monitoring for chronic disease management. Only implementing partners had the resources for telemedicine.

> *"We have no technology to conduct telemedicine, even our community members had no means and were not literate as most patients with chronic diseases are older adults."*

> *"There were no technological resources to conduct virtual care, attend training online and there were no guidelines or approval to do that except for counselling. We heard private doctors were consulting their patients by phone and not in public."*

> *"We were only supported by partners funded by PEPFAR to do telephone counselling, appointment reminders and tracing those who missed an appointment."*

According to Graves et al [42], rural districts face challenges in terms of limited access to the internet and a lack of devices for online learning. The digital divide persists as a significant problem in rural areas, highlighting the need for targeted efforts to address this issue.

Psychological Impact

The participants reported that they faced immense psychological pressure and emotional stress during the pandemic. The constant exposure to critical situations, increased workload, fear of contracting the virus, lack of knowledge, and the emotional toll of witnessing the impact of COVID-19 on patients and communities, contributed to mental health challenges among nurses. These psychological challenges hinder their ability to effectively promote sustainable rural development through PHC. Participants expressed with sadness and emotions the following:

> *"I have not received psychosocial support or debriefing, even after surviving COVID-19; I feel like this interview is a debriefing session."*

> *"I was in isolation alone while sick with COVID-19. No manager came to visit or call me; I was in fear of dying alone."*

> *"Social workers or psychologists were nowhere to be found while we suffer psychologically."*

In a study conducted in the United States by Brown et al. [43], it was discovered that self-worry regarding the risk of COVID-19 was the primary contributor to emotional distress, anxiety, stress, and ultimately, depression amongst nurses. A study by Chen et al. [44], also found that female nurses were more affected than males, therefore, more attention should be given to females. In this study the majority were female participants whom expressed elevated levels of stress during the COVID-19 pandemic.

Addressing these challenges requires targeted interventions and support for RNs in rural areas. This includes providing additional resources, training, and guidance on infection control measures, ensuring access to necessary technology for telehealth, and prioritising the mental health and well-being of nurses. Collaborative efforts between healthcare organisations, policymakers, and communities, are crucial in overcoming these challenges and promoting sustainable rural development through primary healthcare during and beyond the pandemic.

Theme 2: Innovative Solutions in Managing Chronic Diseases

The participants, in their efforts to manage chronic diseases and promote sustainable rural development, have shared that they implemented various innovative solutions during the COVID-19 pandemic. These initiatives were supported by partners funded by PEPFAR. The participants expressed a desire for these initiatives to continue even after the pandemic, recognising their potential for long-term benefits. These solutions address the unique challenges faced in rural areas and aim to improve the quality of care and outcomes for individuals with chronic diseases. This was supported by a systematic review by Gizaw et al [30], that identified a range of strategies that can enhance access to PHC services in rural communities. This includes community health programmes or community-directed

interventions, school-based healthcare services, student-led healthcare services, outreach services or mobile clinics, family health programmes, empanelment, community health funding schemes, telemedicine, collaboration with traditional healers, and partnerships with non-profit private sectors and non-governmental organisations, including faith-based organisations. The following innovative solutions were highlighted by the participants:

Telehealth and Remote Monitoring

The participants suggested the effective use of telehealth technologies, as supported by PEPFAR-funded partners, is key to remotely monitoring chronic conditions, antenatal and post-natal care, providing counselling, delivering information, education and support, and managing medication and lifestyle modifications. They have also utilised mobile applications, such as short message service (SMS) reminders, to enhance patient engagement and appointment adherence. However, there is a desire amongst these nurses to have access to additional resources, such as video conferencing and remote monitoring devices, in the public sector. These resources would enable them to remotely assess patients' health, utilise wearable trackers to collect real-time data on vital signs, and facilitate early detection of health issues for timely interventions. This would bring the public sector in rural areas closer to the capabilities of the private sector in urban areas. This was supported by participates saying:

> *"We need technological devices to implement remote care to patients during medical emergencies and beyond like private sector and develop areas."*
>
> *"We cannot continue to rely on PEPFAR funded partners to provide telehealth, the government and department should take over and provide such services in all rural areas as most patients struggle with money for transport and are busy looking for piece jobs."*

Giwaz et al study [30], provide support for the notion that implementing these strategies can not only enhance PHC services in rural communities but also contribute to achieving universal health coverage (UHC) and reducing health disparities. Mboweni and Risenga's [17], systematic literature review study also provides support for the implementation of telemedicine and remote monitoring as effective global strategies that can be adopted in LMICs, including rural areas. This review highlights the potential of these technologies to bridge the healthcare accessibility gap, particularly in resource-constrained settings, by enabling remote consultations, monitoring, and provision of healthcare services.

