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Medicine Access And Pharmacy Care In Mining Regions: Expanding The Role Of Community Pharmacists

Abstract

Mining communities are exposed to increased health risks, including non-communicable diseases, as well as occupational and infectious diseases. This study uniquely explores the connection between occupational, infectious, environmental, and socioeconomic health risks and how pharmacists can play a key role in mitigating them. The role of community pharmacists is very significant in healthcare coverage, particularly in remote mining areas, because of their accessibility and clinical knowledge. This review aims to synthesize the evidence and propose a framework for pharmacist-led services, including access to medicines, managing chronic and infectious diseases, providing mental health support, integrating telepharmacy and strengthen health system resilience. The barriers that affect the service delivery are discussed, including supply chain disruption, workforce shortage, regulatory issues, and socioeconomic issues. Opportunities exist to further enhance pharmacist involvement in policy, digital health technologies, and workforce development. Pharmacist-led interventions can contribute to better access to essential medicines, improved disease management and reinforce local health systems. The findings also indicate the future research, policy, and innovative solutions for increasing the scope and scale of pharmaceutical care in underserved mining areas.

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INTRODUCTION

Mining remains a major force for economic development globally. It is estimated that around 40-80 million people working in mining operations; with hundreds of millions are engaged in informal and artisanal mining (1-3). The rising demand for critical minerals like lithium, cobalt, copper, and rare earth elements driven by energy transitions and technological development has increased the mining operations into remote and resource-poor locations, particularly in low- and middle-income countries (LMICs) (4, 5). While this growth promotes industrial progress and resource security, it also poses complicated occupational, environmental, and public health concerns for workers and nearby communities.

Mining areas face numerous structural barriers including geographical isolation, inadequate health infrastructure facilities and the lack of health professionals. The barriers limit access to diagnostics, emergency care, chronic disease management and essential medicines contribute to treatment delays, disruptions in care and health inequities (6). Additionally, the transient and migrant nature of miners complicates continuity of care, as follow-up the with health system for ongoing disease management may not always be possible (7).

In mining populations, the burden of disease is substantial and complex. High exposure to silica and respirable dust is linked to silicosis and pneumoconiosis which increase the prevalence of chronic respiratory disease (8). In addition, because of labor mobility, overcrowding and the absence of public health facilities, infectious diseases such as TB, HIV and malaria are spread in mining areas (9, 10). Moreover, toxic exposure and environmental damage from nearby communities contribute to the health threats facing the communities, especially those involved in artisanal and small-scale mining (11, 12). Other factors such as mental health issues, drug and alcohol use disorders, and other psychosocial stressors also contribute to the disease burden for mining communities (13, 14).

While there are significant healthcare needs, health systems in mining areas are frequently under-resourced and poorly coordinated. They often experience limited access to essential medicines, unstable pharmaceutical supply chains and inadequate capacity of the healthcare workforce (15). The challenges underscored the need for decentralized, community-based health care systems that can provide effective service delivery in remote and resource-poor settings.

In this context, the community pharmacists play a crucial role in primary healthcare systems. In addition to their traditional role in dispensing medications, pharmacists also contribute to medication management, chronic disease care, preventive services and public health interventions (8). In rural and remote areas, community pharmacies are often the first point of contact for health care, especially where access to physicians is limited (16, 17). Pharmacist-led interventions have been shown to improve outcomes of chronic diseases, medication safety and treatment adherence (18-20). Additionally, digital health technologies and telepharmacy have expanded the delivery of pharmaceutical care to geographically isolated regions (16, 21, 22).

Although the healthcare needs of a mining population have similarities with other communities that are under-

served, the role of pharmacists has not been fully explored. Much of the literature addresses the aspects of remote pharmacy practice and few has addressed occupational, environmental and socioeconomic aspects that affect the mining communities. This gap inhibits the creation of context-specific health models and the ability to embed pharmacy services in the mining health system. This study aims to address this gap by combining research from mining health and community pharmacy to assess pharmacist's potential contributions in mining regions. The objectives are to: (i) describe the healthcare needs and disease burden of mining communities; (ii) explore the role of community pharmacists in similar under-resourced environments; and (iii) identify challenges and opportunities for implementing pharmacy services in mining contexts. This review aims to identify the key dimensions of the development of pharmaceutical care in mining regions, and to guide future research, policy and practice.

