International Journal of Medicine, Nursing & Health Sciences (IJMNHS) ® (IJMNHS.COM)

Nursing Brain Drain: A Threat to Global Health Security

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Abstract:

The global shortage of nurses and midwives, estimated by the World Health Organization at nearly nine million, continues to pose a major challenge to health systems, especially in low- and middle-income countries (LMICs) where the deficit is most severe. Central to this crisis is the phenomenon of nursing brain drain, characterised by the migration of skilled professionals from under-resourced countries to wealthier nations in pursuit of better pay, safer working conditions, and career advancement. While this movement addresses workforce gaps in destination countries, it critically undermines healthcare delivery in source nations, leading to increased workloads, staff burnout, and compromised patient care. The effects are particularly acute in sub-Saharan Africa and parts of Asia, where fragile health systems already struggle with high disease burdens. This study, adopting a literature-based review methodology, synthesised evidence from peer-reviewed articles, policy reports, and international guidelines to analyse the drivers, consequences, and potential solutions to nursing brain drain. Findings reveal that push factors such as low salaries, unsafe environments, and professional stagnation intersect with pull factors including higher wages and advanced training abroad, intensifying migration trends. Consequences include weakened primary healthcare, rising mortality rates, and the erosion of investments in nursing education. Strategies to address the crisis include improving remuneration and working conditions, regulating international recruitment through ethical frameworks, investing in professional development, and leveraging innovations such as circular migration and telemedicine. Ultimately,

mitigating nursing brain drain requires coordinated national and global efforts to retain talent while ensuring equitable healthcare access.

Keywords: Nursing brain drain, Healthcare workforce, Migration, Global health equity, retention strategies,

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Introduction

The global nursing workforce continues to face a significant crisis, with the World Health Organization (WHO) estimating a shortage of nearly nine million nurses and midwives worldwide, disproportionately concentrated in low- and middle-income countries (LMICs) where over 70% of the deficit is recorded (WHO, 2023). This shortage is compounded by the phenomenon of nursing brain drain, where skilled nurses migrate from resource-constrained nations to wealthier countries in search of better wages, safer working environments, and greater career opportunities. While such migration alleviates shortages in host nations, it depletes the healthcare workforce in countries already struggling to meet population health demands, leading to weakened health systems, rising maternal and child mortality, and an impaired capacity to respond to emergencies (Lopes et al., 2021; Kingma, 2020). In this regard, the uneven mobility of nurses highlights the complex interplay between global labour markets and the pursuit of health equity.

The consequences of nursing brain drain are profound, affecting not only the availability of healthcare providers but also the broader scope of global health security. LMICs with high levels of nurse emigration often suffer from chronic staff shortages, with remaining personnel overburdened and forced to operate in environments of inadequate infrastructure, which diminishes the quality of care and heightens risks of preventable disease outbreaks (Buchan et al., 2022). The COVID-19 pandemic underscored the urgency of equitable workforce distribution, as overstretched health systems in Africa and South Asia struggled to mount effective responses compared to better-resourced nations (WHO, 2021). Ultimately, the departure of trained nurses from LMICs worsens existing inequalities in healthcare access, particularly among vulnerable and rural populations who are left behind, underscoring the need for more ethical and sustainable workforce policies (McCarthy & Monteverde, 2018).

Addressing nursing brain drain requires coordinated global and national strategies aimed at both retention and fair recruitment. The WHO's Global Code of Practice on the International Recruitment of Health Personnel urges destination countries to avoid exploiting vulnerable health systems by enforcing ethical hiring practices and compensatory support measures (WHO, 2019). At the same time, LMICs must invest in strengthening their domestic nursing workforce by improving working conditions, increasing salaries, and offering professional development opportunities that reduce the incentive to migrate (Aiken et al., 2022). Furthermore, policies that expand nursing education, particularly through public-private partnerships, are crucial to scaling up the workforce while retaining talent. These interventions can help balance the benefits of international mobility with the necessity of safeguarding fragile health systems from collapse.

