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Migration intentions among nursing students in the age of COVID-19: A mixed method scoping review

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Abstract

Background: The global nursing shortage poses an immense threat to healthcare systems, worsened by the impact of the COVID-19 pandemic on an already challenged workforce. Understanding student nurses' migration intentions, influenced by the "medical brain drain" phenomenon, is crucial for developing strategies to mitigate this shortage. This scoping review synthesizes the factors influencing undergraduate nursing students' intentions to migrate, specifically examining the unique impact of the COVID-19 pandemic on these decisions.

Method: Adhering to the Arksey and O'Malley framework and the PRISMA-ScR checklist, we conducted a comprehensive search across five databases (CINAHL, PubMed, Ovid MEDLINE, PsycINFO, Embase), focusing on primary research addressing undergraduate nursing student migration intentions between December 2019 and April 2024. Data from selected studies were systematically extracted and analyzed.

Result: Key drivers of migration intent included economic aspirations, the pursuit of professional fulfilment, cultural and familial ties, anticipated quality of life changes, and the influence of educational and policy environments. The COVID-19 pandemic has magnified existing healthcare disparities, reshaping migration motivations and underscoring the need for adaptive educational and policy responses.

Conclusion: Nursing student migration decisions are complex and driven by personal, socioeconomic, and global factors significantly influenced by the pandemic. Targeted policy and educational reforms are essential to enhance local opportunities and mitigate the nursing brain drain. By addressing these factors early, we can foster a committed, resilient nursing workforce capable of meeting future global healthcare challenges, ensuring a more robust and equitable healthcare system worldwide.

Keywords: Brain Drain, Education, Migration Intention, Pandemic, Student Nurse, Workforce

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Introduction

The pervasive challenge of the global nursing shortage, projected to reach a deficit of 13 million by 2030, poses a dire threat to the stability and effectiveness of healthcare systems worldwide.¹ This shortage, exacerbated by the migration of nursing talent from resource-poor to rich countries, significantly compromises patient care quality and disrupts health service delivery.^{2,3} This phenomenon, often called the "medical brain drain," is intricately explained by the "Push and Pull Factors Theory," which elucidates the motivations behind nurses' migration toward nations offering superior professional and lifestyle opportunities.⁴⁻⁶

Amidst the global healthcare crisis, the COVID-19 pandemic has dramatically intensified the factors influencing nurses' migration decisions, particularly among nursing students. While the desire for improved employment prospects, higher earnings, and a better quality of life has long motivated practicing nurses⁷⁻¹¹, this aspiration now increasingly takes root during the formative years of nursing education.¹²⁻¹⁶ While existing literature has extensively explored these drivers in the context of qualified nurses, there remains a significant gap concerning how these aspirations and motivations manifest during nursing education. This scoping review seeks to bridge this gap by synthesizing current evidence on the migration intentions of nursing students, aiming to unravel the complex web of early career influences that predispose nursing students towards migration.

Furthermore, this decision is shaped by both individual motivations and broader socio-economic factors. Students from developing countries, particularly those hit hard by the pandemic, often seek better pay, professional development, and safety abroad.¹⁷⁻¹⁹ Their decision is influenced early in their career planning, with research highlighting the 'push' of socio-political factors and work conditions juxtaposed against the 'pull' of more favorable conditions elsewhere.^{20,21} Importantly, the pandemic has likely made these disparities even more visible to students. However, migration is a

significant life transition. Internationally educated nurses (IENs) may face challenges like credentialing difficulties, cultural displacement, and discrimination.^{22,23} Yet, the aspiration for a better quality of life remains a powerful motivator, even considering these hardships.

The insights garnered from this review will be crucial for formulating targeted educational and policy interventions. These interventions are aimed at fostering a commitment among nursing students to their local healthcare sectors, thereby mitigating the brain drain and promoting a sustainable global nursing workforce.^{2,24} By understanding and addressing the root causes of migration intentions during the educational phase, we can enhance the resilience of healthcare systems and ensure a more equitable distribution of nursing resources worldwide. By delving into the factors influencing nursing students' migration intentions, this study lays the groundwork for evidence-based strategies that enhance both the appeal of domestic healthcare roles and the effectiveness of global health service delivery.