2. Epidemiological and Socioeconomic Context of Mining Communities

Mining regions are subject to specific issues, both occupational and non-occupational, which impose a heavy burden on workers and communities. These are further aggravated by socio-economic factors such as poverty, geographical isolation and poor access to basic health care services. Fully understanding the health risks faced by mining communities, requires a multifaceted approach, with unsafe working conditions, social determinants of health and the broader public health context as illustrated in Figure 1.

2.1 Occupational Disease Burden

In spite of all the dramatic advances in technology, mining is one of the most dangerous industries in the world with workers facing physical, chemical and environmental hazards. Respirable crystalline silica (RCS) exposure is a common issue in mining and has been linked to the development of disease like silicosis, pneumoconiosis and silico-tuberculosis (TB). The conditions are more common in ASM operations where exposure to dust is greater and workers are less likely to wear dust protection devices (1, 15). Silicosis and other lung diseases are not only dominant among current miners but also persist long after miners have left the workforce, underscoring the long-term health risks of mining (6). Beyond silica-related diseases, miners are also exposed to coal dust, toxic chemicals and excessive noise, which can lead to occupational cancers and hearing loss (5). For instance, those who had been miners in Southern Africa still suffer from chronic respiratory diseases and TB without sufficient long term health care and follow-up care, thus showing the long-term effects of these occupational diseases. These health issues are exacerbated by the lack of occupational health programs in ASM sectors, where regulations are weak (23). Health measures in these sectors are underdeveloped, with few demonstrating long-term effectiveness, indicating the need for improved health systems capable of addressing both acute and chronic health conditions in mining regions.

2.2 Infectious Disease Dynamics

In addition to occupational hazards, mining environments increase the risk of infectious disease transmission, especially in regions with high population movement, crowding, and poor sanitation and limited access to healthcare. Labor migration and socioeconomic instability are important contributors to the HIV prevalence in mining. Studies show that the HIV prevalence in communities near mining operations is significantly higher than in non-mining communities (4). Infectious diseases such as TB, HIV and malaria spread more rapidly in the overcrowded mining hostels, where up to 16 miners may live in one room. Furthermore, the link between silicosis and tuberculosis is a particularly concerning as silicosis impairs lung function, making individuals more vulnerable to active TB, especially in the presence of HIV co-infection (24). According to estimates, South Africa has one of the highest rates of tuberculosis (TB) in the world among gold miners, with 3,000–7,000 infections per 100,000 people annually (25). Malaria, which is also prevalent in mining areas, exacerbates the challenges, particularly in regions like Amazon Basin, where deforestation and water stagnation as a result of mining operations worsens the spread (9, 26). These results highlight the need for comprehensive health interventions to include both occupational and infectious disease risk. Integrated models are necessary to tackle the inter-dependence of silicosis, tuberculosis and HIV.

2.3 Social Determinants and Non-Communicable Diseases (NCDs)

Beyond infectious and occupational diseases, the burden of non-communicable diseases (NCDs) such as hypertension, diabetes and cardiovascular diseases is also

growing in mining communities. These conditions are influenced by a complex interrelated array of social, environmental and behavioral factors. Communities are experiencing an increasing burden of NCDs due to elevated levels of tobacco and alcohol use, poor diet, irregular working hours, and work stress (26).

It is well established that health outcomes for miners and their families in mining regions are inequitable. Limited use of primary health services, lack of hygienic conditions and unequal economic benefits from mining activities contribute to the health problems of these populations. More vulnerable groups such as women and children are exposed to environmental risk factors, including heavy metals, and often lack adequate access to health care. Children living near to a mining site are exposed to toxic substances, resulting in increased rates of anaemia, respiratory illness and developmental impairment (27). ASM is a major driver of the health burden in these areas, with over 100 million people relying on ASM for their livelihoods. ASM work is largely unregulated and workers are exposed to mercury and other toxic chemicals. Gold mining, in particular, has been linked to neurological, renal and developmental toxicity due to exposure to mercury (13). Furthermore, mental health disorders and substance use disorders are also known to be major drivers of overall disease burden in mining communities, partly due to the work related stress, social isolation, and the high workloads (28).

Non-communicable diseases, mental health issues, and substance use disorders are interconnected, requiring an integrated and accessible healthcare response. A healthcare system capable of responding to both acute and chronic health issues, also addresses the psychosocial factors that influence health outcomes among mining populations (29).