Turkey provides an illustrative example of the growing impact of brain drain on national health systems. With a population of over 85 million, the country had just 232,442 professionally active nurses in 2021, translating to fewer than three nurses per 1,000 people, significantly below OECD averages (OECD, 2023). Despite this shortage, many Turkish nurses and nursing students express positive attitudes towards migration due to low wages, heavy workloads, and limited career progression opportunities (Seven & Adadıoğlu, 2022). Research suggests that such attitudes strongly predict post-graduation emigration intentions, raising serious concerns for Turkey's future healthcare sustainability (Özdemir & Sevinç,

2023). Unless addressed through comprehensive workforce policies that retain existing staff and ethically manage migration flows, the country risks further exacerbating its shortage and compromising patient outcomes.

Nigeria also exemplifies the scale and urgency of the nursing brain drain in Africa. Between 2019 and 2022, the number of Nigerian nurses recruited into the UK healthcare system increased more than tenfold, from 276 to over 3,000 annually (NMC UK, 2022). Despite government attempts to downplay the crisis, local unions report that poor remuneration, unsafe working environments, and a lack of professional recognition are driving thousands of nurses to seek opportunities abroad (Oduola, 2023). The Nursing and Midwifery Council of Nigeria confirmed that over 7,000 nurses emigrated in just the first nine months of 2021, further straining an already fragile health system (NMCN, 2021). The implications are dire: regions most affected by brain drain, such as sub-Saharan Africa, not only have the weakest health systems but also carry the heaviest burden of disease, compounding global health inequities (Anyangwe & Mtonga, 2007). Projections warn that by 2030, Africa's shortage of nurses and midwives will rise from 1.8 million to 2.8 million unless urgent and coordinated interventions are implemented (WHO, 2023). This underscores the need to address both systemic and personal drivers of migration, ranging from economic insecurity to safety concerns, to secure the future of healthcare delivery in LMICs. The paper aimed to analyse the concept of nursing brain drain and its impact on global health, as well as to discuss its consequences on healthcare systems and primary health care. It also sought to explore potential strategies and solutions that could mitigate the effects of brain drain.

Methodology

This study adopted a literature-based review methodology to explore the phenomenon of nursing brain drain, its causes, consequences, and potential solutions. Relevant peer-reviewed journal articles, policy documents, and reports from international health organisations were systematically reviewed to provide a comprehensive understanding of the subject. The review process involved identifying, selecting, and synthesising existing scholarly evidence on the migration of nurses from low- and middle-income countries to wealthier nations. The materials were analysed thematically to capture recurring patterns such as push and pull factors, the effects on healthcare systems, and strategies for mitigation. This approach allowed for a critical examination of existing knowledge, offering insights into both the global and local dimensions of the issue while highlighting implications for policy, education, and practice.

Overview of Nursing Brain Drain

Nursing brain drain refers to the systematic and large-scale emigration of trained nursing personnel particularly from low- and middle-income countries (LMICs) to wealthier nations. This migration is driven by a complex interaction of "push" and "pull" factors. Push factors include poor remuneration, limited opportunities for professional development, unsafe or under-resourced working environments, and political instability in the source country. Pull factors, on the other hand, involve higher salaries, safer conditions, greater recognition of professional roles, and opportunities for career advancement in destination countries. Recent studies in Africa and Asia have highlighted how insufficient access to modern healthcare technologies, limited postgraduate training, and economic hardship have contributed

significantly to this migration. Scholars also note that nurse migration patterns are sensitive to economic conditions in both origin and destination countries, as downturns or upturns influence the feasibility and attractiveness of international migration (Ibrahim et al., 2024; World Bank, 2024).

