

## Original Article

### Effects of Nurse Emigration on the Quality of health care services: A Cross-Sectional Study in a Tertiary Healthcare Facility in Ghana

#### Abstract

**Introduction:** Brain drain among healthcare professionals, particularly nurses, has emerged as a critical issue impacting health delivery systems in developing regions. The migration of skilled individuals from underdeveloped and developing nations to developed or industrialized countries is not a recent phenomenon.

**Aim:** The purpose of the study is to assess the impact of brain drains among nurses on quality care delivery at Tamale Teaching Hospital.

**Methods:** A descriptive cross-sectional survey was conducted among 324 nurses at Tamale Teaching Hospital using a structured questionnaire adopted from a previous study. The study employed convenience sampling to select participants based on their accessibility and willingness. Data were analyzed using descriptive statistics with SPSS version 27.

**Results:** The study found that low wages (97.8%), limited career opportunities (94.1%), and a poorly funded healthcare system (99.4%) were significant factors contributing to nurse emigration. The brain drain was linked to severe shortages of nurses (94.8%), increased workload (98.1%), and reduced quality of care (93.8%). Notable declines in quality included patient care and attention (37%) and efficiency of service delivery (34%). The impact was also observed in increased patient morbidity (38.6%) and mortality (34%). Recommendations to mitigate these issues included improving remuneration (74.1%), providing better incentives (80.2%), and enhancing professional development opportunities (84.9%).

**Conclusion:** Addressing brain drain among nurses requires a multifaceted approach involving better pay, incentives, and professional support. The study highlights the urgent need for policy interventions to improve working conditions and retention strategies to enhance healthcare delivery at Tamale Teaching Hospital and similar institutions.

**Keywords:** Brain drain, nurse emigration, healthcare quality, Tamale Teaching Hospital, professional development, remuneration, healthcare system.

## Introduction

Over the last ten years, the World Health Organization (WHO) has documented a 60% rise in the migration of healthcare professionals to countries with higher incomes [1]. This has been prompted by the deficiency of the nursing workforce in high-income countries (HICs). In 2019, the United States has an expected shortage of around 550,000 nurses [2]. HICs are strongly dedicated to tackling the nurse shortage, which is expected to reach 7.6 million globally by 2030 [3–5]. This phenomenon may be explained by the active efforts to attract nurses from low- and middle-income countries (LMICs) to address the shortage of healthcare workers. These recruiting practices are influenced by the staffing regulations in HICs [6]. In addition, the worldwide increase in the number of elderly individuals and the rise in both infectious and noncommunicable illnesses are expected to create a significant need for nurses in HICs [7]. Projections indicate that the number of nursing positions will surpass those in all other occupations in the next decade [8, 9], particularly due to heightened migration. The circumstances would adversely affect global healthcare systems [3, 10].

An eminent obstacle to Africa's progress is the movement of highly trained African workers to wealthier nations [11]. The migration of skilled individuals from underdeveloped and developing nations to developed or industrialized countries is not a recent phenomenon. However, the scale of this issue in Africa is growing and requires urgent attention. The consequences of emigration present a significant obstacle to Africa's overall progress [11, 12]. Prior studies suggest that healthcare professionals in Sub-Saharan Africa (SSA) have been emigrating mostly to the United States and the United Kingdom ever since medical education began [11]. The National Health Service (NHS) in the United Kingdom has projected that there are 3395 healthcare professionals of Ghanaian heritage, which is an increase from the previous number of 3236 [13].

In LMICs, the departure of skilled and knowledgeable individuals is seen as a depletion of intellectual and technical staff, which impacts the allocation of the workforce [14–16]. The unidirectional migration of highly qualified workforces mostly benefits the recipient countries, since it diminishes the availability of specialized treatment from professional nurses and so presents a significant challenge to the healthcare sector of LMICs.

Furthermore, several academic inquiries have been conducted to examine the reasons behind the growing emigration of healthcare professionals from nations in SSA [17, 18]. Research conducted in various countries has identified push and pull factors that explain the observed trend of health workforce emigration. These factors include unfavorable working conditions, such as excessively long working hours [19], factors related to career development [20], insufficient resources, and increased workload [21]. Primarily, the main reason why many nurses are drawn to HICs is the expectation of receiving higher compensation [22]. For example, the significant wage disparity between nurses in SSA and their counterparts in the United States provides sufficient motivation for migration [23]. Additional reasons that have been mentioned include individual-related aspects such as advancements in social status and lifestyle [2, 24] and political instability [25].