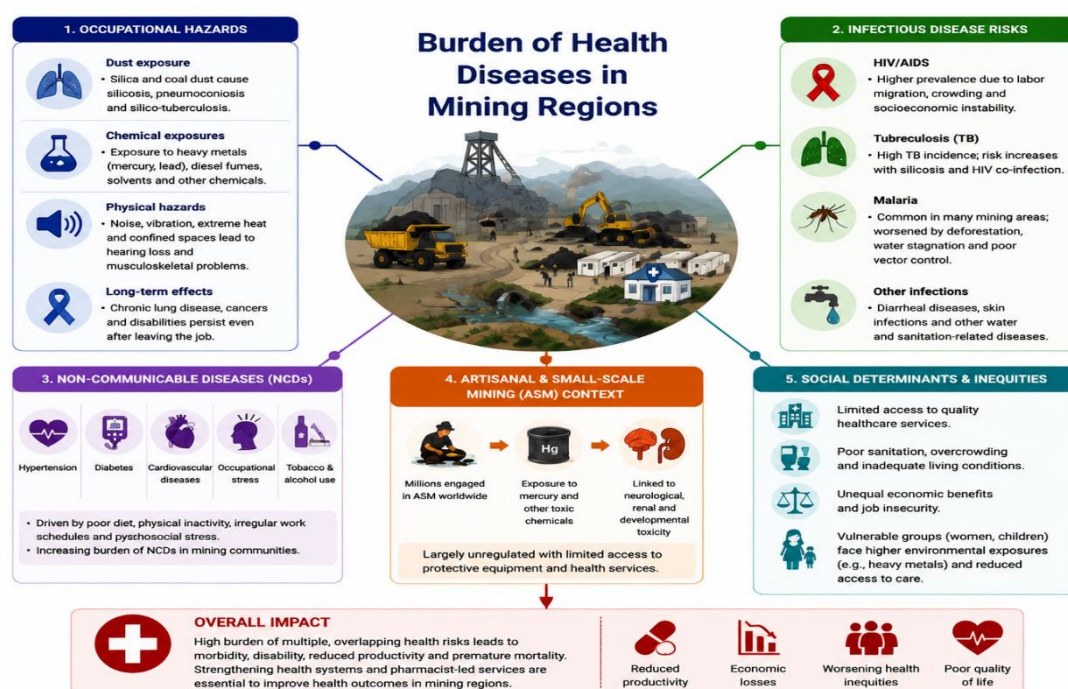


Figure 1: Burden of Health Diseases in Mining Regions

3. Roles of Community Pharmacists in Mining Regions

Healthcare delivery in mining communities, especially those in remote and rural locations, is challenging, compounding the risk of occupational diseases, communicable diseases and the non-communicable diseases (NCDs). The roles of community pharmacists are well-suited to the challenges because of their accessibility, training, and they can provide continuous care. In mining sector, where health services are limited and risk of occupational disease is high, pharmacist's role is not restricted to dispensing drugs but also encompasses health education, chronic disease management, early detection and disease prevention. Figure 2 illustrates the diverse roles of community pharmacists in mining communities, highlighting their key activities and the resulting impact on the health system.

3.1 Medication Access and Continuity of Care

The essential role of community pharmacies in ensuring access to medicines in underserved areas is central to community pharmacy practice. For residents of mining communities, formal health services are seldom available and community pharmacies might be the only or main source of medicinal products. Pharmacist are responsible for ensuring the availability of critical medicines such as, ARTs TB treatment and diabetes care, which are essential in these regions. This is especially important in artisanal and small-scale mining (ASM) communities that lack health care facility, where informal drug vendors are often filling the gap (30). Pharmacists are responsible for inventory control, maintaining buffer stock and regular supply of medicines. Such responsibilities have a direct bearing on access to health services, even in the presence of logistical and transportation challenges brought by mining. Access to medicines including HIV/AIDS, malaria and respiratory medicines is one of the important functions of the pharmacist in these high-risk environments (31).