The consequences of this phenomenon are profound for healthcare systems in countries of origin. The departure of skilled and experienced nurses creates critical workforce shortages, particularly in already fragile health systems. This intensifies workloads for remaining staff, often leading to burnout, declining morale, and reduced job satisfaction (Peters, Palomo, & Pittet, 2020). The reduced nurse-to-patient ratios compromise patient care, leading to increased risks of medical errors, delays in service delivery, and diminished quality of care. Furthermore, the exodus of trained professionals represents a loss of significant investments in nursing education made by LMICs, thereby constituting a form of resource transfer from poor to wealthy nations. The implications extend beyond hospitals to national health indicators, with increases in maternal mortality, child morbidity, and inequitable distribution of healthcare services being observed in high-migration contexts (Umar, Salihu, & Azuine, 2025).

Various strategies have been proposed to mitigate the nursing brain drain crisis. At the national level, improving remuneration packages, providing opportunities for continuous professional development, and upgrading health infrastructure are crucial to retaining skilled personnel. For example, enhancing access to advanced nursing education and research opportunities can help reduce the push factors related to career stagnation. Similarly, improving workplace safety and ensuring adequate supply of essential tools and equipment can enhance job satisfaction. At the international level, bilateral agreements and ethical recruitment policies have been recommended to manage the flow of health workers more equitably (WHO, 2023). Global health initiatives also emphasize the need for wealthier nations to invest in strengthening health systems in source countries, both as a form of responsibility and as a strategy to ensure global health security (Olubukoye et al., 2024).

In conclusion, the nursing brain drain remains a critical challenge to global health security, undermining the resilience of healthcare systems in LMICs while reinforcing inequities between countries. Its drivers are multifaceted, spanning from poor local working conditions to systemic global imbalances in demand and supply of healthcare workers. Addressing the crisis requires a holistic approach: national governments must commit to improving working conditions and career pathways for nurses, while international stakeholders must adopt ethical recruitment frameworks and support collaborative capacity-building initiatives. Without decisive interventions, the continued loss of nursing expertise threatens not only the delivery of healthcare in vulnerable nations but also the broader pursuit of equitable health outcomes worldwide. Ultimately, investing in the retention of nursing professionals is central to both national development and global health security.

Causes of Nursing Brain Drain

In many low- and middle-income countries (LMICs), economic and financial pressures exert a powerful "push" effect that drives nurses to consider migration. Low salaries frequently fail to correspond to the scope of responsibilities performed, leaving many nurses struggling to make ends meet. Evidence from Ghana, for example, shows that among nursing students with

intentions to migrate, approximately 39% cited low salaries as a motivating factor (Laari et al., 2024). Similarly, in an integrative review of factors associated with nurse emigration across LMICs, poor pay was repeatedly identified as one of the strongest correlates (Nursing Open, 2023). In addition, financial incentive disparities between LMICs and high-income countries are dramatic: nurses often expect not only higher wages abroad but also additional benefits, such as housing allowances, health coverage, and pension offering a level of financial security unavailable in many home settings. These disparities make migration a rational economic choice for many, particularly younger nurses or those with fewer financial obligations, who see overseas work as a means to support family, repay educational costs, or build long-term savings.

Beyond pay, working conditions in LMICs often create unbearable strain on nurses, serving as a critical second push factor. High patient-to-nurse ratios are common, which exacerbate workload, reduce the quality of patient care, and accelerate fatigue and burnout. For instance, in a study of Nigerian government hospital nurses, about 75% reported inadequate "decent work conditions," and over 70% exhibited high levels of job burnout, which correlated strongly with emigration intention. In Ghana, more than half of student nurses intending to migrate identified "bad working conditions" as a primary reason (Laari et al., 2024). Poor infrastructure including outdated equipment, insufficient supplies, and unreliable utilities further hampers those on the front line. These environment-related stressors, coupled with limited career advancement, lack of specialty training, and minimal recognition, erode morale and make the "pull" of better conditions elsewhere especially potent.

Political and social instability constitutes another powerful driver of nurse migration from LMICs. In places where governance is weak, corruption high, or where there is civil unrest, nurses often face threats to safety, unpredictable work conditions, and interrupted health services. In the integrative review of emigration factors, insecurity, high crime rates, and political corruption emerged among the strongest push measures (Nursing Open, 2023). For many, unstable environments also mean that professional growth is uncertain, contracts may be insecure, and benefits may be delayed or withheld. Moreover, economic downturns and inflation further reduce the real value of already low wages, sometimes making it impossible for nurses to cover basic living costs. Such conditions do not only influence practicing nurses: students nearing graduation often anticipate difficulties in entering stable and rewarding jobs, tipping them toward migration as a safer and more promising option (Laari et al., 2024).