Prior studies on the migration of nursing professionals have shown a detrimental effect on the standard of nursing care, which is expected to persist in the foreseeable future [15, 20, 26]. The migration of skilled nurses poses significant risks and benefits to less developed health systems, potentially impacting the progress made towards achieving the health-related Sustainable Development Goals (SDGs) and Universal Health Coverage (UHC). This migration paradigm has the potential to both enhance health security and pose hazards to these health systems.

It is important to state that there is a win-win situation for countries with formalized migration arrangements with the HICs [27, 28]. The situation in Ghana is not well articulated and communicated through migration policy. Shaffer et al. [5] emphasize that migration is a potent means of addressing unemployment, alleviating poverty, and mobilizing financial resources to foster economic progress. The justification of emigration advantages to low- and middle-income countries has been supported by the rise in remittance flows. According to a study conducted in 2019, migration was expected to have provided more than US\$4 billion in remittances to Ghana, accounting for 6.05% of the country's GDP [29]. Migration has been contended to promote and contribute to social and economic progress, but its detrimental impact has always overshadowed the advantages for low- and middle-income countries, and in Ghana, the potentials thereof are often not exploited. The Government of Ghana spends a significant proportion of the country year on yearly budget to train nurses, yet loses these skilled workers in other countries [8, 30].

Ghana's healthcare system is grappling with a substantial dearth of proficient nurses, mostly stemming from flawed regulations and a scarcity of well-qualified nursing professionals in healthcare facilities. While the employment of several recently qualified nurses may help to some extent, it is insufficient to completely address the problem of losing highly knowledgeable, skilled, and experienced nursing personnel, as well as the resources spent in their training. The emigration paradigm is encouraged by inherent deficiencies in the country's healthcare system, such as the lack of a well-defined professional advancement path for skilled nurses [31]. The brain drain issue is not only motivated by the appealing financial incentives provided by host governments. There is an absence of a specific and well-defined plan for facilitating the migration of nurses, especially regarding their education and cooperation between the two countries. The emigration of the nursing profession in Ghana is marked by low worker morale and a critical shortage of nurse experts. To successfully tackle the challenges of emigration, all stakeholders must exhibit flexibility and initiative in creating policies that would improve the welfare of nurses and reduce emigration rates.

There is a scarcity of research on the migration of nurses in Ghana, and little information is available about the variables that influence this trend. A significant number of nurses from Ghana are emigrating, with a portion of them harboring the ambition to relocate. Personal variables, such as individual characteristics and circumstances, employment experience, social groupings, and migratory networks play a vital role in influencing migration choices. Analyzing the underlying reasons and goals of emigrants may aid in developing migration policies and identifying relevant parties involved to help curb this menace. It is against this backdrop that this study intends to assess the impact of nurse emigration (Brain drain) on the quality-of-care delivery in Northern Ghana's referral center, Tamale Teaching Hospital.

## Methods and materials

### Study setting

Tamale Teaching Hospital, the main medical facility in Northern Ghana, was the site of the study. With a size of 490,000m<sup>2</sup>, it is located on the Tamale-Salaga Road in the Eastern Part of the Metropolis (digital address: NT-0101-5331). Established in 1974 as a regional hospital, it functioned as a referral hub for other hospitals in the northern areas. To serve the tertiary center for health care and the University for Development Studies and Tamale Nursing and Midwifery Training College's medical, nursing, and allied students, the facility was upgraded to a Teaching Hospital in 2009. More than 100,000 patients are treated there yearly, with a bed capacity of 454[32].

### Study Type and Design

A descriptive cross-sectional study design was employed using the quantitative approach. A cross-section was chosen because it allows the researcher to measure both outcome and exposure variables at the same spot[33].

### Study population

The study involved all categories of nurses from the various departments of the Tamale Teaching Hospital.

### Inclusion and exclusion criteria

The study included all registered nurses, nurse practitioners, and specialist nurses currently employed at Tamale Teaching Hospital across various departments, such as emergency, pediatrics, medical & surgical, and outpatient care. Participants were required to have work experience at the hospital. Nurses who voluntarily agreed to participate and provided informed consent were eligible for inclusion. Nurses were excluded if they did not hold a nursing qualification or were employed in non-nursing roles, such as administrative staff or janitors. Additionally, those employed for less than six months or who were on extended leave during the study period were excluded. Additionally, those who were on extended leave during the study period or who declined to participate were excluded from the study.

### Sample size determination

Using data from the hospital end-of-year report(2022), the total population of nurses of various cadres is 1,696. The total sample size is obtained from the total population using Yamane's simplified formula[34], that is,

$$n = \frac{N}{1 + N(e)^2}$$

Where N = The total population of nurses (1696)

n = The desired sample size

e = Margin of error (set at 5%)

Confidence interval = 95%

$$\begin{aligned} \text{Sample size, } n &= \frac{1,696}{1+1,696(0.05)^2} \\ &= \frac{1,696}{1+1,696(0.0025)} \\ &= \frac{1,696}{1+4.24} \end{aligned}$$

$$= 1,696/5.24$$

$$= 323.66$$

Thus, the estimated sample size for the quantitative study was 324 participants.