Method

This scoping review followed the five-stage framework developed by Arksey and O'Malley.²⁵

The five stages include:

- 1) formulating a broad research question;
- 2) determining relevant studies;
- 3) using inclusion and exclusion criteria;
- 4) extracting and analyzing data;
- 5) presenting findings.

These stages are outlined in the subsequent sections of this study. This scoping review complies with the PRISMA-ScR protocol.²⁶ Scoping reviews typically do not formally appraise evidence or assess the evidence's relative strength.²⁵ Consequently, the included studies were not critically evaluated. The scoping review protocol is available for review on the Open Science Framework (<https://osf.io/derp5/>)

Research Question

The scoping review addressed this research question: What are the key factors that influence

the migration intentions of undergraduate nursing students?

Search strategy

The search approach involved utilizing a combination of MeSH terms and free-text keywords to locate pertinent studies. Multiple trial searches were conducted to fine-tune our strategy. To locate articles, Boolean operators AND or OR with different combinations of the keywords such as nursing student, undergraduate, migration, and intention were utilized (Appendix A). The search was limited to peer-reviewed primary research articles in English, with a publication date range of December 2019 to April 2024. The 2019-2024 timeframe was chosen to maximize relevance amid rapid healthcare changes, including technological and policy shifts alongside the COVID-19 pandemic. Restricting the scope enabled more cohesive, comparable datasets versus introducing multiple contrasting system variables over expanded decades. This targeted timeframe provided the most current, consistent, focused insights to comprehensively inform the scoping review's examination of contemporary factors influencing nursing student migration intentions in the age of COVID-19.

Search strategy

The inclusion criteria

- 1) Studies exploring factors influencing the migration intentions of undergraduate nursing students;
- 2) Primary research studies involving quantitative and/or qualitative evidence;
- 3) Articles published in English;
- 4) Articles published from December 2019 to April 2024.

Studies that did not explore factors influencing undergraduate nursing students' migration intentions, conference abstracts, reviews, and secondary research articles were excluded.

After eliminating duplicates, three authors screened the remaining studies independently (anonymized for review) using Covidence™ (<https://www.covidence.org/>).

The first phase involved screening titles and abstracts based on the inclusion and exclusion criteria. We employed selection criteria for studies to ensure consistency. The first two retrieved studies were screened jointly by three authors and discussed in detail before proceeding with independent title and abstract screening. Studies identified as potentially eligible during the first screening phase were reviewed as full-text articles. Any discrepancies regarding study inclusion were resolved through discussion between three reviewers, Table 1.

The Preferred Reporting

Items for Systematic Reviews and Meta-analysis extension for Scoping Reviews (PRISMA-ScR) flow diagram²⁶ details the review process and outcomes, Figure 1.

Data charting process

Three authors (Ag, BT, MKR; anonymized for review) extracted data from all eligible studies using a data extraction table. All authors cross-checked extracted data to ensure accuracy and discussed any disparities. The eligible articles included authors, titles, country, setting, study design, study objectives, and results, Appendix B.

Collating, summarizing, and reporting results

In the fifth stage of the Arksey and O'Malley framework, the authors employed a rigorous approach to synthesize the findings from the included studies. First, the extracted data were carefully organized and categorized using a standardized data charting form. Next, the authors conducted a thematic analysis to identify overarching themes related to the factors influencing nursing students' migration intentions, following the six-phase process outlined by Braun and Clarke.²⁷ To ensure the trustworthiness of the findings, two authors (AG, BT) independently coded the data and met regularly to discuss and refine the themes until a consensus was reached. A third author (MKR) reviewed the final themes to confirm their accuracy and relevance. The results were then summarized in a narrative format, highlighting

the most significant factors contributing to the migration intentions of undergraduate nursing students, such as career advancement opportunities, financial incentives, working conditions, and quality of life considerations. The authors also identified gaps and limitations in the current literature, such as the need for

more qualitative research to explore nursing students' subjective experiences and perceptions regarding migration. Throughout the process, the authors maintained a clear audit trail and engaged in reflexivity to ensure transparency and minimize potential biases.