On the pull side, recruitment efforts from high-income countries (HICs) actively exploit these vulnerabilities in LMICs. Countries such as the United Kingdom, Canada, Australia, and the United States have ongoing strategies to recruit internationally educated nurses to fill their own workforce gaps. This international demand amplifies the effect of local push factors in LMICs. Evidence from Ghanaian nursing students shows that many indicated these countries as their likely destination choices (Laari et al., 2024). The global nursing workforce survey conducted by national nursing associations also reported that HICs offer internationally competitive salaries, better healthcare infrastructure, and more stable working environments as major attracting features (International Council of Nurses, 2025). These pull factors do more than simply attract; they raise expectations among nurses that decent work elsewhere

is not only possible but should be expected, which in turn increases dissatisfaction with local options.

Taken together, what emerges is a pattern in which economic weaknesses, deficient workplace conditions, unstable political and social environments, and aggressive external recruitment combine to drive nurse migration from LMICs. The decision to migrate is seldom due to just one factor; rather, it is the cumulative weight of push factors that undermine quality of life and professional satisfaction, paired with pull factors that promise a markedly improved future. For policymakers in LMICs, addressing this phenomenon requires multi-pronged strategies: raising wages to living standards, improving infrastructure and workplace safety, providing paths for professional growth, and managing migration through ethical recruitment and bilateral agreements. Without such interventions, the exodus of nursing talent is likely to continue, further straining healthcare systems that are often least able to withstand losses.

Nursing Brain Drain's Effects and Its Consequences

The phenomenon of nursing brain drain has emerged as a critical challenge to healthcare delivery, particularly in low- and middle-income countries (LMICs). The most immediate effect of this migration is the reduction in the healthcare workforce, which undermines the availability and accessibility of quality care. Countries such as Nigeria, Ghana, and other sub-Saharan African nations are especially vulnerable, as they already grapple with weak healthcare systems and high patient-to-nurse ratios (Anyangwe & Mtonga, 2007; WHO, 2021). The departure of skilled nurses worsens shortages, leading to longer waiting times, diminished service coverage, and reduced efficiency within hospitals and clinics. This exodus not only strains service delivery but also perpetuates inequities in access to healthcare, especially in rural and underserved regions (Aiken et al., 2022). Consequently, patients in such areas are disproportionately affected, as their chances of receiving timely, skilled nursing interventions are severely compromised.

A secondary effect of brain drain lies in its disruption of healthcare systems. Experienced nurses often carry institutional knowledge and technical expertise critical for mentoring junior staff and ensuring continuity of care. Their exit creates gaps that are difficult to fill, particularly when remaining nurses are overburdened with additional tasks and responsibilities (Peters, Palomo, & Pittet, 2020). This disruption is exacerbated by weak institutional support and inadequate retention strategies within LMICs, leading to frequent staff burnout and further attrition (Olubukoye, Adeyemi, & Olatunde, 2024). The decline in workforce numbers consequently results in adverse health outcomes, manifesting in higher morbidity and mortality rates, poor maternal and child health indicators, and reduced overall life expectancy. Moreover, insufficient pay, lack of benefits, and low job satisfaction significantly demotivate those who remain in the workforce, further diminishing the standard of patient care (Buchan, Catton, & Shaffer, 2022). To combat this, policymakers are increasingly being urged to develop competitive pay and benefit packages that can enhance nurse retention.

