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The factors that are associated with nurse immigration in lower- and middle-income countries: An integrative review

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Abstract

Aim: This study aims to synthesize the factors associated with nurse emigration from lower and middle-income countries.

Design: Integrative review.

Methods: An in-depth search of registries and five databases yielded 9466 records. Using the PRISMA guidelines, 11 were chosen after screening by two authors independently. The mixed methods appraisal tool (MMAT) was used to assess the risk of bias.

Results: The destination countries were Europe and North America, with an inclination for nurse migration of 14.3%–85%. Emigration factors were poor salary, working conditions, poor quality healthcare infrastructure; outdated healthcare technologies, lack of employment opportunities, younger age, relationship status (single), living environment, social pressure, urban residence, work experience, insecurity, high crime rates, political corruption and foreign language skills.

Public Contribution: Healthcare authorities and nursing leaders must implement practical measures to minimize nurse emigration.

KEYWORDS
a low-income country, emigration, foreign country, migration, nurses, review, workforce

1 | BACKGROUND

Many highly qualified and educated professionals emigrate in search of prospects for advancement in society and improved economies overseas (Kadel & Bhandari, 2019). Emigration refers to the act of leaving one's own country to settle permanently in another and is mostly associated with the pursuit of better conditions or moving away from unfavourable conditions (like wars or famine) in the home country. The emigration of highly skilled healthcare professionals is disproportionally higher in lower- and middle-income countries. The immigration of healthcare professionals to industrialized economies has been an age-long challenge (Bimal et al., 2016; Qi & Chimenya, 2015). Immigration is a situation where a person decides

to live permanently or for a long period of time in another country. Higher incomes, improved living standards, access to cutting-edge technology and more stable political environments attract talent to advanced and industrialized countries (Bimal et al., 2016). In medical circles, this situation results from the decision of the health worker to live in another country due to the special skills they possess and the decision to attain meaningful employment (Qi & Chimenya, 2015). The concept of immigration is colloquially referred to as brain drain (Qi & Chimenya, 2015). The continuous exodus of skilled professionals from one place or profession to another is called brain drain (Adovor et al., 2021; Qi & Chimenya, 2015). However, in this study, the concept is limited to where professionals move from one country to another. In this context, brain drain is described as the international

transfer of human resources from developing to developed countries (Kadel & Bhandari, 2019; Qi & Chimenya, 2015).

As nurses emigrate to these higher and industrialized economies, a vacuum is created in their home countries, leading to insufficient professionals to deal with the already impoverished healthcare situation. It is therefore critical that research evaluate the factors that are associated with nurse emigration, especially from lower resource settings.

2 | INTRODUCTION

Lower- and middle-income countries' health professionals make up a sizeable fraction of the immigrants to developed countries. This causes increased concern worldwide due to its impact on healthcare systems in developing countries (Bimal et al., 2016). There is a growing concern about the negative consequences of international migration on developing countries, causing nurse shortages (George et al., 2019). Countries described as lower- and middle-income economies are largely found in sub-Saharan Africa, Southeast Asia and South America. These countries are defined as lower-middle-income economies because their Gross National Income per capita ranged between $1036 and $4045 as of 2021 (World Bank, 2022).

The past decade has seen low-income countries lose many healthcare professionals, especially nurses, to advanced industrial countries (Aluttis et al., 2014). Registered nurses from donor countries frequently choose to work in developed industrial countries like the United States and the United Kingdom, which compromises the optimal operation of the health systems in the countries of origin (Aluttis et al., 2014; Kadel & Bhandari, 2019). For instance, Nepal's private universities are training more nurses who are eager to emigrate for further studies or seek employment abroad (Kadel & Bhandari, 2019). The National Health Service (NHS) employs over 5405 Nigerian-trained doctors and nurses in the United Kingdom, making up 3.9% of the 137,000 foreign personnel from 202 countries (Adebayo & Akinyemi, 2021; Okafor & Chimereze, 2020). This increasing trend is because organizational emigration factors exist in developing countries, such as ambiguous career options, low incomes, increased workloads, poor working conditions, insufficient medical equipment and training opportunities (Adebayo & Akinyemi, 2021; Kadel & Bhandari, 2019).

The negative impact of nurse emigration in middle- and lower-income countries is detrimental to the health sector's development (Aluttis et al., 2014; Kadel & Bhandari, 2019). The socio-economic factors other than the shortage of skilled workforce, including nurses, influence the supply of critical workforce, especially in the health sector (Kadel & Bhandari, 2019). The continued emigration of a critical workforce (nurses) from developing countries may also lead to a loss of tax revenue and a critical energy workforce that can promote the development of the healthcare sector (Sterud et al., 2018; Te et al., 2018). The emigration of nurses also leads to a decline in international competitiveness because of the loss of skilled labour, which affects the international exchange rate and the local threshold for a basic wage (Yakubu et al., 2022). Nurse emigration also

leads to a loss of potential investment in the country or even discouraged international aid donors because of a lack of people who can work with and implement essential policy and social change (Qi & Chimenya, 2015). Policymakers, health service administrators and nurse managers must identify and implement measures to curtail the growing emigration of the health workforce, especially nurses (Chibango, 2013; Qi & Chimenya, 2015).

The most effective long-term approach to tackling the medical brain drain is an integrated policy plan (Chibango, 2013; Qi & Chimenya, 2015). Research on emigration, particularly in developing countries, has fallen short of assessing the determinants because cross-sectional studies considered a diverse perspective of nurse emigration with limited integration of these factors across countries. Also, several reviews are conducted on nurse/health worker migrations (Sterud et al., 2018; Te et al., 2018; Yakubu et al., 2022). These studies focused on the impact of migration on the health workforce (Te et al., 2018), the working conditions of migrant health workers including nurses (Sterud et al., 2018) and governance-related factors that influence nurse migration (Yakubu et al., 2022). However, no studies that integrate and synthesize factors related to nurse migration in lower- and middle-income countries have yet been published to the best of our knowledge. Understanding and integrating the factors associated with nurse brain drain will be a panacea for theory development, and policy formulation for mitigating the impact of migration. Therefore, this integrative review synthesized the factors associated with nurse emigration in lower- and middle-income countries. This review highlights the factors within lower and middle-income countries that promote migration while also identifying those with the destination countries that attract nurse immigrants.