3.2 Screening, Early Detection, and Preventive Services

Pharmacists play a crucial role in health promotion and disease prevention and managing both communicable and non-communicable diseases. One of the key service they offer is point-of-care testing (POCT), which includes blood pressure readings, blood glucose monitoring, and rapid diagnostic tests (RDTs). These services are especially significant in mining areas, where the physical strain involved in mining further raises the incidence of hypertension, diabetes and TB (32). Occupational diseases are also more likely to occur because of repeated exposure to dust particles, such as silicosis and pneumoconiosis. Pharmacists can recognize the early signs and symptoms associated with respiratory illness and other health issues, and make timely referrals for further medical assessment. In addition, pharmacists also play role in vaccines distribution and promoting of preventative health measures, such as the use of personal protective equipment (PPE), which can minimize burden of disease (33).

3.3 Chronic Disease Management and Continuity of Care

Poor nutrition, smoking, and high levels of occupational stress are contributing to the rising prevalence of non-communicable diseases (NCDs), such as hypertension, diabetes, and cardiovascular disease, among both mine workers and the surrounding community. Pharmacists are ideally suited to provide chronic disease management, and services such as medication therapy management (MTM) plays a key role in supporting delivery of care. The role of the pharmacist is to contribute to improving medication adherence through routinely monitoring of patients' medications, condition management and medication counselling. This is especially important in coal mining regions, where there is shortage of trained health care workers. Pharmacist-led MTM services have demonstrated positive clinical effects on patients with chronic diseases such as hypertension and diabetes, particularly in rural and under-resourced communities (34). Moreover, community pharmacists can be a crucial part of the health care team by collaborating with physicians and nurses to provide comprehensive care. Implementing collaborative care models, particularly for diabetic and cardiovascular patients, can lead to improved disease management and fewer complications (35).

3.4 Infectious Disease Management and Health Promotion

The close-knit living conditions and lack of healthcare services make mining communities especially vulnerable to infectious diseases. In many mining areas, diseases like malaria, TB, and HIV/AIDS are endemic, and the conditions in which miners operate facilitates the spread of these diseases. Pharmacist play a crucial role in managing these diseases, ensuring access to necessary medicines, providing counseling on adherence, and monitoring adverse drug effects (36). Community pharmacists are frequently the first healthcare providers to care for individuals in TB and HIV-prevalent areas. They provide vital services, including directly observed therapy (DOT) for TB and antiretroviral therapy (ART) for HIV, both of which are vital to treatment success and the prevention of drug-resistant strains. Pharmacists also monitor patient outcomes, ensuring that medications are used appropriately, thus improving health outcomes in these high-risk groups (37).

3.5 Mental Health Support and Substance Use Intervention

Mining communities reports high rates of mental health disorders and substance abuse, which are caused by the physical and psychological strain of the mining lifestyle, social isolation, and other factors (38). Miners often seek help from pharmacists for mental health problems and substance use disorders, which are the most common reason for approach to healthcare providers. Pharmacists can intervene by offering mental health support, substance use prevention, and stress management counseling at early stages. They can also refer patients to relevant mental health services when needed. Furthermore, pharmacists also contribute to mental wellness by educating the community on mental health risks, including depression and anxiety, which are often

exacerbated by work-related stress and isolation. In other mining communities, embedding mental health care within the community pharmacy has been demonstrated to have positive impacts on mental health and substance use outcomes, which further improves overall community health and well-being (39).

3.6 Telepharmacy and Technological Integration

Another unique way to deliver healthcare services is via telepharmacy in remote mining areas. Telecommunication technologies enable pharmacists to offer services beyond their physical reach. Telepharmacy allows pharmacists to

review medications, provide consultations and follow up without geographical restrictions, facilitating service delivery in mining communities. Telepharmacy has been successfully implemented in rural and remote areas, improving patient outcomes and medication through specialized pharmaceutical services. The effective implementation of telepharmacy depends on availability of communication system at the site, which may not be accessible in all parts of the mining area. Policymakers must ensure the necessary technological infrastructure is in place of telepharmacy services to be available (21, 40).

causing vaccine wastage and reduced effectiveness owing to the unstable electricity supply(31). In addition, extreme events such as floods during the rainy season have impacted the supply of essential medicines in mining communities in Ghana further isolating villages from timely access to medical services (41, 42).