Another pressing dimension of the nursing brain drain is the limited career advancement opportunities available in many LMIC healthcare systems. Professional stagnation has been reported as a strong driver of migration intentions, as nurses often perceive limited prospects

for further training, promotions, or leadership roles (Özdemir & Sevinç, 2023). When nurses feel undervalued and unable to progress professionally, their motivation wanes, leading them to seek employment in countries offering more robust opportunities for development (Laari et al., 2024). This has a cyclical effect: as more nurses emigrate in search of advancement, those who remain experience heightened job dissatisfaction, resulting in diminished commitment to the profession (Seven & Adadıoğlu, 2022). In turn, the quality of patient care suffers, highlighting the importance of policies that create pathways for professional growth, research participation, and leadership opportunities.

Challenging working conditions further compound the problem of nursing migration. High workloads, inadequate staffing, lack of psychosocial support, and exposure to stressful environments collectively contribute to burnout and dissatisfaction (WHO, 2023). Nurses in overstretched health systems often face physical and emotional exhaustion, leaving them more vulnerable to mistakes and reducing the quality of care provided (McCarthy & Monteverde, 2018). Such conditions push nurses to seek employment in countries that prioritise staff well-being, where supportive workplace cultures and structured stress-management programmes are available (Gozum et al., 2023). Addressing these concerns requires systematic interventions, including the recruitment of sufficient staff, investment in occupational health programmes, and the creation of work environments that value and reward the contributions of nursing professionals (Ibrahim et al., 2024). Without these measures, healthcare systems will continue to lose critical talent, perpetuating the cycle of migration and its negative consequences.

Inadequate infrastructure and resources represent another powerful driver of brain drain among nurses. Healthcare facilities in Nigeria and similar contexts often lack the necessary equipment, supplies, and technological support required for effective service delivery (World Bank, 2024). Nurses working under such conditions experience frustration and moral distress when unable to provide adequate care, which fuels dissatisfaction and emigration (Lopes, Almeida, & Almada-Lobo, 2021). Beyond material shortages, issues of insecurity also weigh heavily on the profession. Nurses in some regions face risks of violence, kidnapping, or occupational hazards without adequate protective mechanisms, making relocation to safer environments an appealing alternative (Umar, Salihu, & Azuine, 2025). Furthermore, political and economic instability ranging from policy inconsistencies to inflation and social unrest erodes job security and quality of life for healthcare workers (NMCN, 2021). These combined pressures significantly weaken health systems and deepen public health vulnerabilities.

Ultimately, the consequences of nursing brain drain extend beyond national borders, as the global health workforce crisis threatens collective progress toward universal health coverage. While high-income countries benefit from the influx of skilled foreign nurses, LMICs bear the brunt of the loss, with profound impacts on patient safety and healthcare outcomes (WHO, 2019; OECD, 2023). The migration of nurses has become a double-edged sword: while it creates remittance flows that support families back home, it simultaneously drains local healthcare systems of essential expertise (Kingma, 2020). To mitigate these consequences, scholars and policymakers emphasise the urgent need for international cooperation, ethical recruitment practices, and domestic reforms that invest in nursing education, job creation, and leadership pathways (WHO, 2023; NMC UK, 2022). Unless these measures are

implemented, the nursing brain drain will continue to destabilise fragile healthcare systems, undermining global health equity and the resilience of nations struggling to meet the healthcare demands of their populations.

Factors Influences Nursing Brain Drain

A major push factor contributing to this brain drain is the prevalence of low salaries and insufficient benefits, which leave nurses undervalued and struggling to meet their personal and family needs. Poor working conditions, characterised by inadequate infrastructure, overcrowded wards, and a lack of essential medical supplies, further exacerbate the problem by creating an unsafe and stressful environment for both nurses and patients. Limited opportunities for career progression within many health systems also foster a sense of professional stagnation, leading to frustration among nurses. Furthermore, the lack of autonomy and decision-making power reduces nurses' sense of professional worth, making them feel marginalised within multidisciplinary teams. Unsatisfactory living conditions, including poor access to housing, education, and healthcare, further reinforce the push to seek better prospects abroad (Aiken et al., 2022; Umar, Salihu & Azuine, 2025; Ibrahim et al., 2024).