Ward Base Outreach Teams (WBOTs) and Community Health Workers (CHWs) Programme

The participants reported they have collaborated with the WBOTs and CHWs even before COVID-19, to extend care beyond healthcare facilities and were very concerned when it was disrupted during COVID-19 and emphasised that this was supposed to be strengthened during medical emergencies, not weakened. CHWs are a new cadre of healthcare workers who are part of the district health system and are typically local community members who have received training to provide basic health education, disease management support, and medication adherence assistance, under the guidance of the same RNs and strengthening the implementation of the comprehensive integrated care. This collaborative approach bridges the gap between healthcare services and rural communities, enhancing access to care and promoting sustainable health practices.

Health Promotion and Education

The participants reported that they have prioritised health promotion and education to empower individuals with chronic diseases, pregnant, and post-natal woman, to better manage their conditions. They have developed educational materials, conducted virtual or in-person workshops, and utilised social media platforms to disseminate information on healthy lifestyles, disease prevention strategies, and self-management techniques, and emphasised that this should be implemented in conjunction with the WBOTs. By promoting health literacy and empowering individuals, nurses contribute to sustainable rural development by fostering a culture of preventive care and self-care. Participants indicated that:

> *"The disruption of outreach teams and CHWs in providing screening, testing. health promotion and prevention is a flop and has affected the progress made to reduce the burden of disease."*
>
> *"WBOTs and CHWs programme should be strengthened during epidemics not dismantled ."*

A study by Behera et al [45], provided support for the idea that PHC nurses can actively engage with community members, with a particular focus on women, children, individuals with chronic diseases, and those affected by HIV/AIDS and TB, as well as their families.

Collaborative Care Networks

The participants suggested that establishing collaborative care networks involving multidisciplinary teams, including physicians, pharmacists, lay or adherence counsellors, case facilitators, dieticians, CHWs ,WBOTs and mental health professionals, is key during pandemics and beyond. These networks facilitate coordinated care, shared decision-making, and comprehensive support for individuals with chronic diseases, including pregnant and post-natal woman. By leveraging the expertise of different professionals, RNs believe that this can address the complex needs of patients and promote holistic and sustainable health outcomes.

> *"We work in collaboration with case facilitators, assistant pharmacists and adherence and lay counsellors from PEPFAR funded partners. It makes a huge difference because the department have no such resources, however it will be a challenge when their funding is finished."*

> *"The department should have created post similar to those with partners in rural PHC facility for sustainability."*

A study by Bouton et al [46] supported that interprofessional collaboration (IPC) in a PHC setting is key in the management of chronic diseases, as they need psychosocial support, rehabilitation, and dietary planning in an integrated manner.

Mobile Clinics and Outreach Programmes

The participants suggested that areas with limited healthcare infrastructure have to set up or strengthen mobile clinics and conducted outreach programmes to reach underserved populations rather than disrupting services. These initiatives bring healthcare services directly to rural communities, allowing for on-site consultations, health screenings, immunisations, delivery of chronic medications, and health promotion activities. By ensuring access to care and by addressing the barriers of distance and transportation, mobile clinics and outreach programmes contribute to sustainable rural development by improving health equity. Participants emphasised that:

> *"Mobile clinics should not have been interrupted, because it reduces overcrowding and makes social distancing possible in case medical emergencies."*

> *"Mobile clinics enable people without transport to access treatment in rural, mining and farming areas."*

> *" People access immunisation and screening through mobile ."*

> *"People can access health services in the workplace."*

A study conducted by Mangundu et al [47] in Zimbabwe in 2023, provided support for the finding that individuals residing in rural areas often have to travel distances exceeding 10 kilometres, which is the standard set by the WHO, in order to access PHC services. The high cost of transportation makes it unaffordable for them, leading them to seek assistance from traditional healers for conditions that require the formal healthcare system [47]. This situation ultimately leads to poor prognosis and complications for these individuals. Mboweni and Risenga [18] conducted a study in South Africa in 2023, in which they confirm that patients recognise the effectiveness of mobile clinics and telemedicine in improving access to healthcare, particularly during medical emergencies and beyond. These technological interventions are acknowledged as valuable tools that enhance healthcare accessibility, allowing patients to receive timely medical assistance even in remote or underserved areas.

Health Technology Applications

The participants reported that they have utilised health technology applications (Apps) to enhance priority programmes management especially chronic diseases. The Apps were supplied by PEPFAR implementing partners, and they hope that the government can also adopt similar technology. These applications provided a personalised care plan, medication reminders, symptom tracking, and lifestyle recommendations, and should be enhanced for better outcomes. By incorporating technology, nurses can support patients in self-management, facilitate communication and engagement, and empower individuals to take an active role in their health. Participants emphasised that:

> *"We need more technological applications that can be used by admin and data capturer to support clinical staff with other services."*

> *"We have young people in our facility that can use other application to improve access to services in rural areas."*

A study conducted by Murtagh et al [48] supported the notion that resource-limited areas are still lagging behind developed countries when it comes to the implementation of e-health interventions. This includes inadequate integration of strategies for communicable diseases and NCDs. The study raises concerns about this disparity and the need for attention and action in these areas. By implementing these innovative solutions, RNs will be able to overcome challenges and promote sustainable rural development through effective integrated disease management. These approaches enhance access to care, improve patient outcomes, and empower individuals and communities to adopt healthy practices, ultimately contributing to the overall well-being and development of rural areas.