3 | AIM

This study synthesized the factors associated with nurse emigration in lower- and middle-income countries.

4 | METHODS

4.1 | Search strategy

There was an in-depth search of five electronic databases using predetermined search terms. The databases searched were PubMed Central, Cumulative Index to Allied Health Literature (CINAHL), Embase, Scopus and Web of Science. The search was conducted from January 2010 to June 2022. The keywords that were used mainly consisted of the population (nurses), interventions (factors associated), comparison (non-identified), outcome (brain drain) and design (any design)—PICOD framework. The keywords adopted used MeSH terms (in PubMed), Emtree words (in EMBASE), synonyms and other derivatives by combining them with the appropriate Boolean operators, wild carts and truncation. An example of the search terms in

PubMed Central included ((nurs*) OR (experienced nurs*) OR (nursing staff*) OR (workforce)) AND ((Low-income country) OR (Middle-income country) OR (health work*)) AND ((Brain drain) OR (travel out) OR (greener pasture*) OR (work abroad) OR (Nurse migration)) AND ((Human resource) OR Competent* OR (Human capital)) AND ((Quantitative research) OR (qualitative research) OR (mixed method) OR (observational) OR (cross-sectional)). The keywords were modified to suit each database search strategy. The search and reporting for this study were guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) checklist (Page et al., 2021).

4.2 | Inclusion and exclusion criteria

The main inclusion criteria were studies from lower- and middle-income countries (based on the world bank classification of countries) involving nurses, moving to another country to work, written in English language and articles published between January 2010 and June 2022.

The studies that were mainly excluded described factors related to training and recruiting the health workforce, health policy planning, human resource strategizing, planning for improving the quality of the health workforce (in both origin and destination countries), challenges associated with nurse workforce, health worker shortages, mitigating strategies, effects of health worker motivation on staff retention, reasons to engage or work rurally in the home country, predictors of workforce integration in target countries, the experience of migrant health workers in destination countries and impact of health worker migration on health indices in countries of origin.

4.3 | Search results

The in-depth search of the electronic databases using the PICOD framework retrieved 9466 records (7 studies were retrieved from reviewing registries). The search and outcome from each database are added in Supplementary File S1. The total retrieved records were transferred to endnote 20, and duplicates (75) were identified and deleted, as shown in Figure 1. Eventually, 29 abstracts were selected for full-length article reading and screening, and 11 articles met the inclusion criteria and were selected for this study.

4.4 | Quality appraisal

The tool that was used to assess the methodological quality of the selected studies was the mixed methods appraisal tool (MMAT) because it is appropriate for assessing the quality of various research designs simultaneously (Hong et al., 2018). Two researchers (the first and second authors) independently assessed the quality of each study and compared the results. Hong et al. (2018) argued that when using the MMAT the authors ought not to make a score but to

present the results after building consensus between two reviewers. Therefore, in using this tool, we presented the results of the appraisal without an overall score.

4.5 | Data extraction and analysis

Two researchers (the first and second authors) independently developed a matrix, compared, discussed and accepted it for data extraction. Each author extracted data using this predetermined matrix, and the extracted data were then compared and synchronized. This allowed for comprehensiveness in extracting relevant information about the factors influencing nurse emigration in lower- and middle-income countries. Where there was a discrepancy in the extracted information, a third author was invited to read the article and act as an arbiter. The decisions were upheld through consensus.

The data analysis used the convergent synthesis design by adopting the thematic data analysis principle. The data were transformed into qualitative descriptive statements according to a predefined principle (Hong et al., 2017; Pluye & Hong, 2014). After transforming all findings into descriptive qualitative statements, line-by-line coding of the statements was independently conducted as free codes by two authors and compared. Related and similar codes coalesced into subthemes, and similar ones further coalesced into the main themes. In this review, several individually developed pretested measurement tools were used to assess the factors associated with nurse emigration. Moreover, the selected studies identified several factors associated with nurse emigration, indicating high heterogeneity in the data, making it impossible to conduct a meta-analysis. Therefore, we did not conduct tests of heterogeneity, sensitivity or robustness of data. The analysis was limited to only conducting a thematic analysis of the factors that are associated with nurse emigration in lower- and middle-income countries by integrating the extracted data into themes.

4.6 | Ethical consideration

This study is an integrative review of the factors associated with nurse emigration in lower-and middle-income countries by using published and indexed articles in designated databases. Therefore, there was no need to seek ethical clearance from any ethics committee for this review.

5 | RESULTS

5.1 | Study characteristics

The search in five databases yielded 9466 records and 9391 records after duplicates were removed (75). Through title and abstract screening, 29 studies were identified for full-text reading. Using