### **Sampling techniques**

In this study, the researcher adopted convenience sampling. Convenience sampling is a non-probability sampling method where participants were chosen based on their easy accessibility and availability to the researcher. Instead of being selected randomly from a larger population, participants in this approach were chosen based on their easy accessibility to the researcher. This method was used due to geographical proximity, availability at a given time, or willingness to participate in the research.

### **Data Collection Tool**

An administered questionnaire was used to collect data from the respondents. It is designed based on the objectives of the study. The Questionnaire was adapted from previous studies.

### ***Factors Driving Nurses' Emigration***

To assess the push and pull factors influencing nurses' decisions to emigrate, a researcher-developed questionnaire was utilized. Drawing from a thorough review of relevant literature [35–37], the questionnaire was designed to capture a comprehensive range of factors affecting nurse migration. Before its implementation, the questionnaire underwent rigorous pretesting on nurses in a similar healthcare environment, allowing for refinement and removal of any ambiguities.

The internal consistency of the questionnaire, assessed through Cronbach's alpha coefficient after pretesting, demonstrated a high level of reliability ( $\alpha = 0.85$ ).

### ***Emigration Intentions of Nurses***

The emigration intentions of nurses were assessed using a three-item turnover intention scale developed by Mobley et al.[37]. The scale aimed to gauge nurses' inclination towards seeking opportunities outside of their current organization. The items included statements such as "I often think of leaving the organization". Previous studies have demonstrated strong internal consistency coefficients for this scale, ranging between 0.80 and 0.90 [38, 39], further validating its reliability for assessing nurses' emigration intentions.

### **Reliability and Validity**

The reliability of the instruments used in this study was assessed through internal consistency. The researcher-developed questionnaire on factors driving nurse emigration was designed based on a thorough review of relevant literature [35–37], ensuring it captured a comprehensive range of factors influencing nurse migration. The internal consistency of the questionnaire was evaluated using Cronbach's alpha coefficient, which resulted in a high reliability score of  $\alpha = 0.85$ , indicating that the instrument was consistently measuring the factors influencing nurse emigration.

The scale used to assess nurses' emigration intentions, a three-item turnover intention scale developed by Mobley et al., demonstrated strong reliability in previous studies, with internal consistency coefficients ranging from 0.80 to 0.90. This further supports the scale's reliability in

accurately measuring nurses' inclination to seek employment opportunities outside their current organization.

The validity of the researcher-developed questionnaire on factors influencing nurse emigration was established through a comprehensive review of the relevant literature [35–37], ensuring that the questionnaire addressed a wide range of push and pull factors related to nurse migration. By grounding the instrument in existing research, it was designed to accurately capture the relevant variables associated with nurses' decisions to emigrate. The turnover intention scale used to assess emigration intentions was developed by Mobley et al. and has demonstrated validity in prior research, with strong internal consistency coefficients ranging from 0.80 to 0.90. This supports its validity in measuring the factors that influence nurses' emigration intentions in a reliable manner.

### **Data Collection Procedure**

The data collection process was conducted online via KoboToolbox, a secure platform for data collection. First, permission was obtained from the relevant authorities at Tamale Teaching Hospital, including the ethics committee. Nurses who met the inclusion criteria to participate were invited, and information sheets detailing the study's objectives, procedures, and potential risks were shared. Informed consent was obtained electronically through the KoboToolbox platform.

Structured questionnaires and interview guides were developed on KoboToolbox to collect both quantitative data on socio-demographics, emigration intentions, factors influencing migration, and the impacts of brain drain on the healthcare system. Research assistants were trained on the study's objectives, the use of KoboToolbox, and ethical considerations to ensure consistency and reliability in data collection.

Data were administered through the online platform, allowing participants to complete the survey at their convenience, either via mobile devices or computers. The survey took approximately 15-20 minutes to complete. KoboToolbox ensured data accuracy, as it automatically tracked responses and alerted the researcher to any inconsistencies or missing information. Regular monitoring was conducted to verify the completeness and quality of data. Responses were securely stored within the KoboToolbox system, with access limited to authorized personnel only. Once data collection was completed, a follow-up message was sent to participants to express gratitude and address any concerns or questions. All collected data were anonymized to maintain confidentiality, and the results were used solely for the study's purposes.