Theme 3: The Role of Primary Health Care in Promoting Sustainable Rural Development

The RNs emphasised that PHC plays a crucial role in promoting sustainable rural development by addressing the healthcare needs of rural populations in a comprehensive and equitable manner. Participants emphasise their key roles that that they do for the PHC in promoting sustainable rural development, which includes:

Access to Essential Health Service

The participants emphasised the fundamental principle of ensuring accessibility of essential health services to rural communities, apart from priority programmes. They assert that supporting RNs is crucial in achieving this principle. Despite the shortage of skilled healthcare providers, RNs possess the necessary knowledge and skills to deliver a wide range of services, including preventive care, health promotion, disease management, and basic curative services. They are extensively trained and hold specializations in advanced midwifery, mental health, and primary healthcare. Recognised by the South African Nursing Council to practice autonomously, they can deliver specialized care in rural areas. By providing these services at the community level, the PHC enhances healthcare access, diminishes health disparities, and enhances the overall well-being of rural populations [2, 45]. One participant reported the following:

> " *I have an advanced midwifery specialty, and some have PHC , Nurse initiated management of ART (NIMART) and psychiatry as specialty and we can render all essential health services and we cannot be ignored or left behind in certain issues like COVID 19 "*

Health Promotion and Prevention

The participants emphasised the need for continued health promotion and disease prevention strategies, and they were concerned when all this was stopped, especially in rural farming and mining areas. RNs are always engaged in activities such as community education, vaccinations, screenings, and lifestyle counselling to promote healthy behaviours and prevent the onset of diseases through collaboration networks and with internal and external stakeholders. By focusing on prevention, PHC reduces the burden of HIV and TB mortality and morbidity, maternal and child mortality, chronic diseases, and improves population health outcomes, thus fostering sustainable development by reducing healthcare costs and improving productivity [49, 21]. One of the participants pointed out the following:

> *"Vaccinations against childhood illnesses, screening and testing of chronic diseases, HIV and TB were stopped during COVID-19 instead of integrating such in the current screening services and vaccination services."*

Community Engagement and Empowerment

The participants highlighted that PHC encourages community engagement (CE) and empowers individuals to actively participate in their own health and well-being. They indicated that it is through the PHC that communities engage in decision-making processes, by utilising CHWs, and promote health literacy. RNs further explained that empowering individuals and communities enables them to take ownership of their health and that PHC fosters sustainable rural development through increased health knowledge, self-care practices, and community-driven initiatives.

> *"Communities know problems, causes and sources of diseases in the community and if engaged we can solve problems."*

> *"We are working with our community through clinic committee, community-based organisation and we having meetings with them which help a lot."*

A study by Erku et al [50], supported the idea that CE in PHC can contribute to achieving UHC. Through CE, the voices of community members are heard, and cultural issues are openly discussed, enabling the addressing of myths, negative beliefs, and norms that may adversely affect their health. This inclusive approach fosters a deeper understanding of the community's needs and helps tailor healthcare interventions accordingly.

Holistic and Integrated Care

The participants indicated that PHC should provide a holistic and integrated approach to healthcare delivery even during medical emergencies and be prioritised in capacity-building efforts, like other programmes. They further explained that they consider the social, economic, and environmental determinants of health, and these considerations help them to address the multiple dimensions of well-being. By integrating medical, preventive, and social services, PHC promotes comprehensive care that meets the diverse needs of rural populations. They believe this approach improves health outcomes, enhances the quality of life, and supports sustainable rural development by fostering resilient and thriving communities.

> *"During COVID-19 we provided sub-optimal care due to inadequate knowledge and fear and we knew it would lead to poor health outcomes."*

> *"We cannot go back to the vertical approach of providing because of medical emergencies. Integration is key and it should never happen."*

According to Chotchoungchatchai et al [25], the implementation of an integrated approach in PHC can contribute to the attainment of sustainable development goals. This is achieved through community engagement (CE), which actively involves community members in decision-making processes and ensures their participation in designing and implementing sustainable healthcare solutions. Mboweni and Makhado [51] conducted a study in South Africa which supports the notion that RNs receive extensive training in NIMART. This training enables them to deliver integrated care for both communicable diseases and NCDs in resource-limited areas [51]. This aligns with WHO's approach of task shifting, where clinical responsibilities are delegated to appropriately trained nurses, to address healthcare gaps in areas with limited resources. However, they experience challenges regarding training and implementation that affect the quality of health outcomes, especially among PLHIV [53]. Hence a conceptual framework was developed to guide training and implementation in the PHC [53].