FIGURE 1 PRISMA flow chart for the selection of studies.
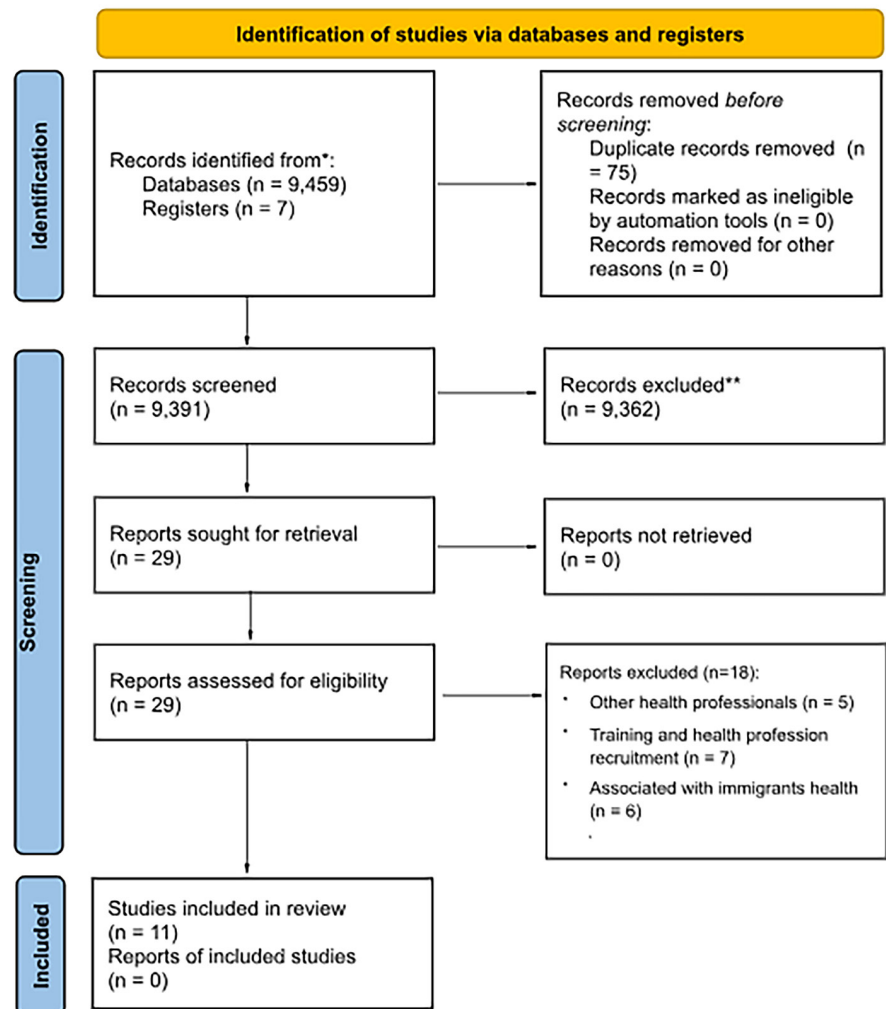
predetermined inclusion and exclusion criteria, 11 studies were identified as suitable for this study. The studies were conducted in the Philippines ($n=1$), Jamaica ($n=1$), South Africa ($n=3$), Ethiopia ($n=1$), the United Kingdom ($n=1$), Iran ($n=1$), Kenya ($n=1$), Serbia ($n=1$) and Taiwan ($n=1$), as shown in Table 1. The various study designs used were qualitative studies (Dimaya et al., 2012; Wojczewski, Pentz, et al., 2015), mixed methods design (Bidwell et al., 2014; Tomblin Murphy et al., 2016; Wojczewski, Poppe, et al., 2015; Worku et al., 2019), cross-sectional surveys (Asadi et al., 2017; Gacevic et al., 2018; Lowe & Chen, 2016; Williams et al., 2020) and secondary analysis of data (Gross et al., 2011).

5.2 | Thematic results

The studies investigating the migration of nursing professionals from developing countries were used for this integrative review. The main themes that emerged were (1) the proportion and destination country of migration, (2) the context of nurse migration, (3) problems created by nurse migration and 4) interventions to curtail nurse brain training as depicted in Table 2.

5.3 | The proportion of migration and destination countries

Developed countries were identified as destinations for nurse emigration (Tomblin Murphy et al., 2016; Wojczewski, Poppe, et al., 2015). Some of the preferred destinations were European countries (Wojczewski, Poppe, et al., 2015). In Jamaica, for example, the most frequent destination countries across all professions were Canada (64%), the United States (45%), another Caribbean nation (8%) and the United Kingdom (6%) (Tomblin Murphy et al., 2016). In Jamaica, 11% of health professionals worked as a member of their field outside of Jamaica, mostly in neighbouring Caribbean nations (Tomblin Murphy et al., 2016).

Additionally, 67.8% of Ethiopian health workers (including nurses) indicated having migration intentions (Worku et al., 2019), whereas 28.0% of South Africans who participated in the West African Health Organization's Young Professional Internship Program (YPIP) between 2005 and 2013 reported having intentions to migrate (Lowe & Chen, 2016). In Iran, the inclination to migrate was estimated at 54.8% among healthcare workers (Asadi et al., 2017), while in Serbia, 14.3% intended to work abroad (Gacevic et al., 2018).

TABLE 1 Distribution of study characteristics and prevalence of brain drain.