### **Dependent and independent variable**

The independent variable in this study is nurse emigration. This refers to the movement or migration of nurses from Ghana to other countries for employment opportunities, which could be influenced by factors such as better working conditions, higher salaries, and career advancement opportunities.

The dependent variable is the quality of healthcare services in a tertiary healthcare facility in Ghana. This includes aspects such as the availability of skilled nurses, patient care outcomes,

efficiency of healthcare delivery, patient satisfaction, and overall healthcare service quality, which may be impacted by the emigration of nurses.

### **Data Management and Analysis**

Data obtained from the study was secured with a password and stored on a personal laptop, with a backup saved in a Google Drive. Sole access to the study data was restricted to the researcher. All data collected were cleaned and inputted into Excel. Quantitative data were analyzed using descriptive and inferential statistics with SPSS version 27. Descriptive statistics were used to summarize and cross-tabulate the proportion of independent variables against dependent variables. An acceptable significance level was based on a confidence level of 95% and a P-value of 0.05.

To ensure that the study tool meets the objectives of the study, it was pretested in another health facility in the Tamale Metropolis (Northern Regional Hospital), which shared similar attributes with those sampled for the study. Problems identified in the tool were corrected accordingly.

### **Ethical Consideration**

The research was conducted by the Declaration of Helsinki, ensuring that ethical guidelines were strictly followed. Written informed consent was collected from all respondents after explaining the study's purpose and allowing them to ask questions for clarification. Participation was voluntary, and respondents were assured that they could withdraw at any time without consequence. Confidentiality was maintained by anonymizing all data securely stored within the KoboToolbox platform, accessible only to authorized personnel. The study aimed to minimize harm by keeping the survey brief and non-intrusive, with data used solely for research purposes and presented in aggregate form. The relevant ethics committee at Tamale Teaching Hospital granted ethical approval.

## **Results**

### **Socio-demographic characteristics**

The study included 324 participants, of whom 53.1% were male and 46.9% female. The majority were aged 30 years or older (55.9%). Educational qualifications varied, with most respondents holding a diploma (34.9%) or degree (39.2%). About half (50.6%) of the respondents were married (50.6%), and a slight majority (54.6%) had less than five years of working experience(*Table 1*).

**Table 1: Socio-demographics characteristics**

Variables	Category	Frequency	Percentage
Sex	Male	172	53.1
	Female	152	46.9
Age	< 30 years	143	44.1
	≥ 30 years	181	55.9
Qualification	Certificate	64	19.8
	Diploma	113	34.9
	Degree	127	39.2
	Postgraduate/Specialist program	20	6.2
Marital status	Married	164	50.6
	Single	160	49.4
Years of working experience	< 5 years	177	54.6
	≥ 5 years	147	45.4

### Emigration intentions of nurses

Nurses' primary reasons for emigration were great health safety and recognition of professional expertise (both 100%), followed by improved working conditions (92.0%), attractive retirement benefits (92.0%), better career prospects (89.5%), and a stable socio-political environment (89.8%). Financial incentives, such as higher income (81.5%) and better training opportunities (65.1%), were also significant. Family-based reasons were less influential (32.1%), while job availability and professional working environments were equally considered (50% each) (Table 2).

**Table 2: Emigration intentions of nurses**

Reasons for migration of nurses abroad	Yes (%)	No (%)
Better career prospects or advancement	290(89.5%)	34(10.5)
Higher-income or attractive salaries	264(81.5%)	60(18.5%)
Better employment contract	169(52.2%)	155(47.8%)
Great health safety	324(100.0%)	0(0.0%)
Improved working condition	298(92.0%)	26(8.0%)
Family-based reason	104(32.1%)	220(67.9%)
Better training opportunity	211(65.1%)	113(34.9%)
Availability of job opportunities	162(50.0%)	162(50.0%)
Recognition of professional expertise	324(100.0%)	0(0.0%)
Professional working environment	162(50.0%)	162(50.0%)
Attractive retirement benefits	298(92.0%)	26(8.0%)
Stable socio-political environment	291(89.8%)	33(10.2%)

### Factors that contribute to or influence Nurse Emigration among nurses



The main factors driving nurses to emigrate are poorly funded healthcare systems (99.4%), low wages (97.8%), lack of resources (96.6%), and limited career opportunities (94.1%). Economic instability (92.9%), unstable retirement benefits (92.9%), and lack of educational opportunities (91.0%) also contribute significantly. Additionally, dangerous working conditions (88.6%) and political instability (87.7%) are notable concerns (Table 3).