Health System Strengthening

The participants emphasised that they contribute to the strengthening of health systems in rural areas as the first contact of care and that they are key in advocating for capacity building, and improving infrastructure, hence it is key for the healthcare system to develop a skilled healthcare workforce for the PHC. By investing in PHC infrastructure and human resources, sustainable rural development is supported through improved healthcare accessibility, reduced health inequities, and enhanced emergency preparedness.

> *"There is no health system without us in PHC nurses as we are in touch with people at ground level.*"

> *"Any person who is sick, first come to us - we should be first trained not hospital."*

The SANC supported the notion of building the capacity of RNs to enhance their competencies [54]. This is achieved through specialisation as an additional qualification in PHC, allowing them to independently practice as specialists within the defined professional, ethical, and legal practice guidelines. With this specialisation, RNs are equipped to conduct physical assessments, diagnose illnesses, prescribe treatments, and make appropriate referrals for further management. In a study conducted in South Africa by Muthathi and Rispel [55], it was highlighted that strong leadership is crucial for the successful implementation of the Ideal Clinic Realisation and Maintenance (ICRM) policy guidelines. These guidelines aim to enhance infrastructure and prepare for the implementation of the National Health Insurance Bill (NHI). However, RNs expressed concerns about the lack of accountability and their limited involvement in decision-making processes. These issues raise questions about the long-term sustainability of the ICRM program.

Collaboration and Partnerships

The participants expressed that their key role relies on collaboration and partnerships with various stakeholders, including local communities, governments, non-governmental organisations, and other healthcare providers. These collaborations foster a coordinated and integrated approach to healthcare delivery in rural areas. By leveraging the strengths and resources of different partners, the PHC enhances its impact, expands the reach of services, and promotes sustainable rural development. RNs should engage in collaborative partnerships with various stakeholders at the community, national, and international levels. This collaborative approach is essential in working towards the WHO's vision of "Health for All" within the framework of PHC. [2,5,56-58]. By fostering partnerships and involving all relevant stakeholders, RNs can contribute to the realisation of this vision and promote equitable access to comprehensive healthcare services. One of the participants mentioned that:

> "*We work with community-based organisations, traditional leaders and healers, youth, Non-governmental organisation in farming, rural and mining areas to reduce the burden of disease, and reduce HIV and TB transmission.*"

Overall, PHC serves as a foundation for promoting sustainable rural development by ensuring access to essential health services, focusing on prevention and health promotion, empowering communities, providing holistic care, strengthening healthcare systems, and fostering collaboration. Its role is essential in improving health outcomes, reducing health disparities, and creating resilient and thriving rural communities.

Conclusion

The study demonstrates that the experiences of RNs during the COVID-19 pandemic in managing priority programmes and chronic diseases have underscored their crucial role in promoting sustainable rural development through PHC. Despite the pandemic's challenges, these nurses have demonstrated resilience, adaptability, and innovation in delivering continuous care to pregnant and post-natal women and those individuals living with HIV, TB, and chronic diseases in rural areas. Their efforts have contributed to sustainable rural development in several ways. They have worked towards equitable access to healthcare services, addressing disparities and reducing inequalities in rural communities. By focusing on health promotion and disease prevention, they have empowered individuals and communities to adopt healthy behaviours and prevent chronic diseases, thereby improving overall population health. In addition, RNs in PHC have actively engaged rural communities, involving them in decision-making, as well as fostering community ownership of health initiatives. This engagement has built resilience, enhanced social cohesion, and promoted local leadership in rural areas, as well as supporting sustainable development. Moreover, these nurses have emphasised integrated and comprehensive care, considering the physical, mental, and social aspects of health. By addressing social determinants of health and collaborating with stakeholders, they have strengthened healthcare systems and improved healthcare delivery in rural areas, contributing to the overall resilience and sustainability of the healthcare system. Despite the challenges posed by the pandemic, the experiences of RNs highlighted their invaluable contribution to sustainable rural development through PHC. It is crucial to recognise and support their role by investing in training, providing necessary resources, and involving them in policy development and implementation. By doing so, we can maximise their impact and ensure the well-being of rural populations in the face of future challenges.

Implications For Practice

The experiences of RNs in PHC underscore the importance of robust infrastructure in rural areas to effectively manage essential programmes and chronic diseases during crises, such as the COVID 19 pandemic. Governments and healthcare organisations should invest in improving facilities, technology, and resources in PHC facilities to ensure uninterrupted care delivery. Telehealth and digital solutions have become crucial during the pandemic, and RNs should receive proper training and resources to utilise these platforms for remote consultations, monitoring, and education. Health literacy initiatives should be prioritised to empower patients in effectively managing their conditions. Furthermore, collaborative care and interdisciplinary teams are essential for comprehensive disease management. Integrated Disaster planning and response strategies should be in place to address the unique needs of individuals in need of priority programmes, including chronic diseases in rural areas. Engaging with rural communities and involving them in decision-making processes, along with continuous professional development, are vital for promoting sustainable rural development through PHC. By implementing these strategies, RNs can effectively manage essential programmes in rural areas.