4.2 Workforce Shortages and Professional Sustainability

Mining regions are often underserved by pharmacists and other healthcare workers, who tend to be concentrated in urban areas. Recruitment and retention issues are prominent, and healthcare workers in these regions frequently experience professional isolation and poor living conditions (16, 43). Fluctuations in commodity prices result in boom-bust cycles in mining-dependent economies, further undermining the stability of labor forces (44). Temporary population movements, linked to mining activities, increase turnover rates among healthcare workers in countries such as Burkina Faso, which affects the quality and consistency of health services. There is a significant shortage of pharmacists in remote areas, where there is greater reliance on informal medicine providers. In the absence of qualified pharmacists, local communities often rely on unregulated medicine vendors, as observed in Zimbabwe, raising concerns about the quality and safety of medicines and posing potential health risks. Several of these challenges might be mitigated with incentives, such as telepharmacy services or remote duty allowances, which can help to address workforce shortages (45).

4.3 Supply Chain and Logistical Barriers

The infrastructure and operational costs within the pharmaceutical supply chain are often lacking in mining areas. Stockouts are common, especially for essential medicines like anti-tuberculosis (TB) medicines and anti-retroviral therapy (ART). In Tanzania, TB and HIV drugs are often in short supply in mining communities, resulting in treatment interruptions and increased risk of drug resistance. Although mining companies often have advanced logistical capabilities for transporting natural resources but fail to apply them to healthcare needs (31). In Mozambique, mining companies have well-developed supply chains for resource transport, however these are not integrated with the local healthcare network, creating a disconnect between corporate logistics and community healthcare delivery (15). Integrating these resources could provide a cost-effective solution to improve the reliability of pharmaceutical supply chains in remote areas.

4.4 Regulatory and Policy Constraints

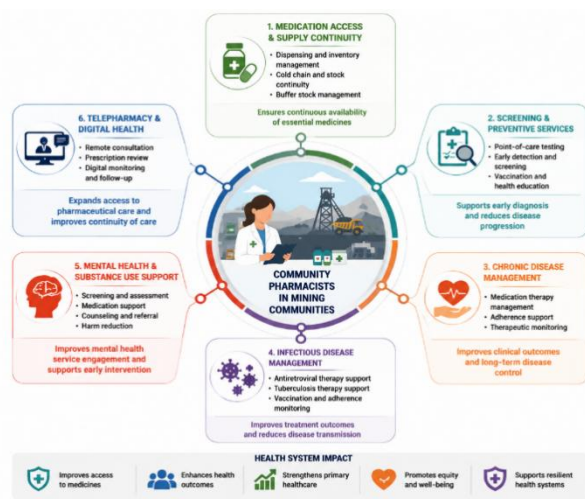


Figure 2: Multifaceted Roles of Community Pharmacists in Mining Communities

Barriers to Community Pharmacy Service Delivery in Mining Regions

This section examines the multiple barriers to providing effective community pharmacy services in mining areas, including geographic isolation, staffing problems, regulations, supply chain issues, and socioeconomic and cultural factors. These barriers have a profound effect on the health outcomes of people, especially in ASM areas. The major barriers to community pharmacy service delivery in mining regions are summarized in Table 1, highlighting the key challenges and their impact on healthcare access and quality.

4.1 Geographic Isolation and Infrastructure Constraints

Most of the mining regions are isolated, with scarce or non-existent resources and infrastructure. The lack of transportation and weak power supply infrastructure are some of the key challenges in health service delivery. For example, villages in close proximity to mining sites in sub-Saharan Africa may not have access to health care services because of these infrastructure challenges. Mining activities in Mozambique and Burkina Faso are creating access challenges and increasing health inequities to health services (2). These areas are referred to as "pharmacy deserts" and there is low access to essential medicines due to a lack of pharmacy density. Moreover, during mining activities in Tanzania, the cold chain for vaccines and biologics has been interrupted

In many low- and middle-income countries, the regulations governing pharmacy services has not kept pace with the expanding role of pharmacists. In some mining areas, pharmacists are the only healthcare providers due to limited access to other services. Pharmacist are often not recognized as primary healthcare providers, limits their capacity to offer clinical care, including medication therapy management (MTM) and point-of-care testing (46). For instance, a South African case study identifies regulatory constraints that restrict pharmacists' involvement in managing chronic conditions like hypertension and diabetes in mining regions. Although pharmacists are qualified to manage these conditions, the regulatory framework has not formally recognized this role, nor have pharmacists been included in collaborative care models (47). Facilitating pharmacist-led care through healthcare provider partnerships and regulatory reforms is a critical step towards improving healthcare access in mining regions.