**Table 3: Factors that contribute to or influence Nurse Emigration among nurses**

<b>Factors pushing nurses out of home countries</b>	<b>Yes (%)</b>	<b>No (%)</b>
Low wages	317(97.8%)	7(2.2%)
Limited career opportunities	305(94.1%)	19(5.9%)
Lack of resources to work effectively	313(96.6%)	11(3.4%)
Unstable economy	301(92.9%)	23(7.1%)
Dangerous working conditions	287(88.6%)	37(11.4%)
Unstable retirement benefit	301(92.9%)	23(7.1%)
Unsatisfactory and unstable political environment	284(87.7%)	40(12.3%)
Lack of educational opportunities	295(91.0%)	29(9.0%)
Poorly funded healthcare system	322(99.4%)	2(0.6%)

### **Implications or impacts of Nurse Emigration among nurses**

The emigration of nurses has several significant impacts on healthcare systems. A severe shortage of nurses is reported by 94.8% of respondents, while 98.1% noted an increase in workload. It was also observed that emigration promotes **nurse emigration** (92.6%) and reduces the quality of care (93.8%). The departure of nurses acts as a distraction to the remaining staff (96.9%) and leads to reduced job satisfaction (90.7%). Additionally, 93.2% of respondents reported an increase in mortality and morbidity rates due to the emigration of nurses. (Table 4).

**Table 4: Implications or impacts of nurse emigration among nurses**

<b>Impact of emigration</b>	<b>Yes (%)</b>	<b>No (%)</b>
Severe shortage of nurses	307(94.8%)	17(5.2%)
It increases the workload	318(98.1%)	6(1.9%)
It promotes brain drainage	300(92.6%)	24(7.4%)
It reduces the quality of care	304(93.8%)	20(6.2%)
It acts as a distraction to the remaining staff	314(96.9%)	10(3.1%)
It reduces job satisfaction	294(90.7%)	30(9.7%)
It increases mortality and morbidity rate	302(93.2%)	22(6.8%)

### **Impact of nurse emigration among nurses on the quality of health delivery**

**Nurse emigration** has significantly impacted health delivery, with 51.9% of respondents reporting a very significant or significant decline in overall quality. Key areas affected include patient care (37%), service

efficiency (34%), and waiting times (29.3%). Patient outcomes have worsened, with increased morbidity (38.6%) and mortality (34%), along with higher readmission rates (29.3%) and longer recovery times (24.7%). The reduction in nursing staff has led to challenges such as increased patient-to-nurse ratios (41.7%), workload difficulties (37%), and job stress (35.5%). Specialized care capacity has been severely impacted, with a significant increase in medical errors (32.4%) and compromised emergency response (35.5%). The nurse-patient relationship has deteriorated for 30.9% of respondents, and professional development has been hindered (26.2%). Despite these challenges, 66.4% believe the quality of care can still be restored or improved, highlighting optimism despite the adverse effects. Additionally, issues with team collaboration (20.1%) and inadequate support for junior staff (27.8%) further exacerbate the situation (Table 5).

**Table 5: Impact of nurse emigration among nurses on the quality of health delivery.**

Variables	Category	Frequency	Percentage (%)
Impact of nurse brain drain on overall quality of health delivery.			
	Very significant	90	27.8
	Significant	78	24.1
	Moderate	66	20.4
	Slight	51	15.7
	No impact	39	12
Areas with a noticeable decline in quality due to the departure of skilled nurses			
	Patient care and attention	120	37
	Efficiency of service delivery	110	34
	Patient waiting times	95	29.3
	Availability of specialized care	85	26.2
	Continuity of care	75	23.1
	Staff collaboration and teamwork	65	20.1
	Other	50	15.4
Impact of brain drain on patient outcomes at Tamale Teaching Hospital			
	Increased patient morbidity	125	38.6
	Increased patient mortality	110	34
	Higher rates of patient readmission	95	29.3
	Longer recovery times	80	24.7
	Increased patient dissatisfaction	85	26.2
	No noticeable effect	55	17
Challenges faced due to reduction in nursing staff			
	Increased patient-to-nurse ratio	135	41.7
	Difficulty in managing workload	120	37
	Increased job stress and burnout	115	35.5
	Decreased time for patient education	95	29.3
	Reduced opportunities for professional development	85	26.2
	Inadequate support for new/junior nurses	90	27.8
	Other	50	15.4
Extent of brain drain affecting the hospital's ability to provide specialized care			
	Very significant extent	95	29.3
	Significant extent	85	26.2
	Moderate extent	80	24.7
	Slight extent	45	13.9
	No impact	19	5.9
Changes in frequency of medical errors/adverse events following the departure of experienced nurses			
	Significant increase	105	32.4
	Moderate increase	95	29.3
	Slight increase	80	24.7
	No change	35	10.8
	Decrease	9	2.8