Table 1. Selection criteria for studies to ensure consistency

	Inclusion Criteria	Exclusion Criteria
Participants	<ul style="list-style-type: none"> Undergraduate nursing students. 	<ul style="list-style-type: none"> Post-graduate nursing students. Fully qualified or registered nurses;
Concept	<ul style="list-style-type: none"> Studies exploring factors influencing undergraduate nursing students' migration intention. 	<ul style="list-style-type: none"> Studies that do not explore factors influencing undergraduate nursing students' migration intention.
Context	<ul style="list-style-type: none"> Any setting where undergraduate nursing education is provided (e.g. Tertiary institutions). 	
Study types	<ul style="list-style-type: none"> Primary research studies involving mixed, quantitative and/or qualitative evidence. Articles published in English. Articles published from December 2019 onwards. 	<ul style="list-style-type: none"> Articles published before December 2019. Conference abstracts, reviews, and secondary research articles. Articles in non- English languages.

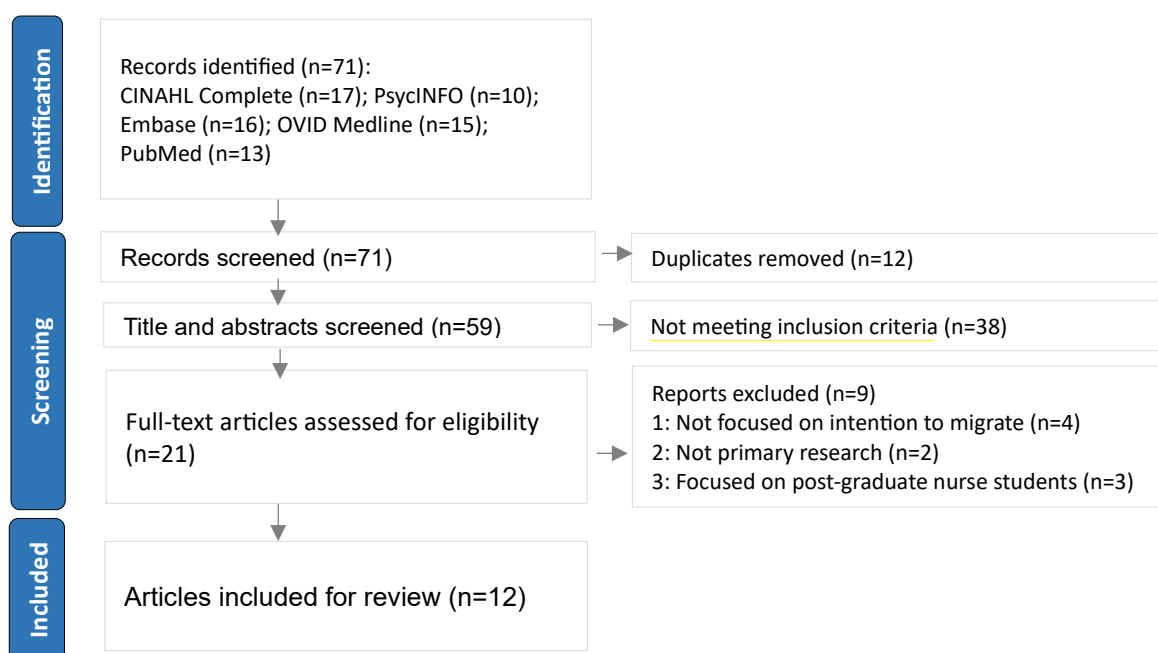


Figure 1. PRISMA flow diagram for study selection²⁶

Result

Study selection

The database search yielded 71 titles and abstracts. After removing 12 duplicates, 59

titles, and abstracts were screened against the inclusion and exclusion criteria. This screening process excluded 38 titles and abstracts, resulting in 21 titles and abstracts being retrieved for full-text review.

Upon further examination of the full-text versions, nine articles were excluded for the following reasons:

- 1) Four studies were not focused on the intention to migrate.
- 2) Two studies were not primary research.
- 3) Three studies focused on post-graduate students (qualified nurses) rather than undergraduate nursing students.