On the other hand, attractive pull factors in high-income countries significantly contribute to nursing migration. Competitive salaries and robust benefits packages offered by industrialised nations present strong financial incentives for nurses from LMICs. In addition, the availability of modern facilities, well-equipped hospitals, and safer working environments enhance the appeal of working abroad. Career advancement opportunities, particularly in the form of specialisation and continuous professional development, provide nurses with avenues for upward mobility that may not be available in their home countries. The cultural and lifestyle attractions of more developed societies, coupled with better access to high-quality education and training opportunities, further entice nurses to migrate. These elements collectively present an alluring contrast to the professional and socio-economic struggles faced in their home contexts, fuelling the ongoing cycle of brain drain (OECD, 2023; WHO, 2023; Özdemir & Sevinç, 2023).

Beyond individual push and pull factors, global systemic dynamics also influence the flow of nurses across borders. The growing interconnectedness brought about by globalisation and international migration has significantly reduced the barriers for nurses seeking work abroad. Developed countries, grappling with ageing populations and rising healthcare demands, actively recruit foreign nurses to fill workforce gaps. International recruitment agencies play a pivotal role in this process by facilitating the movement of nurses from under-resourced regions to wealthier nations. In addition, global trade agreements and economic partnerships often include provisions that simplify labour mobility, inadvertently accelerating the migration of healthcare professionals. Consequently, LMICs face a double burden: the loss of skilled health professionals and the increasing strain of health system demands on the remaining workforce (McCarthy & Monteverde, 2018; Kingma, 2020; Lopes, Almeida & Almada-Lobo, 2021).

The consequences of nursing brain drain are profound, particularly for the healthcare systems of source countries. The departure of skilled nurses weakens already fragile health infrastructures, reduces patient safety, and exacerbates inequities in access to quality

healthcare. For instance, Nigeria and Ghana continue to face critical nurse shortages due to migration, which undermines their ability to achieve universal health coverage. This imbalance perpetuates health disparities between low- and high-income countries and impedes progress toward global health targets. Moreover, the financial investment made by governments in training nurses is lost when these professionals emigrate, leading to a cycle of underinvestment and dependency on foreign aid or expatriate workers. These consequences underscore the urgent need for comprehensive policy interventions that address both the root causes and the systemic factors fuelling brain drain (Anyangwe & Mtonga, 2007; Olubukoye, Adeyemi & Olatunde, 2024; Peters, Palomo & Pittet, 2020).

Addressing the challenge of nursing brain drain requires a multi-pronged approach that combines national, regional, and global strategies. Source countries must prioritise improving salaries, benefits, and working conditions to retain their nursing workforce. Investing in professional development, expanding opportunities for specialisation, and enhancing decision-making autonomy for nurses can foster greater job satisfaction and career loyalty. At the same time, international collaboration is crucial to regulate recruitment practices and promote ethical standards, as outlined in the WHO Global Code of Practice. High-income countries must also acknowledge their role in exacerbating the crisis and explore strategies such as bilateral agreements that support workforce sustainability in LMICs. Ultimately, reducing the brain drain requires long-term investment in nursing education, job creation, and leadership development, ensuring that nurses worldwide are empowered, valued, and adequately supported (WHO, 2021; WHO, 2023; World Bank, 2024; Laari et al., 2024; Seven & Adadıoğlu, 2022)

Potential Strategies and Solutions to Mitigate the Effect of Brain Drain

The challenge of brain drain in the nursing profession requires comprehensive strategies that address both systemic and individual-level factors contributing to workforce migration. Strengthening healthcare systems in low- and middle-income countries (LMICs) remains one of the most critical approaches. Governments must invest in improving salaries, infrastructure, and professional development opportunities to enhance the working environment for nurses. Better pay and conditions not only reflect recognition of nurses' pivotal roles but also reduce the economic and professional pressures that drive migration (Olubukoye, Adeyemi, & Olatunde, 2024). In addition, increased funding for healthcare training and facilities can ease workforce shortages and create incentives for nurses to remain in their home countries. Aiken et al. (2022) emphasise that the disparity in healthcare infrastructure between low- and high-income countries is one of the strongest determinants of migration, underscoring the urgent need for robust investment in domestic health systems. Without such interventions, LMICs will continue to lose their trained workforce to countries offering better compensation and career prospects.