Impact of brain drain on the hospital's capacity to handle emergency cases			
Severely impacted		115	35.5
Moderately impacted		105	32.4
Slightly impacted		60	18.5
No impact		30	9.3
Improved capacity		14	4.3
Impact of brain drain on nurse-patient relationship			
Significantly deteriorated		100	30.9
Moderately deteriorated		85	26.2
Slightly deteriorated		80	24.7
No change		45	13.9
Improved relationship		14	4.3
Belief in restoring or improving quality of health delivery at the Tamale Teaching Hospital despite brain drain			
Strongly agree		110	34
Agree		105	32.4
Neutral		65	20.1
Disagree		30	9.3
Strongly disagree		14	4.3

### Ways to reduce the emigration rate of nurses

To reduce nurse emigration, the majority of respondents support offering better pay or remuneration (74.1%), using incentives (80.2%), and providing access to further education (84.9%) as essential strategies. Offering free housing (64.8%) and attractive retirement benefits (71%) are also considered effective retention measures. Training more nurses (86.4%) was the most widely supported measure to reduce emigration, focusing on increasing the workforce. Additional factors that could help retain nurses include improved working conditions (78.5%), career advancement opportunities (76.3%), job security (70.8%), and supportive management and leadership (72.4%). Family support programs (68.9%) were also seen as a way to ease the pressure on nurses considering emigration for family reasons (Table 6).

**Table 6: Ways to reduce the emigration rate of nurses**

Variables	Category	Frequency	Percentage (%)
Do you believe that offering better pay/remuneration can help reduce the emigration rate?	Yes	240	74.1
	No	84	25.9
Do you believe using incentives can help reduce the emigration rate?	Yes	260	80.2
	No	64	19.8
Do you believe that providing access to further education can help reduce the emigration rate?	Yes	275	84.9
	No	49	15.1
Do you believe that offering free housing can help reduce the emigration rate?	Yes	210	64.8
	No	114	35.2
Do you believe that providing attractive retirement benefits can help reduce the emigration rate?	Yes	230	71
	No	94	29
Do you believe that training more nurses can help reduce the emigration rate?	Yes	280	86.4
	No	44	13.6

### Discussions

Nurses' primary reasons for emigration show a strong inclination towards improved health safety and recognition of professional expertise (100%), better working conditions (92.0%), attractive retirement

benefits (92.0%), enhanced career prospects (89.5%), and a stable socio-political environment (89.8%). Financial incentives, such as higher income (81.5%) and better training opportunities (65.1%), are also significant. Family-based reasons are less influential (32.1%), while job availability and professional working environments are equally considered (50% each). These findings align with existing literature. For instance, Goh and Lopez[4] and Labrague et al.[38] emphasize job satisfaction and improved working conditions as crucial factors, while Efendi et al. [6] and Okeke [22] highlight career prospects and higher salaries as significant pull factors. However, discrepancies exist, such as those of Humphries et al. [19], who suggest that improving working conditions beyond financial incentives is essential to addressing migration issues.

The implications of these findings are significant for both source and destination countries. Source countries must prioritize improving working conditions, offering competitive compensation packages, and enhancing career development opportunities to retain their healthcare workforce. This holistic approach is supported by data showing insufficient financial incentives. Ethical recruitment practices and sustainable integration programs are vital for destination countries to attract and retain migrant nurses. This includes recognizing their qualifications, providing support, and ensuring that recruitment methods are fair[16]. International cooperation and agreements can help manage migration sustainably, such as through temporary migration programs or financial compensations for source countries.

Nurses' emigration is significantly driven by poorly funded healthcare systems, with 99.4% citing this as a primary reason for leaving. This finding is consistent with previous studies, such as Peters et al.[18], highlighting how underfunded systems lead to inadequate infrastructure, staffing shortages, and a lack of necessary medical supplies. These conditions create a challenging work environment that compromises patient care and staff satisfaction. Without the proper investment, healthcare systems struggle to provide the support and resources nurses need to perform their duties effectively. The lack of resources is cited by 96.6% of nurses as a compelling reason for their emigration. This aligns with Humphries et al. [19], who note that inadequate resources, such as outdated equipment and insufficient medical supplies, can be a significant source of professional frustration and stress. When nurses do not have the tools, they need to deliver quality care, it not only hampers their ability to perform effectively but also diminishes job satisfaction.

Low wages are a major factor driving nurses to emigrate, with 97.8% of respondents indicating this as a key motivator. This finding is supported by Okeke [22], who points out that higher income is one of the most substantial pull factors for healthcare professionals seeking opportunities abroad. In many developing countries, nurses' salaries do not adequately reflect their critical role in the healthcare system, nor do they provide a living wage comparable to their counterparts in developed nations. As a result, nurses often look for better-paying positions in other countries. The implication is that source countries must offer competitive salaries that align with global standards to prevent the loss of their nursing workforce.