Consequently, 12 articles were included in the scoping review, as presented in the flowchart illustrating the search strategy and selection process, Figure 1.

Characteristics of included studies

Geographical spread: This scoping review offers a valuable global perspective, with studies conducted in nine countries across multiple continents: Indonesia (n=2), Turkey (n=3), Slovakia (n=1), Ghana (n=1), India (n=1), Ireland (n=1), Nigeria (n=1), Romania (n=1), and China (n=1). This diversity allows for a nuanced understanding of how migration intentions are shaped by economic, cultural, and policy factors in various settings.

Diverse settings and participants: The review includes a range of contexts and participant groups. Several studies focus exclusively on nursing students at varying stages of their education, providing insights into how intentions evolve over time. Indonesia, Turkey, Ireland, Nigeria, Romania. Importantly, the Slovakian study offers a comparative perspective by including both nursing students and practicing nurses. Additionally, the qualitative study in Ghana explores the experiences of both medical and nursing students, highlighting how educational inequalities influence migration aspirations.

Methodological variety: The included studies employ both quantitative and qualitative methodologies. Large-scale surveys in Indonesia, India, and Turkey capture broad trends and allow for statistical analysis, while the in-depth

interviews in Ghana provide a deep understanding of students' lived experiences. Furthermore, the longitudinal study in Romania offers a unique perspective on how migration intentions shift in response to global events like Brexit and the COVID-19 pandemic.

Migration intentions among nursing students

Survey data across multiple countries reveal significant migration intentions among nursing students, though with substantial regional variations in both desire and likelihood of staying within local healthcare systems. Several studies highlight powerful desires to migrate. In Indonesia, 87% of nursing students intend to seek employment abroad, primarily driven by higher salaries and career opportunities.²⁸ Turkish students showed similar inclinations, with 82% interested in migrating for advanced training.²⁹ Slovakia reported that 75% of nursing students and professionals are open to migration, mainly to Western Europe, for improved wages and working conditions.³⁰

Intentions vary across regions. Indian students showed somewhat lower but still significant intent (65%), focusing on gaining international experience and personal growth.³¹ This contrasts sharply with Ireland, where only 25% of new nursing graduates plan to remain, citing limited advancement opportunities.³² Interestingly, Romania reported a higher retention intention of 45%, with familial ties and local job satisfaction contributing.³

Turnover intentions also reveal differences. Chinese students were highly likely (70%) to leave their first overseas job within two years to pursue better conditions or education.³⁴ However, Ghanaian students expressed more cautious views, with concerns about racism and crime tempering their migration desires.¹⁵ These findings underscore the complexity of migration intentions. Economic factors and career prospects are potent motivators globally but are weighed against local conditions, personal goals, and perceived challenges across different cultural contexts in destination countries.

Review findings

The thematic analysis using Braun and Clark's²⁷ framework identified five themes across twelve studies.

Economic aspiration vs. Professional fulfillment:

Studies consistently highlight economic incentives as primary motivators for migration. In Slovakia, most of the nursing workforce expressed intentions to migrate due to superior economic prospects abroad.³⁵ Similarly, the Nigerian study identified the pursuit of better remuneration as a key driver, with a significant correlation between economic satisfaction and migration intentions.¹³ Beyond economic benefits, professional development opportunities were highly valued. For instance, Indonesian nursing students cited advanced training and broader career opportunities in Japan as major incentives for migration.²⁸ This sentiment was echoed in the Turkish study, where professional advancement was a significant factor influencing the desire to migrate, particularly among those with previous international exposure or familial connections abroad.³⁵

Preferred migration destinations such as the UK, Canada, and the USA were frequently mentioned across studies, suggesting a strong orientation towards countries known for higher living standards and better healthcare systems.¹³ The opportunity to receive higher education or specialized training was another critical factor, particularly highlighted in the Ghanaian and Romanian contexts, where students saw migration as a means to access quality education and training unavailable in their home countries.^{33,34} A distinct dichotomy was noted in attitudes towards practicing in native versus foreign countries. In Ireland and India, unfavorable conditions at home, such as limited career progression and saturation of the healthcare market, contrast sharply with the perceived professional dignity and advancement opportunities abroad, motivating migration.^{31,32}