Acknowledgments

This research was supported and made possible by the Northwest Department of Health, which granted permission to conduct the research and facilitated the exploration of significant topics concerning the experiences of RNs. I would also like to express my gratitude to the PHC RNs who willingly participated in this study.

Conflict Of Interest Statement

The author declares no conflict of interests, financial or non-financial or otherwise that may have an inappropriate influence on writing this article.

References:

[1] Haileamlak A. (2021). The impact of COVID-19 on health and health systems. *Ethiopian journal of health sciences*, *31*(6), 1073–1074. https://doi.org/10.4314/ejhs.v31i6.1

[2] Swanson, M., Wong, S. T., Martin-Misener, R., & Browne, A. J. (2020). The role of registered nurses in primary care and public health collaboration: A scoping review. *Nursing open*, *7*(4), 1197–1207. https://doi.org/10.1002/nop2.496

[3] Danhieux, K., Buffel, V., Pairon, A. *et al.* The impact of COVID-19 on chronic care according to providers: a qualitative study among primary care practices in Belgium. *BMC Fam Pract* **21**, 255 (2020). https://doi.org/10.1186/s12875-020-01326-3

[4] Fekadu, G., Bekele, F., Tolossa, T., Fetensa, G., Turi, E., Getachew, M., Abdisa, E., Assefa, L., Afeta, M., Demisew, W., Dugassa, D., Diriba, D. C., & Labata, B. G. (2021). Impact of COVID-19 pandemic on chronic diseases care follow-up and current perspectives in low resource settings: a narrative review. *International journal of physiology, pathophysiology and pharmacology*, *13*(3), 86–93.

[5] Hacker, K. A., Briss, P. A., Richardson, L., Wright, J., & Petersen, R. (2021). COVID-19 and Chronic Disease: The Impact Now and in the Future. *Preventing chronic disease*, *18*, E62. https://doi.org/10.5888/pcd18.210086

[6] Haque, M., McKimm, J., Sartelli, M., Dhingra, S., Labricciosa, F. M., Islam, S., Jahan, D., Nusrat, T., Chowdhury, T. S., Coccolini, F., Iskandar, K., Catena, F., & Charan, J. (2020). Strategies to Prevent Healthcare-Associated Infections: A Narrative Overview. *Risk management and healthcare policy*, *13*, 1765–1780. https://doi.org/10.2147/RMHP.S269315

[7] Pillay, Y., Pienaar, S., Barron, P., & Zondi, T. (2021). Impact of COVID-19 on routine primary healthcare services in South Africa. South African Medical Journal, 111(8), 714-719. doi:10.7196/SAMJ.2021.v111i8.15786

[8] Parkinson, A., Matenge, S., Desborough, J., Hall Dykgraaf, S., Ball, L., Wright, M., Sturgiss, E. A., & Kidd, M. (2022). The impact of COVID-19 on chronic disease management in primary care: lessons for Australia from the international experience. *The Medical journal of Australia*, *216*(9), 445–448. https://doi.org/10.5694/mja2.51497

[9] WHO 2020 edited by Murray C.J.L., and Lopez , A.D. 2020 The Global burden of disease and injury series. Accessed on 22 February 2023 from 0965546608_eng.pdf (who.int)

[10] Colvin C. J. (2011). HIV/AIDS, chronic diseases and globalisation. *Globalization and health*, *7*, 31. https://doi.org/10.1186/1744-8603-7-31

[11] WHO 2023. HIV and AIDS facts sheets Accessed on 23 February 2024 from HIV and AIDS (who.int)

[12] Deeks, S. G., Lewin, S. R., & Havlir, D. V. (2013). The end of AIDS: HIV infection as a chronic disease. *Lancet (London, England)*, *382*(9903), 1525–1533. https://doi.org/10.1016/S0140-6736(13)61809-7

[13] WHO 2024. Chronic comorbidities and coinfection among PLHIV. accessed 21 February 2021 from: Global HIV Programme (who.int)

[14] WHO. 2020. Maternal mortality. accessed 30 August 2024'from https://search.app/Y3nP69nuN1t8hoCF8

[15] Sanyu A. Mojola, Nicole Angotti, Danielle Denardo, Enid Schatz & F. Xavier Gómez Olivé] (2022). The end of AIDS? HIV and the new landscape of illness in rural South Africa, Global Public Health, 17:1, 13-25, DOI: 10.1080/17441692.2020.1851743