Limited career opportunities are a significant driving factor for nurse emigration, with 94.1% indicating this concern. This is consistent with findings from Efendi et al.[6], which show that career advancement is essential for job satisfaction and professional growth. Many nurses seek environments where they can pursue further education, specialize in their fields, and advance to higher positions within the healthcare system. When these opportunities are lacking, nurses are more likely to look for career progression abroad. This could also be confounded by economic instability and unstable retirement benefits. Economic instability and unstable retirement benefits are significant factors influencing nurse emigration, each cited by 92.9% of respondents. This finding resonates with Adeyemi et al.[25], who illustrate how

economic instability affects job security and long-term career planning. Nurses prefer to work in environments where economic policies are stable, and their retirement plans are secure. The lack of economic stability and reliable retirement benefits in their home countries drives them to seek more secure and predictable conditions elsewhere. To address this, source countries must implement policies that promote economic stability and offer robust, stable retirement benefits to foster a secure working environment.

A lack of educational opportunities is cited by 91.0% of nurses as a reason for emigration. Cabanda[27] discusses how limited opportunities for education and professional development drive healthcare professionals to seek opportunities abroad. Continuous learning and advancement are critical for maintaining professional competence and job satisfaction. When nurses cannot access educational programs and opportunities for professional growth, they are more likely to migrate to countries where these are available. The implication is that source countries need to invest in educational infrastructure and create opportunities for nurses to advance their skills and knowledge domestically.

The emigration of nurses leads to a severe shortage within healthcare systems, as reported by 94.8% of respondents. This finding aligns with previous literature that underscores the critical impact of workforce depletion in the healthcare sector [17, 40]. An increase in workload is noted by a substantial 98.1% of respondents as a direct consequence of nurse emigration. When nurses emigrate, those who remain are forced to take on additional responsibilities to cover the gap, leading to increased stress and workload. This additional burden can result in longer working hours and heightened pressure to maintain the quality of care with fewer resources. The literature supports this, indicating that excessive workloads can lead to burnout and a decrease in job satisfaction among nurses [38].

A reduction in the quality of care is a critical impact of nurse emigration. The departure of nurses leads to a domino effect where the remaining healthcare staff becomes overextended, and patient care suffers as a result. Quality care is heavily reliant on adequate staffing levels to ensure that patients receive timely and effective treatment. Overburdened staff may not be able to provide the same level of attentiveness and care, leading to poorer health outcomes. Ensuring that healthcare facilities are adequately staffed is essential to maintaining high standards of patient care. Also, the departure of colleagues can negatively impact the morale and focus of those left behind, disrupting team dynamics and increasing stress levels. The remaining nurses may be preoccupied with concerns about additional responsibilities or worry about their own job security and working conditions, leading to decreased productivity and job satisfaction. Healthcare systems must address these distractions by providing support to remaining staff, including counseling services, team-building activities, and clear communication to help manage transitions smoothly.

The reduced job satisfaction resulting from nurse emigration is evident, with 90.7% of respondents indicating this concern. The challenges of increased workload, the emotional toll of colleagues leaving, and the pressures of maintaining care quality all contribute to decreased job satisfaction among remaining nurses. Discontented staff are more likely to experience burnout and consider emigration themselves, perpetuating a cycle of turnover. Healthcare systems must improve job satisfaction by addressing the factors contributing to dissatisfaction, such as enhancing work conditions, providing professional development opportunities, and ensuring adequate staffing levels. The overall effect of this is the increase in mortality and morbidity rates due to the emigration of nurses, reported by 93.2% of respondents. The loss of skilled nurses impacts patient outcomes critically, as overburdened and understaffed facilities struggle to maintain the same level of care. Studies have shown that adequate nurse staffing levels are closely linked to better patient outcomes, including lower mortality and morbidity rates [41].

Nurse brain drain has significantly impacted healthcare delivery, with 51.9% of respondents reporting a very significant or significant decline in overall quality. This decline manifests in patient care (37%), service efficiency (34%), and waiting times (29.3%), aligning with the literature that highlights the critical impact of workforce depletion in the healthcare sector[41]. The reduction in available nurses per patient leads to less individualized patient interaction, potentially missing critical care steps and resulting in suboptimal outcomes [4].