Ref, country	Purpose	Approach/design	Study population and sample	The prevalence of brain drain
Dimaya et al. (2012), Philippine	To determine the process of nurse migration drives the development of policies	Qualitative	High-level positions in nurse education, employment and migration. n = 58	
Tomblin Murphy et al. (2016), Jamaica	To describe the methods and findings of the Jamaica component of health worker migration	Mixed methods	Four professional groups: physicians, nurses, midwives and dental auxiliaries. n = 361	Nurses' (35%) interest in migrating had increased, and 15% indicated interest had decreased.
Wojczewski, Pentz, et al. (2015), South Africa	To compare to the experiences of doctors and nurses experiences of deskilling and discrimination during migration	Mixed methods	Health workers in five project partner countries n = 88 (25 nurses/midwives, 41 doctors, 22 medical technicians)	The proportion of lead migrants among nurses was high; almost 2/3, and more than 50% of the migrating physicians were lead migrants
Worku et al. (2019), Ethiopia	To assess the magnitude of intention to leave and associated factors among health workers working at primary hospitals.	Mixed methods	All health workers who were working in primary hospitals n = 382 (Nurses = 238 [62.3%])	Age of health workers 20–29 years, living out of the family, job opportunity, poor performance appraisal and low affective commitment were the factors affecting intention to leave.
Williams et al. (2020), UK	To describe adherence with the Code's principles and its continuing relevance in the international recruitment of health workers.	Quantitative survey	Foreign-trained doctors and nurses	
Asadi et al. (2017), Iran	To determine factors influencing intention to migrate in skilled human resources	Quantitative/ Cross-sectional	Health sector human resources n = 827	Inclination to travel was reported at 54.77%
Gacevic et al. (2018), Serbia	To determine the prevalence and predictors of job satisfaction, dual practice and intention to work abroad of workers in the Serbian healthcare	Quantitative/ Cross-sectional	Health workers n = 73,940	11.7% reported dual practice, and 14.3% had the intention to work abroad
Bidwell et al. (2014), South Africa	To explore factors influencing the decision to migrate and post-migration experiences	Mixed method	Doctors and nurses who had migrated to the UK. n = 16	
Wojczewski, Poppe, et al. (2015), South Africa	To explore the professional links that migrant health workers from sub-Saharan Africa living in 5 African and European destinations in countries of origin	Qualitative	migrant doctors, nurses and midwives n = 66 (Belgium 12, Austria 14, Botswana 15, South Africa 15).	
Gross et al. (2011), Kenya	To examine the impact of out-migration on Kenya's nursing workforce	Secondary data analysis	Nurses in Kenya n = 41,367	From 1999 to 2007, nurses (n = 2581 22%) applied to out-migrate. For every 4.5 nurses Kenya adds to the nursing workforce, 1 nurse in the workforce applies to out-migrate.
Lowe and Chen (2016), Taiwan	To describe the socio-demographic characteristics associated with migration and the reasons for going to a preferred or most likely destination	Quantitative/ Cross-sectional	Young professionals that participated in the Young Professional Internship Program of the West African Health Organization (2005–2013). n = 118	Migration was more common among males and those less than 31, single and high dependency, or previous work abroad. Having a medical profession and being posted to urban or semi-urban areas were also associated with emigration.

TABLE 2 Distribution of measurement tools and key findings.

Author	Tool/ Instrument	Determinants of brain drain	Key findings
Dimaya et al. (2012)	semi-structured interview	Policy, low salary, poor condition, outdated health care technology lack of opportunity	• Participants described emigration factors as internal conditions within the Philippines. • Nurses' low salaries within both the public and private, poor working conditions, outdated healthcare technologies and lack of employment opportunities are the main emigration factors.
Tomblin Murphy et al. (2016)	-Survey questionnaire two formats	Age, income, cost of living, the quality of infrastructure	• The factor predicting intention to migrate was age, with older respondents having a lower likelihood. • The highest-ranking reason for a desire to migrate was related to respondents' income (64%) relative to living costs (57%).
Wojczewski, Pentz, et al. (2015)	Semi-structured interviews	Short-term, long-term, or permanent inability to work as the healthcare professional	• Almost all respondents experienced short-term, long-term, or permanent inability to work as healthcare professionals; however, few reported positive career development post-migration. • Discrimination based on a foreign nationality, race, or gender was a major challenge.
Worku et al., (2019)	Standardized structured questionnaires and -semi-structured interview	Poor system and the criterion commitment, no professional development, recognition, incentives/ rewards, working conditions, and vibrant leaders	• Health workers who were unsatisfied with their performance appraisal results were 2.97 times (AOR 2.97; 95% 1.64,5.36) more likely to leave their current organization • Health workers who have low affective commitment were 3.12 times (AOR 3.12; 95% CI: 1.64, 5.92) more likely to intend to leave their current organization as compared to those who have high affective commitment.no professional development, recognition, incentives/ rewards, adequate working materials, good working environment and vibrant leaders.
Williams et al., (2020)	Questionnaire on non-monetary healthcare statistics	International experience	• Nurses trained in the most common lower and middle income countries of training were most likely to reside in the UK, whereas those trained in Europe were most likely to reside in a neighbouring country.
(Asadi et al., 2017)	Self-developed pretested questionnaire	Age, work experience, employment status, marital status, familiarity with a foreign language, relatives or family living abroad, prior experience of living abroad	• The most important factors influencing the inclination to migrate were reaching out for better life (81.92 ± 21.95), interdisciplinary discrimination (80.83 ± 20.75) and experience of living and studying abroad (80.55 ± 18.12). • People (<35 years old and <5 years' work experience), with informal employment, familiarity with the foreign language, foreign language skills, relatives living abroad, being abroad and had a foreign language course, were most inclined to migrate
Gacevic et al., (2018)	Self-developed questionnaire	Personal job satisfaction, Male, Professional category-nurses, Having a dual practice	• Personnel dissatisfied with their job in the Network had 3.57 times greater odds to have an intention to work abroad ($p < 0.001$). • Males (1.53 times); participants younger than 55 years (2.72 times); nurses (1.28 times); staff from secondary and tertiary level (1.41 and 1.68 times respectively) and managers (26% less likely) intention to work abroad. • Personnel having dual practice (1.55 times greater odds) have the intention to work abroad ($p < 0.001$).
Bidwell et al., (2014)	Semi-structured interviews	Insecurity, high levels of crime, and racial tension	• The wish to work and train in what was perceived to be a first-class care system was a pull factor to migrate to the United Kingdom. • Instead of obtaining new skills, many (particularly nurses) felt they had become 'deskilled'. • Many also felt that working conditions and opportunities for them in the UK National Health Service (NHS) compared unfavourably with the private sector in South Africa
Wojczewski, Poppe, et al., (2015)	Self-developed semi-structured interview	Skill organization, ability to still be registered at home Scientific practice in the destination country	• African migrant health workers are actively engaged in improving living conditions for their family members and the population. • Migrants are mediators and active networkers in a globalized and transnationally connected world

(Continues)

TABLE 2 (Continued)