[16] Okereke, M., Ukor, N. A., Adebisi, Y. A., Ogunkola, I. O., Favour Iyagbaye, E., Adiela Owhor, G., & Lucero-Prisno, D. E., 3rd (2021). Impact of COVID-19 on access to healthcare in low- and middle-income countries: Current evidence and future recommendations. *The International journal of health planning and management*, *36*(1), 13–17. https://doi.org/10.1002/hpm.3067

[17] Grudniewicz, A., Gray, C. S., Boeckxstaens, P., De Maeseneer, J., & Mold, J. (2023). Operationalizing the Chronic Care Model with Goal-Oriented Care. *The patient*, *16*(6), 569–578. https://doi.org/10.1007/s40271-023-00645-8

[18] Kendzerska, T., Zhu, D. T., Gershon, A. S., Edwards, J. D., Peixoto, C., Robillard, R., & Kendall, C. E. (2021). The Effects of the Health System Response to the COVID-19 Pandemic on Chronic Disease Management: A Narrative Review. *Risk management and healthcare policy*, *14*, 575–584. https://doi.org/10.2147/RMHP.S293471

[19] Mboweni, S.H., & Risenga, P.R. (2022). The Impact of The COVID-19 Pandemic on the Management of Chronic Disease in South Africa: A Systematic Review. *The Open Public Health Journal*.

[20] Mboweni, S. H., & Risenga, P. R. (2023). Experiences of patients with chronic diseases during the COVID-19 pandemic in the North West province, South Africa. *South African family practice: official journal of the South African Academy of Family Practice/Primary Care*, *65*(1), e1–e10. https://doi.org/10.4102/safp.v65i1.5643

[21] Sundler, A. J., Hedén, L., Holmström, I. K., van Dulmen, S., Bergman, K., Östensson, S., & Östman, M. (2023). The patient's first point of contact (PINPOINT) - protocol of a prospective multicenter study of communication and decision-making during patient assessments by primary care registered nurses. *BMC primary care*, *24*(1), 249. https://doi.org/10.1186/s12875-023-02208-0

[22] AbdulRaheem Y. (2023). Unveiling the Significance and Challenges of Integrating Prevention Levels in Healthcare Practice. *Journal of primary care & community health*, *14*, 21501319231186500. https://doi.org/10.1177/21501319231186500

[23] Sullivan, E. J., Handley, S. M., & Connors, H. (1994). The Role of Nurses in Primary Care: Managing Alcohol-Abusing Patients. *Alcohol health and research world*, *18*(2), 158–161.

[24] Du, S., Cao, Y., Zhou, T. *et al.* The knowledge, ability, and skills of primary health care providers in SEANERN countries: a multi-national cross-sectional study. *BMC Health Serv Res* **19**, 602 (2019). https://doi.org/10.1186/s12913-019-4402-9

[25] Nkabinde-Thamae, G., Downing, C., & Nene, S. (2022). Self-care neglect through the voices of nurses working in primary healthcare clinics in Gauteng, South Africa. *Nursing forum*, *57*(6), 1330–1338. https://doi.org/10.1111/nuf.12812

[26] Chotchoungchatchai, S., Marshall, A. I., Witthayapipopsakul, W., Panichkriangkrai, W., Patcharanarumol, W., & Tangcharoensathien, V. (2020). Primary health care and sustainable development goals. *Bulletin of the World Health Organization*, *98*(11), 792–800. https://doi.org/10.2471/BLT.19.245613

[27] Gizaw, Z., Astale, T., & Kassie, G. M. (2022). What improves access to primary healthcare services in rural communities? A systematic review. *BMC primary care*, *23*(1), 313. https://doi.org/10.1186/s12875-022-01919-0

[28] Acharya, S., Lin, V., & Dhingra, N. (2018). The role of health in achieving the sustainable development goals. *Bulletin of the World Health Organization*, *96*(9), 591–591A. https://doi.org/10.2471/BLT.18.221432

[29] De Villiers, K. Bridging the health inequality gap: an examination of South Africa's social innovation in health landscape. *Infect Dis Poverty* **10**, 19 (2021). https://doi.org/10.1186/s40249-021-00804-9, K. Bridging the health inequality gap: an examination of South Africa's social innovation in health landscape. *Infect Dis Poverty* **10**, 19 (2021). https://doi.org/10.1186/s40249-021-00804-9

[30] Huang, L., Cleveland, T., Clift, K., Egginton, J. S., Pacheco-Spann, L., Johnson, M. G., Albertie, M., Cardenas, L. D., Phelan, S. M., Allyse, M. A., & Barwise, A. K. (2022). Key Stakeholder Perspectives of Community Engagement Efforts and the Impact of the Covid-19 Pandemic. *Journal of primary care & community health*, *13*, 21501319221133076. https://doi.org/10.1177/21501319221133076

[31] Gizaw, Z., Astale, T., & Kassie, G. M. (2022). What improves access to primary healthcare services in rural communities? A systematic review. *BMC primary care*, *23*(1), 313. https://doi.org/10.1186/s12875-022-01919-0

[32] Johnston, C. S., Belanger, E., Wong, K., & Snadden, D. (2021). How can rural community-engaged health services planning achieve sustainable healthcare system changes? *BMJ open*, *11*(10), e047165. https://doi.org/10.1136/bmjopen-2020-047165

[33] South Africa. Department of health. National Health Research Priorities For South Africa. 2023.Pretoria accessed 30 August 2024 From : Revised-National-Health-Research-Priorities-2021-2024.pdf

[34] Creswell, J.W. and Creswell, J.D. (2020) Research Designs*: Qualitative, quantitative and mixed Methods Approaches. 5th ed. California:* SAGE.