Another key solution involves regulating international recruitment through ethical frameworks and bilateral agreements. The WHO Global Code of Practice on the International Recruitment of Health Personnel provides guidance to ensure that recruitment processes are fair and do not disadvantage source countries already facing shortages (WHO, 2019). For example, unethical practices such as aggressive recruitment from understaffed regions can further weaken fragile healthcare systems, exacerbating disparities in access to care. To

counter this, countries can negotiate agreements that balance the rights of healthcare workers to seek opportunities abroad with the need to protect domestic systems. McCarthy and Monteverde (2018) argue that international migration policies must be designed to uphold equity and shared responsibility between sending and receiving countries. Similarly, Lopes, Almeida, and Almada-Lobo (2021) highlight that recruitment policies must be aligned with global health security goals, since unchecked workforce migration undermines the sustainability of healthcare delivery in LMICs. Such regulatory measures create a framework where mobility is managed without depleting the human resources essential for local healthcare systems.

Encouraging circular migration has also emerged as a promising strategy to mitigate the long-term consequences of brain drain. Circular migration enables nurses to work abroad, gain valuable skills and exposure, and subsequently return to contribute to their home countries. The Philippines and other nurse-exporting nations have developed return migration programmes to harness this model, ensuring that global experiences benefit national health systems rather than permanently draining them (World Bank, 2024). OECD (2023) reports suggest that circular migration can be mutually beneficial, provided there are reintegration programmes and incentives for returnees. For LMICs, this approach has the potential to build a more skilled workforce while maintaining international exchange. Seven and Adadıoğlu (2022) note, however, that successful implementation depends heavily on domestic policies that support reintegration and career development, without which returning nurses may still seek re-emigration. In this context, circular migration should not be seen as a panacea but as part of a broader mix of strategies aimed at sustaining the workforce.

Leveraging technology and telemedicine represents another innovative solution, particularly in contexts where physical shortages of nurses are acute. Through digital health platforms, expatriate nurses can contribute remotely by providing teleconsultations, mentoring, and training to their colleagues at home (WHO, 2023). Such approaches not only expand healthcare access in underserved areas but also foster ongoing collaboration between diaspora professionals and local systems. Peters, Palomo, and Pittet (2020) highlight that the integration of technology into nursing care can mitigate the effects of brain drain by ensuring that expertise continues to circulate despite physical migration. However, realising the full potential of digital health solutions requires significant investments in infrastructure, digital literacy, and data security frameworks. As Umar, Salihu, and Azuine (2025) explain, countries such as Nigeria can capitalise on digital health as a way to transform their crisis of brain drain into an opportunity for innovation, provided policymakers commit to long-term investments in technology-driven healthcare.

Finally, improving compensation, working conditions, and career development opportunities is essential for building a sustainable and satisfied nursing workforce. Competitive salaries and comprehensive benefits packages including retirement plans, healthcare coverage, and allowances help ensure that nurses feel valued and supported in their roles (Ibrahim et al., 2024). Beyond financial incentives, enhancing opportunities for training, mentoring, and career progression increases job satisfaction and loyalty, reducing the likelihood of migration (Laari et al., 2024). Buchan, Catton, and Shaffer (2022) argue that career advancement structures not only enhance workforce retention but also improve the quality of care,

creating a virtuous cycle that benefits both healthcare providers and patients. Moreover, implementing policies to reduce excessive workloads, ensure adequate staffing, and promote work-life balance can significantly improve retention (Anyangwe & Mtonga, 2007). As Kingma (2020) points out, migration decisions are rarely based solely on pay; rather, they reflect a combination of financial, professional, and social factors. Addressing these comprehensively is therefore critical in tackling brain drain. A multi-dimensional approach that combines policy reform, fair recruitment, digital innovation, and investment in human capital offers the most sustainable path forward.