Author	Tool/ Instrument	Determinants of brain drain	Key findings
Gross et al., (2011)	Secondary data analysis	Age	• Nursing (85%) applying for out-migration were registered, or B.SC nurses prepared and within ten days (49%) of their initial registration • First-time applicants (82%) were for the United States or the United Kingdom • For every 4.5 nurses Kenya adds to its training workforce, a nurse applies for migration.
Lowe & Chen, (2016)	A web-based online survey questionnaire	Younger age, Less work experience, High level of dependency, No previous work experience	• Health workers (28%) have a history of migration. • Migration was more common among males, less than 31 years, single, with high dependency level and no previous work experience • Reasons for migration were the fair level of workload, job promotion and limited risk

Also, between 1999 and 2007, it was reported that about 6.0% of the total workforce of Kenya had applied for migration, and 85.0% of these were registered nurses (Gross et al., 2011). The proportion of nurses working in the destination countries was also substantial (Williams et al., 2020). In the five case studies described, foreign-trained physicians and nurses made up over a quarter of the physician workforce and 5.0% of the nursing workforce in 2018 (Williams et al., 2020). Registered nurses had an out-migration probability that was 7.7 times greater than enrolled nurses, while a nurse with a degree had an out-migration probability that was 15.5 times greater than that of enrolled nurses (Gross et al., 2011).

5.4 | The context of nurse migration

This theme identified sub-themes associated with the context of migration among nurses. The sub-themes identified were the emigration factors for nurses and the factors that attract nurses to the destination countries.

5.4.1 | Emigration factors for nurses

These emigration factors mainly focus on forcing nurses to relocate from their country of training to work in developed nations. The emigration factors for nurses were poor salary (Dimaya et al., 2012; Gacevic et al., 2018; Lowe & Chen, 2016; Tomblin Murphy et al., 2016), outdated healthcare technologies (Dimaya et al., 2012; Gacevic et al., 2018), lack of employment opportunities (Asadi et al., 2017; Dimaya et al., 2012; Gacevic et al., 2012; Gross et al., 2011; Tomblin Murphy et al., 2016) and poor healthcare infrastructure (Tomblin Murphy et al., 2016). Age between 20 and 29 years old, living away from home, the chance to have other jobs, ineffective performance evaluation and having affective commitment were the factors that influenced the intention to migrate among Ethiopian health workers including nurses (Asadi et al., 2017; Gross et al., 2011; Worku et al., 2019). Other factors associated with nurses' migration were social factors that were described as family and social pressures

(Asadi et al., 2017; Dimaya et al., 2012). In South Africa, the main emigration factors were being a male, less than 31 years old, single and currently unemployed, or working in an urban setting, insecurity including high levels of crime and racial tension (Bidwell et al., 2014; Lowe & Chen, 2016; Williams et al., 2020). Also, other emigration factors for nurses' migration were the readily available recruitment agencies that vigorously advertise their services (Asadi et al., 2017; Wojczewski, Pentz, et al., 2015; Wojczewski, Poppe, et al., 2015).

Age, work experience, employment, marital status, knowledge of a foreign language, possession of foreign language skills and enrolment in a foreign language course are some demographic factors that significantly affect nurse/healthcare providers' intentions to migrate (Bidwell et al., 2014; Gacevic et al., 2018; Gross et al., 2011). Other critical factors were having relatives live abroad (Asadi et al., 2017; Bidwell et al., 2014; Gacevic et al., 2018), and having prior work experience abroad (Asadi et al., 2017). Healthcare professionals working in tertiary or secondary-level facilities were more likely to migrate than those working in a primary healthcare facility (Gacevic et al., 2018).

Factors that attract people to be inclined to migrate are better interdisciplinary discrimination and having experience of education abroad (Asadi et al., 2017). High HIV prevalence, shortage of staff, heavy workloads, limited medical resources and the adverse effects of affirmative action on job prospects in South Africa were some of the endogenous factors that caused the migration of nurses (Bidwell et al., 2014), while high crime rates, concerns about personal safety, the political environment, disappointment over a lack of facilities and political corruption were the exogenous driving forces (Bidwell et al., 2014).

5.4.2 | The factors that attract nurses in the destination countries

The factors that attract nurses in the destination countries mainly were multiple and interrelated. These factors are the relief policies developed countries provide better service conditions for nurses (Bidwell et al., 2014; Dimaya et al., 2012; Tomblin Murphy

et al., 2016). An important factor that motivated the migration of nurses was the employment opportunities available in the destination countries (Asadi et al., 2017; Bidwell et al., 2014; Gross et al., 2011; Tomblin Murphy et al., 2016; Wojczewski, Poppe, et al., 2015). Certain personal factors like divorce or unhappy family life influenced the decision to migrate among some migrants (Wojczewski, Pentz, et al., 2015; Wojczewski, Poppe, et al., 2015). Sometimes those in the medical field move away because they were educated in their destination countries' markets. Another push factor was the disproportionate training of professionals by lower- and middle-income countries, where some trained professionals have limited job prospects (Asadi et al., 2017; Bidwell et al., 2014; Williams et al., 2020). Also, for migrants in destination countries, payment, career development and working conditions were significant factors that attract nurses in destination countries (Bidwell et al., 2014; Lowe & Chen, 2016). While nurses trained in Europe were more likely to live in a neighbouring country, those trained in lower and middle-income countries were more likely to reside in the United Kingdom (Williams et al., 2020). Respondents from African countries indicated they wanted destinations with reasonable workloads, opportunities for job advancement and minimal occupational risk (Lowe & Chen, 2016).

5.5 | Problems created by nurse emigration

It is generally difficult to quantify and measure the impact of nurses' migration in developing countries (Tomblin Murphy et al., 2016). This theme was organized into subthemes that included the impact of nurses' emigration on training nurses and healthcare providers, quality and quantity of patient care, socio-economic influences and impact on reaching the destination countries.