[35] Polit, D.F., and Beck, C.T. (2021) Nursing *Research: Generating and assessing evidence for nursing practice*. *10th ed.* Philadelphia: Wolters Kluwer.

[36] Brink, H., Van der Walt, C. and Van Rensburg, G. (2018) *Fundamentals of research methodology for health care professionals.*4th ed. Cape Town: Juta.

[37] Gray, J. R., Grove, S. and Sutherland, S. (2020) *The practice of nursing research: Appraisal, synthesis, and generation of evidence. 8th ed.* St Louis Missouri: Elsevier

[38] Naeem, M., Ozuem, W., Howell, K., & Ranfagni, S. (2023). A Step-by-Step Process of Thematic Analysis to Develop a Conceptual Model in Qualitative Research. International Journal of Qualitative Methods, 22. https://doi.org/10.1177/16094069231205789

[39] Jerome-D'Emilia, B., Suplee, P. D., & Linz, S. (2022). Challenges faced by new nurses during the COVID-19 pandemic. *Journal of nursing scholarship: an official publication of Sigma Theta Tau International Honor Society of Nursing*, *54*(6), 772–786. https://doi.org/10.1111/jnu.12783

[40] Nielsen, M., D'Agostino, D., & Gregory, P. (2017). Addressing Rural Health Challenges Head On. *Missouri medicine*, *114*(5), 363–366.

[41] Halcomb, E., McInnes, S., Williams, A., Ashley, C., James, S., Fernandez, R., Stephen, C., & Calma, K. (2020). The Experiences of Primary Healthcare Nurses During the COVID-19 Pandemic in Australia. *Journal of nursing scholarship: an official publication of Sigma Theta Tau International Honor Society of Nursing*, *52*(5), 553–563. https://doi.org/10.1111/jnu.12589

[42] Shami, E., Gholipour, K., Naghibi, D., & Azami-Aghdash, S. (2023). The roles and challenges of the primary health care systems in epidemic management: a scoping review. *Primary health care research & development*, *24*, e55. https://doi.org/10.1017/S1463423623000452

[43] Tessema, G. A., Kinfu, Y., Dachew, B. A., Tesema, A. G., Assefa, Y., Alene, K. A., Aregay, A. F., Ayalew, M. B., Bezabhe, W. M., Bali, A. G., Dadi, A. F., Duko, B., Erku, D., Gebrekidan, K., Gebremariam, K. T., Gebremichael, L. G., Gebreyohannes, E. A., Gelaw, Y. A., Gesesew, H. A., Kibret, G. D., … Tesfay, F. H. (2021). The COVID-19 pandemic and healthcare systems in Africa: a scoping review of preparedness, impact and response. *BMJ global health*, *6*(12), e007179. https://doi.org/10.1136/bmjgh-2021-007179

[44[Graves, J. M., Abshire, D. A., Amiri, S., & Mackelprang, J. L. (2021). Disparities in Technology and Broadband Internet Access Across Rurality: Implications for Health and Education. *Family & community health*, *44*(4), 257–265. https://doi.org/10.1097/FCH.0000000000000306

[45] Brown, R., Da Rosa, P., Pravecek, B., & Carson, P. (2023). Factors associated with changes in nurses' emotional distress during the COVID-19 pandemic. *Applied nursing research : ANR*, *69*, 151659. https://doi.org/10.1016/j.apnr.2022.151659

[46] Chen, R., Sun, C., Chen, J. J., Jen, H. J., Kang, X. L., Kao, C. C., & Chou, K. R. (2021). A Large-Scale Survey on Trauma, Burnout, and Posttraumatic Growth among Nurses during the COVID-19 Pandemic. *International journal of mental health nursing*, *30*(1), 102–116. https://doi.org/10.1111/inm.12796

[47] Behera, B. K., Prasad, R., & Shyambhavee (2022). Primary health-care goal and principles. *Healthcare Strategies and Planning for Social Inclusion and Development*, 221–239. https://doi.org/10.1016/B978-0-323-90446-9.00008-3

[48] Bouton, C., Journeaux, M., Jourdain, M. et al. Interprofessional collaboration in primary care: what effect on patient health? A systematic literature review. BMC Prim. Care 24, 253 (2023). https://doi.org/10.1186/s12875-023-02189-0