Impact of global events on migration intentions:

The impact of global events on migration intentions among nursing students is evident across several studies, each highlighting the responsiveness of migration decisions to international dynamics such as economic crises, policy changes, or health emergencies. For instance, the Romanian study directly links Brexit and the COVID-19 pandemic as significant factors affecting the migration intentions of nursing students, suggesting a high sensitivity to global political and health landscapes.³³ Similarly, the study from Ghana reflects on how global health emergencies, notably the COVID-19 pandemic, influence students' decisions, with many viewing migration as a strategy to escape local health system challenges exacerbated by global crises.¹⁵

Furthermore, in Slovakia, changes in European Union policies and economic instability within the EU have been noted to affect students' migration plans, with many students recalibrating their destination preferences based on these global events.³⁰ These findings are comparable to those from the Nigerian context, where economic recessions significantly influence migration intentions, further highlighting the connection between global economics and local decision-making.¹³

These studies collectively highlight how global events act as catalysts for migration, triggering reconsiderations of potential destinations and timing for migration among nursing students. This responsiveness underscores the interconnectedness of local career decisions and global events, illustrating a complex web of influences that drive the migration intentions of healthcare professionals in training.

Cultural and familial influences on migration decisions:

The reviewed studies extensively document the influence of cultural and familial factors on migration decisions. The Indian study prominently notes that familial obligations and cultural ties significantly deter migration intentions among nursing students, with a substantial proportion of students prioritizing proximity to family over potential economic or professional gains abroad.³¹ Similarly, the study

from Indonesia highlights how family expectations and cultural norms shape migration decisions, where students often consider familial approval and expectations when contemplating overseas opportunities.³⁶

Conversely, the Ghanaian study indicates that while cultural ties are strong, the acute local employment conditions compel many to consider migration a viable option despite solid familial bonds.¹⁵ In Turkey, the intergenerational transfer of migration intent is observed, where students with family members abroad are more likely to migrate, suggesting that familial networks facilitate migration and possibly reduce cultural barriers to relocation.³⁵

These findings collectively suggest a complex interplay between cultural adherence and economic motivation, where familial influences either act as a catalyst or a barrier to migration, depending on the socio-economic and cultural context of the students involved.

Perceived quality of life changes: According to the studies, perceived changes in quality of life significantly influence migration decisions among nursing students. In the Nigerian study, students anticipated better living conditions and work-life balance abroad as major reasons for their migration intentions, reflecting a strong belief that moving would enhance their personal and professional lives.¹³ Similarly, the Slovakian study reports that students expect significant improvements in lifestyle and career opportunities overseas, suggesting that the perceived quality of life abroad can drastically sway migration decisions.³⁷

The study from Ghana contrasts these findings somewhat, indicating that while some nurses anticipate a better quality of life abroad, others are concerned about social isolation and cultural displacement, which could detract from their overall life satisfaction.¹⁵ Meanwhile, in Indonesia, students highlighted that improved job satisfaction and professional recognition abroad are major factors that they believe would lead to a better quality of life compared to their current prospects at home.²⁸

These perspectives underscore a common theme: the expectation of a better quality of life abroad is a potent motivator for migration despite concerns about potential negative impacts on social and cultural integration.

Policy and educational system influences: The influence of policy and educational systems on migration decisions is well-documented across the studies. The Romanian study highlights how EU integration policies have opened new opportunities for migration, influencing students' decisions to move abroad for better educational and professional prospects.³³ Similarly, in Indonesia, the government's support and regulation of overseas employment have made international opportunities more accessible and attractive, encouraging more students to consider migration a viable career path.²⁸

Conversely, the Ghanaian study reflects on how national policies inadequately addressing job saturation and poor remuneration in the healthcare sector are pushing students to seek opportunities abroad.¹⁵ In Turkey, educational reforms aimed at aligning local nursing education with international standards have heightened students' expectations and intentions to work in better-regulated healthcare environments abroad.³⁵

These findings indicate a significant impact of national policies and educational systems on shaping migration intentions, with students in various countries responding to how well their educational achievements are expected to be rewarded domestically and internationally.