4.5 Socioeconomic and Cultural Barriers

Mining communities face many socioeconomic challenges including poverty, low health literacy, and informal employment, all of which impact health care access. High out-of-pocket cost for medication and health care services further reduce access. For example, in Ghana, many mining workers do not have sufficient funds to pay for chronic diseases and so resort to self-

medication or informal health workers (48). Also, cultural attitudes affect access to formal health service utilization. In some contexts, traditional medicine is also a significant component, as in Burkina Faso, for which cultural beliefs around traditional medicine might lead to lower level of treatment-seeking and health outcomes (49). Healthcare access can be enhanced with culturally responsive strategies such as community health education that resonates with the local practices while emphasizing the benefits of formal healthcare.

4.6 Financial Sustainability

A major challenge in providing pharmacy services in remote mining communities is the sustainability of pharmacies. Operating in remote areas increases high cost, making it challenging for pharmacies to remain financially workable. The profitability of community pharmacies in rural South Africa is challenging, as the demand is volatile and the cost of providing the services to the mining communities is high (47). Financial sustainability could be achieved through alternative financial models such as corporate social responsibility (CSR) scheme by mining companies and public-private partnerships (PPPs). Corporate health programs can further help to maintain the availability of pharmacies, enabling access to essential health services for these underserved communities (50).

Table 1: Barriers to Community Pharmacy Service Delivery

Barrier	Description	Impact
Geographic Isolation	Remote locations and poor infrastructure limit access to healthcare services	Cold chain interruptions, vaccine wastage, limited patient access
Workforce Shortages	Few pharmacists and healthcare workers; high turnover and professional isolation	Reliance on informal medicine vendors; reduced quality and consistency of care
Supply Chain & Logistics	High operational costs and stockouts; disconnected corporate and local supply chains	Treatment interruptions, increased drug resistance
Regulatory & Policy Constraints	Pharmacists not formally recognized as primary care providers; outdated regulations	Limited MTM, point-of-care testing, exclusion from collaborative care
Socioeconomic & Cultural Factors	Poverty, low health literacy, informal employment, and traditional beliefs	Self-medication, lower treatment-seeking, reduced healthcare utilization
Financial Sustainability	High costs and volatile demand make pharmacies less profitable	Reduced availability of pharmacy services; difficulty maintaining operations

5. Opportunities and Future Directions

Table 2 provides a summary of key opportunities in community pharmacy in mining areas, with actionable strategies identified across the following areas: healthcare integration, community pharmacy workforce, digital health, policy and research.

5.1 Health System Integration and Policy Reform

The formal integration of the community pharmacist in the primary health care (PHC) system represents a particularly promising strategy. The expanding pharmacist scope of practice roles including the ability to prescribe within protocols, performing diagnostic test and

chronic disease management, would enable a strong opportunity for pharmacists to contribute meaningfully as primary care providers in mining communities with limited healthcare staff (19). Participation of pharmacists in collaborative practice arrangements with physicians, nurses and public health practitioners offers scalable solutions to tackle the challenges of limited health workers and continuity of care (51). Integrating pharmacy services with the broader primary healthcare and occupational health systems can improve service coordination and patient outcomes (16). The service extension must be achieved through policy reform. Policy makers and regulatory bodies should revise scope-of-

practice policies to confirm reimbursement for pharmacists' clinical services, and to harmonize policies across health, labor and mining jurisdictions (52). In ASM, regulatory strategies should also address on the informal medicine markets by improving the quality assurance systems and ensuring adherence to distribution standards. Mining companies represents untapped collaborators leveraging corporate social responsibility framework and logistical infrastructure can support community pharmacy services, improve the resilience of the supply chain, and strengthen health systems (53).

5.2. Digital Health and Workforce Development

Digital health technologies are the great potential to bridge geographic divides. Telepharmacy services allow pharmacists to consult, verify prescriptions and conduct medication reviews and patient counselling, thereby reaching more remote mining communities (1). Telemedicine integration enables interdisciplinary care and allows pharmacists to play a part in optimizing treatment and ongoing follow-up (17). Digital adherence devices and mobile health applications ensure continuity of care to mobile populations. However, for the successful implementation, investments in telecommunications infrastructure, digital literacy education and regulatory frameworks that facilitate remote care delivery are required (16). Increased roles for pharmacists in the mining industries necessitate specific workforce development. Competencies relevant to mining health, such as occupational disease management, infectious disease control, culturally responsive practice, should be included in training programs (8). Digital learning

platforms can facilitate continuing professional development for pharmacists in remote areas, while recruitment and retention is crucial and requires incentive systems such as rural placement programs, financial support and career advancement (18). Task-sharing models where particular tasks are delegated to their respective providers under supervision of pharmacists can further extend service delivery (2).