[49] Mangundu, M., Roets, L., & Janse van Rensberg, E. (2020). Accessibility of healthcare in rural Zimbabwe: The perspective of nurses and healthcare users. *African journal of primary health care & family medicine*, *12*(1), e1–e7. https://doi.org/10.4102/phcfm.v12i1.2245

[50] Murtagh, S., McCombe, G., Broughan, J., Carroll, Á., Casey, M., Harrold, Á., Dennehy, T., Fawsitt, R., & Cullen, W. (2021). Integrating Primary and Secondary Care to Enhance Chronic Disease Management: A Scoping Review. *International journal of integrated care*, *21*(1), 4. https://doi.org/10.5334/ijic.5508

[51] Demaio, A. R., Kragelund Nielsen, K., Pinkowski Tersbøl, B., Kallestrup, P., & Meyrowitsch, D. W. (2014). Primary Health Care: a strategic framework for the prevention and control of chronic non-communicable disease. *Global health action*, *7*, 24504. https://doi.org/10.3402/gha.v7.24504

[52] Erku, D., Khatri, R., Endalamaw, A., Wolka, E., Nigatu, F., Zewdie, A., & Assefa, Y. (2023). Community engagement initiatives in primary health care to achieve universal health coverage: A realist synthesis of scoping review. *PloS one*, *18*(5), e0285222. https://doi.org/10.1371/journal.pone.0285222

[53] Hlamalani Mboweni, S., & Makhado, L. (2023). Perspective Chapter: Enhancing the Nurse-Initiated Management of Antiretroviral Therapy Training and Implementation - A Conceptual Framework. IntechOpen. doi: 10.5772/intechopen.107982

[54] Mboweni, S., & Makhado, L. (2020a). Challenges influencing nurse-initiated management of antiretroviral therapy training and implementation in Ngaka Modiri Molema district, North West province. *Health SA Gesondheid, 25*, 11 pages. doi:**https://doi.org/10.4102/hsag.v25i0.1174**

[55] Mboweni, S. H., & Makhado, L. (2020b). Conceptual framework for strengthening nurse-initiated management of antiretroviral therapy training and implementation in North West province. *Health SA = SA Gesondheid*, *25*, 1285. https://doi.org/10.4102/hsag.v25i0.1285

[56] South African Nursing Council (SANC), 2014. competencies for primary care nurse specialist accessed on 22 February 2023 from SANC-Competencies-Primary-Care-Nurse-Specialist.pdf

[57] Muthathi, I. S., & Rispel, L. C. (2020). Policy context, coherence and disjuncture in the implementation of the Ideal Clinic Realisation and Maintenance programme in the Gauteng and Mpumalanga provinces of South Africa. *Health research policy and systems*, *18*(1), 55. https://doi.org/10.1186/s12961-020-00567-z

[58] Van den Muijsenbergh, M., & van Weel, C. (2019). The Essential Role of Primary Care Professionals in Achieving Health for All. *Annals of family medicine*, *17*(4), 293–295. https://doi.org/10.1370/afm.2436

About The Author:

Author: Sheillah Hlamalani Mboweni
Affiliation: University of South Africa, College of Human Sciences, Department of Health Studies
Mailing Address: No. 1 Preller Street, Muckleneuk, PO Box 392, UNISA, Pretoria, 0003
Tel: +27 12 433 4827
E--mail: mbowesh@unisa.ac.za

Bio:

Dr. SH Mboweni is an expert in communicable diseases and non-communicable diseases, with an emphasis on the HIV/TB epidemic for 24 years - 19 years spent working in the public health sector. She started her career in 1997 as a Clinical Nurse Practitioner. In 2007, she started working as a Community Nursing Science Lecturer at Chris Hani Baragwanath Nursing College; then transferred to Limpopo College of Nursing and was a member of several committees. In 2013, she served as the regional training centre Deputy Director for the Northwest Department of Health, where she was in charge of enhancing the knowledge of healthcare professionals on HIV/AIDS, STIs, and TB. In 2016, she worked as a project and area manager for the PEPFAR-funded NGO Aurum Institute. In 2018, she graduated from Northwest University with a doctorate in nursing and later began working for the United States of America's (USA) Centers for Disease Control and Prevention (CDC) as a public health specialist for HIV prevention as a team lead for the HIV Index testing and recency testing research project in 2020. Currently serving as a Senior Lecturer in the UNISA Department of Health Studies, where she facilitates Health Services Management, and newly inaugurated member of the major chapter of SIGMA Theta Tau Chi XI and member of Research Integrity Community Practice in the Northern Region of South Africa. She has published 10 articles and one book chapter in accredited peer reviewed journals and has been presented for her work at both national and international conferences. She is a reviewer in the International Journals and Scopus h-index level four.