5.5.1 | Increase burden of training of nurses and healthcare providers in countries of origin

The emigration of nurses has a detrimental influence on the training and retention of nurses, especially the associated cost and workforce requirement (Dimaya et al., 2012; Tomblin Murphy et al., 2016). The continued migration of nurses leads to increased enrolment in training institutions (Dimaya et al., 2012; Tomblin Murphy et al., 2016). This results in increasing pressure on facilities and poor training output for nurses (Dimaya et al., 2012; Tomblin Murphy et al., 2016). This makes the continued investment in training nurses in developing countries yield minimal results (Tomblin Murphy et al., 2016). Another major challenge is the shift of nurse training to meet the demands of migrating countries (Dimaya et al., 2012). This low quality leads to the underperformance of nursing training institutions as standards are lowered to create additional training institutions and the standards required during training (Dimaya et al., 2012). Some contributing factors to the

low quality of training were identified as inexperienced faculty, inadequate facilities to meet demand and diminished exposure to patient care due to overcrowding in the clinical settings (Dimaya et al., 2012; Tomblin Murphy et al., 2016).

5.5.2 | Reduction in quality and quantity of patient care

Health service delivery in developing countries is negatively impacted by the migration of skilled medical personnel to developed countries (Dimaya et al., 2012; Gross et al., 2011; Tomblin Murphy et al., 2016). Factors related to poor-quality healthcare services are the exportation of skilled healthcare professionals to other countries (Dimaya et al., 2012). The influence of these factors was higher as there was a shift in the focus of nurses to clinical, secondary and tertiary levels of care from primary disease prevention (Dimaya et al., 2012). A study in Kenya showed a significant reduction in the nursing workforce even though there was an increase in training capacity (Gross et al., 2011). Another challenge identified was the oversupply of nurses who lack basic clinical experience, making them unsuitable for the international market and leading to a high prevalence of unemployed nurses—a paradox (Dimaya et al., 2012; Tomblin Murphy et al., 2016). Recruiting and retaining health professionals has become more difficult due to migration (Tomblin Murphy et al., 2016). For example, the shortage of a nursing workforce in Jamaica has led to increasing nurse burnout that impacts the quality of healthcare service provision (Tomblin Murphy et al., 2016). The reduction in the workforce of nurses in developing countries has also been associated with reduced coverage for immunization and strategies for the control of HIV AIDS (Tomblin Murphy et al., 2016).

5.5.3 | Socio-economic impact of the emigration of nurses

The emigration of nurses to developed countries has some socio-economic repercussions for their countries of origin. One significant positive impact of migration is the remittances sent home by migrants (Tomblin Murphy et al., 2016). Another significant benefit of migrating was gaining research skills (Bidwell et al., 2014). Migrant professionals were still registered with the professional regulatory bodies in their home countries (Wojczewski, Poppe, et al., 2015). It was claimed that by assisting with health education and social structures, migrant health workers maintain professional ties with their home countries (Wojczewski, Poppe, et al., 2015). Many migrant workers worked with non-governmental organizations in their countries of origin and supported community members (Wojczewski, Pentz, et al., 2015; Wojczewski, Poppe, et al., 2015).

The socio-economic challenge is the lack of adjustment of returning migrants as they are faced suddenly with the lack of equipment

and poor salary conditions (Tomblin Murphy et al., 2016). Also, migrants indicated that they have challenges in establishing contact with their country of origin due to the political situations in those countries (Wojczewski, Pentz, et al., 2015; Wojczewski, Poppe, et al., 2015).

5.5.4 | The impact of emigration on the destination country

Some migrants had short, middle and long-time difficulty securing work as healthcare professionals to reach their destination country (Bidwell et al., 2014; Wojczewski, Poppe, et al., 2015). Discrimination in residing in a foreign country affects job prospects (Wojczewski, Poppe, et al., 2015). In destination countries, migrants are expected to learn a foreign language associated with challenges and long wait periods (Wojczewski, Pentz, et al., 2015; Wojczewski, Poppe, et al., 2015). Due to this, some healthcare professionals have had career path changes (Wojczewski, Poppe, et al., 2015). Another important factor that was also identified was the deskilling associated with the continuous non-use of skills obtained as some people had to wait between 2 and 10 years before securing the appropriate job (Bidwell et al., 2014; Wojczewski, Pentz, et al., 2015; Wojczewski, Poppe, et al., 2015). Healthcare workers reported they were disappointed upon reaching the destination country (Bidwell et al., 2014).

5.6 | Interventions to curtail nurse brain train

The studies identified several interventions that could curtail nurses' migration from developing to developed countries. The sub-themes that emerged from this were domestic-based and international interventions and those focused on destination countries.

5.6.1 | Domestic-based interventions

In the Philippines, the government developed a policy to ensure that they attained a sustained retention of the health workforce including nurses. The study by Dimaya et al., 2012 assessed using qualitative techniques the level of success related to the enacted policy. The enactment of the policy was seen as an essential intervention to control the spate of migration of nurses from the Philippines (Dimaya et al., 2012). Another action needed is to ensure domestic mind change by incorporating the sense of nationality in the newly trained nurses (Dimaya et al., 2012). Also, advocated interventions were nurse-led cooperatives and homes to empower the skills of newly qualified nurses and use home-based supports that will aid nurses in generating income aside from their usual work (Dimaya et al., 2012; Tomblin Murphy et al., 2016). Some identify local interventions to control the migration challenge for specific governments from lower-income countries to recruit from other countries

(Tomblin Murphy et al., 2016). For example, in Jamaica, the government has adopted a strategy to recruit from Nigeria and Cuba (Tomblin Murphy et al., 2016).

5.6.2 | International focus interventions

The use of the WHO Code and bilateral labour agreements were discussed concerning achieving ethical nurse recruitment (Dimaya et al., 2012; Williams et al., 2020). Making developing countries have an active role and responsibility in international labour migration will also aid in curtailing the migration of nurses (Dimaya et al., 2012). Another important factor in controlling the migration of healthcare professionals from developing countries is adhering to the international code of ethics on migration and recruitment (Williams et al., 2020).