Implications to Nursing Education and Practice

The implications of brain drain for nursing education are profound, as the continuous migration of qualified nurses reshapes both the training environment and the expectations placed on educational institutions. Globalisation and increasing ease of migration have made it more attractive for nurses to seek opportunities abroad, leaving nursing schools in developing nations to contend with dwindling faculty numbers and a shortage of experienced mentors. This not only affects the quality of training available but also places pressure on institutions to expand enrolment to meet domestic demand while simultaneously losing graduates to foreign markets. The challenge is compounded by demographic shifts such as ageing populations and rising healthcare needs, which heighten the demand for skilled nurses at a time when many are leaving. Additionally, international recruitment agencies and policies embedded in global trade agreements create pathways that further enable outward migration, making it difficult for nursing education systems in low- and middle-income countries to retain their talent pool. Consequently, nursing schools must adapt curricula and strengthen retention strategies to prepare nurses for both local service delivery and the realities of a globalised labour market.

In nursing practice, the effects of brain drain manifest in several ways that directly impact patient care and the stability of healthcare systems. A shortage of experienced nurses often translates into reduced quality of care, as fewer hands are available to provide safe and effective services, especially in critical and specialised areas. This shortage increases the workload for those who remain, leading to fatigue, burnout, and lower job satisfaction, which in turn fuels a cycle of further attrition. Rural and underserved areas are particularly vulnerable, as the departure of even a small number of skilled nurses can result in disrupted services and reduced access to essential healthcare. Over time, this weakens the resilience of health systems, undermines public trust, and widens disparities in care delivery. For the remaining workforce, the lack of recognition and support can reduce morale and retention, creating a fragile environment where sustaining adequate staffing levels becomes increasingly difficult. These challenges highlight the urgent need for systemic solutions that not only address the immediate shortages caused by migration but also focus on creating supportive and rewarding environments that encourage nurses to remain in practice locally.

Wayforward

Short-term recommendations to curb the brain drain among nurses and other healthcare professionals must focus on immediate improvements in working conditions, salaries, and benefits. Nurses are often overworked, underpaid, and exposed to difficult working environments, which pushes them to seek better opportunities abroad. In addition, providing

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opportunities for professional growth through continuous training, mentorship, and leadership development is essential to sustain motivation. When nurses see clear pathways for career advancement, skill acquisition, and recognition, they are less likely to migrate in search of better prospects. These measures do not require decades to implement; they are immediate, practical, and can help slow down the migration tide while long-term structural reforms are being developed.

Long-term recommendations, however, require a more strategic and systemic approach. Developing and implementing a robust national health workforce plan is vital to ensuring sustainability in human resources for health. Such plans should account for the current gaps, future projections, and training capacities to align with national healthcare needs. International cooperation is equally important, as the brain drain is a global issue that cannot be solved by individual countries alone. Partnerships between governments, international organisations, and healthcare institutions can promote equitable distribution of healthcare workers while fostering shared responsibility. Alongside this, heavy investment in nursing education and research will be key to building local capacity and ensuring innovation in healthcare delivery.

Conclusion

Nursing brain drain remains one of the most pressing threats to healthcare delivery, particularly in low- and middle-income countries where fragile systems are already overburdened. The combined effects of poor remuneration, inadequate infrastructure, limited career prospects, and unsafe working conditions push skilled professionals to migrate in search of better opportunities, leaving behind critical gaps in patient care and workforce sustainability. While the benefits of migration may accrue to destination countries, the source nations bear heavy losses in human capital, financial investment, and health outcomes, thereby deepening global health inequities. Addressing this challenge demands both immediate and long-term interventions: short-term strategies must focus on improving salaries, working conditions, and professional development opportunities to retain talent, while long-term measures should include comprehensive workforce planning, investment in nursing education, international cooperation, and ethical recruitment frameworks. Only through a coordinated and multi-dimensional approach can the global community safeguard the future of nursing and strengthen healthcare systems to deliver equitable, resilient, and sustainable care for all populations.

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