Patient outcomes have worsened, with increased morbidity (38.6%) and mortality (34%), higher readmission rates (29.3%), and longer recovery times (24.7%). These effects are consistent with studies that show adequate nurse staffing improves patient health outcomes and reduces incidences of morbidity and mortality [25]. The remaining staff, facing increased patient-to-nurse ratios (41.7%) and workload difficulties (37%), become overburdened, further compromising care quality. This scenario is supported by findings indicating that higher patient loads per nurse are associated with increased stress and job dissatisfaction [38]. Moreover, specialized care capacity has been severely impacted due to an increase in medical errors (32.4%) and compromised emergency response (35.5%), as the remaining staff often lack the necessary expertise to manage specific health conditions and emergencies effectively. The nurse-patient relationship has deteriorated for 30.9% of respondents, weakening the rapport and trust essential for effective care [19]. Professional development has also been hindered (26.2%), with nurses experiencing limited opportunities for growth due to increased workloads and limited resources.

Despite these challenges, 66.4% of respondents believe that the quality of care can still be restored or improved, reflecting optimism and resilience within the healthcare system. This suggests the potential for positive change if effective strategies are implemented to retain nurses, improve working conditions, and provide continuous professional development opportunities. Furthermore, issues with team collaboration (20.1%) and inadequate support for junior staff (27.8%) exacerbate the situation, highlighting the importance of robust support systems and fostering a culture of teamwork[16].

To reduce nurse emigration, the majority of respondents support offering better pay or remuneration (74.1%), using incentives (80.2%), and providing access to further education (84.9%) as essential strategies. These approaches align with previous research indicating that competitive salaries and professional development opportunities are significant factors in retaining healthcare workers[22]. Furthermore, offering free housing (64.8%) and attractive retirement benefits (71%) are regarded as effective retention measures, echoing findings that comprehensive compensation packages contribute to job satisfaction and long-term retention[25].

The most widely supported measure to reduce emigration is training more nurses (86.4%), focusing on increasing the workforce to meet the demand. This consensus underscores the critical need for expanding the nursing workforce to alleviate workload burdens and improve care delivery standards[38]. Whilst this resolves the issues of nurse emigration in the short term, if the factors influencing this migration are not addressed, the issue will continue to linger on even if more nurses are trained. Improved working conditions (78.5%) and career advancement opportunities (76.3%) are also highlighted by respondents as necessary for retention, reinforcing the importance of creating a supportive and growth-oriented professional environment [4].

Job security (70.8%), alongside supportive management and leadership (72.4%), were acknowledged by respondents as vital for reducing emigration. These factors are consistent with the literature that emphasizes the role of stable employment and positive leadership in enhancing job satisfaction and reducing turnover[19]. Additionally, family support programs (68.9%) were seen as a way to ease the pressure on nurses considering emigration for family reasons. This suggests that comprehensive support

systems, including those that address personal and family needs, are essential in retaining nursing professionals [16].

The cross-sectional study on nurse emigration provides a useful snapshot of the key factors driving nurses to leave their home countries, such as better pay, improved working conditions, career advancement opportunities, and family support. This approach allows for the efficient collection of comprehensive data on multiple variables at a single point in time, offering valuable insights for policymakers. However, the study's design has limitations, including an inability to establish causality, potential biases like selection and response bias, and a lack of temporal depth that prevents an understanding of long-term trends. Additionally, the study may overlook nuances in personal experiences. Despite these shortcomings, the findings offer a solid foundation for developing strategies to retain nurses and highlight the need for more in-depth, longitudinal research to understand and address the issue of nurse emigration fully.

### **Conclusion and recommendation**

The study highlights that nurse emigration is primarily driven by better career prospects, higher income, improved working conditions, and professional recognition. These factors and the need for health safety and professional acknowledgment align with existing literature and emphasize the importance of enhanced financial and professional support. The impact of nurse brain drain on healthcare delivery is significant, leading to increased patient morbidity, decreased job satisfaction, higher stress levels among remaining staff, and reduced service quality. Addressing these issues through better remuneration, incentives, and access to further education is crucial for lowering emigration and improving healthcare outcomes.

Recommendations for mitigating nurse emigration include increasing government funding for the healthcare sector to improve wages and working conditions, implementing incentive programs, and investing in educational opportunities. Advocacy for better compensation, continuous professional development, and support for junior staff are also essential strategies. Additionally, future research should examine the effectiveness of specific retention strategies and the decision-making processes of nurses considering migration. By implementing these measures, healthcare systems can stabilize the nursing workforce, reduce emigration rates, and enhance the quality of care.

### **Consent for publication**

Not applicable

### **Data Availability**

Data used to support this study are available from the corresponding author upon request.

### **Disclaimer (Artificial intelligence)**

The authors currently declare that generative AI (ChatGPT) was used during manuscript editing(grammar).

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