5.6.3 | Interventions in destination countries

The interventions in the destination countries are expected to focus on means of improving skills (Wojczewski, Pentz, et al., 2015; Wojczewski, Poppe, et al., 2015), eliminating discrimination (Wojczewski, Pentz, et al., 2015) and helping foreigners to secure the appropriate jobs (Wojczewski, Pentz, et al., 2015). Other interventions included reciprocal trade, cross-border cooperation, the movement of minds and the destination countries (Dimaya et al., 2012).

5.7 | Results of quality appraisal

The MMAT has two screening questions that determine how clear the research question was and if the collected data answered the research question appropriately. All the studies were affirmative regarding those two screening questions. Some studies ($n = 4$) were assessed under the qualitative section. This section focuses on (1) the appropriateness of the approach to answering the research question, and the collection method, (2) the data collection method is appropriate, (3) if the interpretation was properly made and (4) if there was coherence in the data sources, collection, analysis and interpretation. All the studies (Bidwell et al., 2014; Dimaya et al., 2012; Wojczewski, Pentz, et al., 2015; Wojczewski, Poppe, et al., 2015) were adequate in all five categories. On the other hand, five studies were also assessed under the quantitative category (1) if the sampling strategy addressed the research question, (2) if the sample is representative of the population, (3) if the measurement is appropriate, (4) the risk of response bias and (5) if the data analysis was appropriately answered by a research question. All the studies (Asadi et al., 2017; Gacevic et al., 2018; Gross et al., 2011; Okeke, 2014; Williams et al., 2020) were deemed appropriate for this category. Two studies were assessed under the mixed methods study that evaluated the (1) adequacy of the rationale for using a mixed-method study design,

(2) effective integration of the different components of the study, (3) outputs of the integration of qualitative and quantitative components adequately interpreted, (4) divergence and inconsistencies between the qualitative and quantitative results addressed and (5) different components adhere to the qualitative criteria of each tradition of the methods involved. The two (Tomblin Murphy et al., 2016; Worku et al., 2019) studies were assessed to be adequate in these five categories. The appraisal details using the MMAT are shown in Supplementary File S2.

6 | DISCUSSION

This integrative review assessed the factors responsible for nurse emigration in low- and mid-income countries. These factors that influence nurse emigration were summarized into themes that included proportion and destination country of migration, the context of nurse migration, problems created by nurse migration and interventions to curtail nurse brain drain. These themes were organized such that we identified firstly the antecedents of migration, the effects of migration and how to curtail the same in lower- and middle-income countries. It is imperative that this systematic process of using the integrative synthesis method was adopted to allow readers to follow the synchrony of the presentation. The integrative synthesis showed that the causes of nurse migration are many and complex. This is because individual, family, community, society and national-level factors influence the decision of nursing professionals to migrate. It has been shown in other studies that the decision to migrate by the health workforce is influenced by many interacting factors (Labonté et al., 2015; Walton-Roberts et al., 2017).

The factors that influence the emigration of nurses can be viewed as those factors that drive the nurses from their country of origin and attract them to their land of destination. It has been demonstrated that these two dichotomies interact in a complex way to promote the migration of nurses from developing countries (Garner et al., 2015; Shamsi & Peyravi, 2020; Ward et al., 2019; Willis-Shattuck et al., 2008). Nurses and medical brain drain are influenced and motivated by multiple push and pull factors that attract nurses in the destination countries to interact in a complicated yet dynamic fashion to ensure the perpetuity of the act (Adovor et al., 2021). These emigration factors were identified to include socio-economic conditions, lack of nurses and equipment, poorly developed healthcare systems, other social factors outside the terrain of the health systems like wars and some personal motivations like the need to attain higher education. These factors were also reported in other studies (Labonté et al., 2015; Walton-Roberts et al., 2017). Other emigration factors were poor remuneration and higher living costs in some developing countries (Adovor et al., 2021; Dohlman et al., 2019). In lower- and middle-income countries, healthcare workers' salary is poor, with the increasing cost of living, lack of social security measures and poor retirement packages (Adovor et al., 2021). Several other studies

have reported the critical role of financing in health worker migration (de Silva et al., 2014; Kizito et al., 2015; Okeke, 2014). The role played by financial status is an essential ingredient for nurse motivation. Healthcare policymakers and implementers must institute practical measures to improve the healthcare system, develop equipment, improve staff remunerations and encourage nurses to desist from emigration. The patriotism of nurses to stay in their country of training and origin is critical to improving healthcare outcomes.

The factors that attracted nurses in the destination countries included the ability to speak the language of the destination country or another foreign language, having international travelling experience, having other relatives who live abroad, desire to have a higher education and knowing other health professionals who live and work abroad. These emigration factors were equally reported to influence brain drain in developing countries (Adovor et al., 2021; Asongu, 2014; Deressa & Azazh, 2012). The influence of relatives of a migrant in the decision to migrate has been noted to be critical to the process of nurse emigration (Asongu, 2014; Deressa & Azazh, 2012). These nonfinancial factors are also indicated to influence the overall decision as family ties, social networks and other people play critical roles in decisions (Dohlman et al., 2019; Fouad et al., 2015). Healthcare workers' desire to improve their skills and attain higher education has been reported in other studies (Nauriyal et al., 2019). To curtail the emigration of nurses as a long-term goal, developing countries must institute measures that give opportunity for the educational development of existing nurses through ensuring standardization of training skills and increased access to institutions. In developing countries, nurses can school and work simultaneously, and therefore skilled personnel will not be lost due to the need to access higher education.