5.3. Research Priorities and Community Engagement

There is a critical need for context-specific research for the purposes of informing pharmacy practice in the mining regions. Future studies should evaluate the effectiveness, cost-effectiveness and scalability of pharmacist-led interventions, particularly: the implementation of telepharmacy in low-resource settings; integration of pharmacy services into occupational health settings; interventions for co-existing infectious and non-communicable diseases; and sustainable financing models for remote pharmacy services (54). Developing this evidence base will be key to supporting policy and implementation strategies. Effective healthcare provision also requires community engagement and sensitivity towards the sociocultural context. Outreach initiatives and partnerships with community leaders can help to build trust, increase health literacy, and promote health-seeking behaviors among pharmacists (2). Where appropriate, community Pharmacy services can be more widely adopted and accepted by integrating the perspectives of traditional health systems while ensuring evidence-based practice, particularly for migrant and transient populations.

Table 2: Opportunities for Community Pharmacy in Mining Regions

Opportunity Area	Description	Key Actions
Integration into Primary Healthcare	Expand pharmacy roles in underserved mining communities to include prescribing, diagnostic testing, and chronic disease management.	Update scope-of-practice regulations- Foster collaboration with healthcare professionals
Strengthening Supply Chain Systems	Improve pharmaceutical distribution in remote mining regions by leveraging existing infrastructure and managing inventories efficiently.	Develop decentralized networks- Use forecasting tools and digital management systems
Expansion of Telepharmacy & Digital Health	Leverage digital platforms to deliver pharmacy services remotely, ensuring access for transient mining populations.	Implement telepharmacy platforms- Invest in telecommunications infrastructure and digital literacy
Workforce Development & Training	Develop targeted training programs specific to mining health and create incentives to improve recruitment and retention of pharmacists.	Introduce rural placement programs- Provide financial and career advancement incentives
Policy Reform & Regulatory Innovation	Update policies to recognize expanded pharmacy roles in primary care and create reimbursement systems for pharmacist-delivered services.	Harmonize policies across sectors- Establish reimbursement frameworks
Community Engagement & Culturally Responsive Care	Engage local communities and adapt services to cultural contexts to build trust and promote health-seeking behaviors.	Create outreach programs- Integrate traditional health practices where appropriate

Research & Evidence Generation	Conduct research to evaluate the effectiveness, cost-effectiveness, and scalability of pharmacist-led interventions in mining regions.	Focus on telepharmacy implementation, co-existing disease management, and sustainable financing models
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6. Conclusion

There are substantial health care issues in mining areas including structural barriers, multiple disease burdens, geographic isolation and lack of infrastructure. This review emphasizes the large number of health risks present in the mining population – both occupational, infectious, non-communicable and socio-economic. The responses needed to these challenges are context specific, integrated and tailored to the needs of these communities. Community pharmacists are ideally positioned to play a pivotal role in tackling these challenges, given their accessibility, clinical skills, and increasing role in primary healthcare. Experience from under-serviced and rural settings demonstrates that pharmacist-led interventions have a positive impact on access to medicines, disease management, and public health. Pharmacists are vital to mobile populations in mining areas in providing continuity of care, managing complicated treatment and facilitating timely diagnosis of disease. An integrated approach at the system level is required to help leverage the role of the pharmacist to optimally address infrastructure, staffing, supply chain, regulatory and socio-economic challenges. This development is underpinned by supportive policies, sustainable funding and targeted training. Further, telepharmacy and digital health technologies can enhance access to healthcare in remote areas, and public-private partnerships (PPPs) with the mining industry can boost the healthcare system. Overall, community pharmacists are an underutilized and valuable asset in improving access and inequity in mining communities. Policy, practice and research can all be aligned to enable pharmacists to play a more effective role in strengthening health systems and to enhance health outcomes for these often neglected population groups.

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Conflict of interests

The authors declare that there are no competing interests.

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