The influence of emigration on the already minimal nurse workforce in low- and mid-income countries cannot be overemphasized. The net effect of emigration of healthcare professionals has disproportionately had a negative net effect on low- and mid-income countries' health indices (Crisp & Chen, 2014). The negative repercussions affect both individual and health services managers including governments of these countries. Nurse emigration is associated with poor service provision, reduced health access and diminished quality of care (Adovor et al., 2021; Crisp & Chen, 2014). The combined effects have resulted in maternal and child mortality, increasing burden on health systems due to infectious diseases and the high impact of non-communicable diseases and cost of treatment in the countries of origin. The disproportionate migration of nurses has also led to increasing healthcare costs both for individuals and governments (Adovor et al., 2021; Labonté et al., 2015; Walton-Roberts et al., 2017). Health professional shortages have been responsible for the high rate of mortality and morbidity associated with developing countries (Adovor et al., 2021). The inadequate numbers of health professionals have invariably made healthcare access and quality in those countries even poorer (Adovor et al., 2021; Crisp & Chen, 2014). One of the factors causing the ongoing trend of low healthcare indices is documented and acknowledged shortage of

healthcare professionals in developing countries (Adovor et al., 2021; Crisp & Chen, 2014; Dohlman et al., 2019).

However, the increasing emigration of nurses has somewhat improved the nature of healthcare services in developed countries (Adovor et al., 2021). Like other studies that reported migration data in a longitudinal study (Adovor et al., 2021), migrants primarily originated from island countries, low-income counties, sub-Saharan Africa and the Caribbean countries. Sub-Saharan Africa has poor healthcare systems and inadequate personnel. For example, in Nigeria and Egypt, it has been reported that the repercussions of nurse migration have a debilitating effect on the healthcare system especially with the exposure of healthcare system weaknesses due to the COVID-19 pandemic (Hashish & Ashour, 2020; Okafor & Chimereze, 2020). The destination countries have primarily been Europe, America and some developed countries in Asia. This has been noted to influence the number of nurses and other essential medical practitioners in these countries of origin (Adovor et al., 2021; Dohlman et al., 2019).

Measures to institute and ensure a critical health workforce require diverse interventions. An assortment of interventions must be initiated to create conducive working conditions in the countries of origin. These measures include improving working conditions by providing desired working equipment, critical training for nurses and establishing efficient educational systems that can improve the training requirements of nurses. This role in improving healthcare providers' working conditions was also reported (Nauriyal et al., 2019). Nurses must be given the necessary equipment to perform their duties in a safe working environment.

6.1 | Implications on nursing practice

The role of nurses in healthcare systems is critical for the overall outcome and improvement in developing countries. The increasing migration of nurses from lower-income countries for greener pastures in industrialized economies has cardinal effect on individuals seeking healthcare services, healthcare authorities and national governments. The continued emigration of these nurses also influences the ability of governments to plan adequately for the health workforce as the likelihood of nurse migration may be deemed unpredictable (Labonté et al., 2015; Walton-Roberts et al., 2017). This study has synthesized the factors that are associated with nurse brain drain from developing countries. This study provides an impetus to curtail the continued exodus of nurses by healthcare authorities, to identify and institute measures to critically mitigate those factors to curtail emigration and ensure the continued retention of nurses in these countries. The total prevention of nurse migration is also critical to ensure that governments can project how the health workforce can be utilized for the development of the healthcare systems. Healthcare authorities must collaborate with other sectors to ensure the sustained retention of the critical workforce in developing countries as the factors that promote the migration of nurses can be described as multi-dimensional and complicated.

6.2 | Strengths and limitations

This integrative review highlighted the factors associated with nurse emigration in lower- and middle-income countries. The study provides and integrates the factors both in the origin and destination countries that are emigration factors or attract the migration of nurses. The study also determined how nurse emigration affected the overall workforce and the quality of healthcare in low- and mid-income countries. We further provide a context for mitigating the continuous migration of nurses.

This study is not without some limitations. First, some studies targeted all health workers, of whom nurses were part. In such a situation, we included the study. It is therefore possible that if only nurses were targeted, their results could have been different. Second, one critical limitation associated with this study is the use of only English language-based studies. This might have increased the propensity to miss essential papers published in non-English languages. For these limitations enlisted here, the generalization of the findings should be made with caution, as papers from non-English language countries might have been left out. However, the study provides a good starting point for creating understanding and instituting measures that can promote the retention of trained nurses in lower- and middle-income countries. Third, another critical limitation of this study was the inability to have homogeneity in the data, making it difficult to conduct a meta-analysis. We could not conduct a sensitivity analysis or test robustness due to the heterogeneity of the data. Regardless, the use of thematic analysis allowed us to elicit the factors associated with nurse emigration in lower- and middle-income countries. Lastly, we used the MMAT for quality appraisal. Even though this tool is good for assessing methodological quality for diverse designs, it does not allow for computing an overall score. Therefore, makes it difficult to be definite on the level of quality of each study.

7 | CONCLUSION

The factors associated with nurse emigration are complex and multi-faceted, and comprehensive strategies are required to mitigate its impact. To curtail the impact of nurse emigration, attention should be paid to mitigate the root causes, reduce disparities and encourage mutual workforce exchange. Other critical interventions will include developing incentive programmes for nurses in lower- and middle-income countries, improving academic infrastructure and ensuring social and political stability. To achieve this, international agencies must appreciate and take full responsibility for curbing the continued migration of nurses from developing countries. International agencies, governments and non-governmental organizations must coordinate their activities to recognize and salvage the struggling healthcare sector, increase health resources, support local systems and initiate and implement policy in their countries of origin. Future studies must test and implement interventions that promote the

retention of nurses and encourage mutually beneficial exchanges between developed and developing countries.

AUTHOR CONTRIBUTIONS

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CONFLICT OF INTEREST STATEMENT

No conflict of interest has been declared by the authors.

DATA AVAILABILITY STATEMENT

Data from which the conclusions are based have been included in this manuscript, and no data are deposited in any data repository.

ETHICS STATEMENT

Because no human subjects were engaged in this study, no Institutional Review Board approoval was requred.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.