Discussion

The desire for economic advancement and the pursuit of professional fulfillment creates a complex dichotomy within the migration intentions of nursing students. This tension is particularly evident in the age of COVID-19, where the pandemic has brought economic instability and fluctuating healthcare needs to

the forefront. Studies across numerous countries, including Indonesia, Nigeria, Slovakia, and Romania^{13,28,30,33,36} consistently highlight a strong correlation between economic aspirations and migration tendencies. The Dual Labor Market Theory³⁸ and Expectancy Theory of Motivation³⁹ provide relevant theoretical frameworks, emphasizing the allure of higher wages, improved living standards, and greater financial security frequently found in developed nations. These economic 'pull' factors are particularly potent when perceived opportunities diminish in a student's home country, with low pay and limited benefits acting as 'push' factors compelling them to look abroad.

However, solely focusing on economic drivers oversimplifies a multifaceted decision. Students from countries like Turkey, India, and Ghana^{15,29,31,35,40} demonstrate a nuanced understanding of professional fulfillment and its role in career choices. They seek advanced training, greater autonomy, recognition, and career progression often unavailable in their home countries. Moreover, the COVID-19 pandemic has highlighted disparities in healthcare resources and working conditions globally, potentially intensifying this desire for professional betterment. However, the balance between economic and professional aspirations can change during different stages of a nurse's career. The Irish study⁴¹ suggests that new graduates might prioritize salary and financial stability. However, as they gain experience, the pursuit of advanced specializations, research opportunities, and leadership roles might become stronger.

The COVID-19 pandemic has highlighted the vulnerabilities of healthcare systems worldwide, potentially amplifying economic and professional concerns among nursing students.^{42,43} These findings call for urgent attention in both source and destination countries. Source countries must prioritize investing in healthcare infrastructure, competitive salaries, and robust career progression pathways – factors likely thrown into sharper relief by the challenges of the pandemic.⁴⁴ Additionally, destination countries

must re-evaluate recruitment practices to avoid exploiting global health crises. Ethical recruitment strategies that prioritize long-term sustainability and avoid exacerbating existing shortages in source countries are imperative.^{45,46} Further research is needed to explore how the pandemic has specifically altered the balance between economic and professional fulfillment drivers among nursing students, shaping their migration intentions throughout the COVID-19 era and beyond.

Global events such as Brexit and the COVID-19 pandemic are pivotal influencers, demonstrating how external uncertainties can accelerate or reroute migration intentions. For instance, the Romanian study clearly illustrates the direct impact of Brexit and COVID-19 on students' migration intentions, suggesting a rapid re-evaluation of potential destinations considering new visa regulations and healthcare challenges.³³ The Theory of Planned Behavior supports this phenomenon⁴⁷ for understanding the migration intentions of nursing students, emphasizing that such intentions are influenced by personal attitudes, perceived social pressures, and feasibility considerations. This theory's application is evident in the study of Iranian nurses, where a significant correlation was found between the intention to migrate and workload, as well as an inverse relationship with a healthy work environment, highlighting the role of personal attitudes and perceived control over their working conditions.⁴⁸ The findings from the studies conducted in Slovakia and Ghana shed light on the impact of economic downturns and healthcare system disparities in exacerbating migration intentions. These studies also highlight how perceived better opportunities in foreign lands during local instability play a key role.^{15,30}

The results presented herein align with the widely acknowledged and studied Push-Pull Theory, which posits that various push and pull factors jointly contribute to the decision of nursing students to migrate.^{14,15,29} Specifically, it is found that a combination of push factors, such as economic hardship and a saturated job market, alongside pull factors, such as better job

prospects and stable political environments in the destination countries, significantly impact nurses' migration decisions.⁴⁹ The aforementioned findings contribute significantly to the existing body of literature and emphasize the necessity of comprehending the intricate interplay of diverse variables that significantly influence nursing students' migration patterns. Such knowledge can aid in formulating informed policies and strategies to promote the retention and recruitment of nursing students and ensure quality healthcare services.

Furthermore, it is widely acknowledged that economic challenges and the pursuit of better living standards are among the primary drivers of migration. This is evident in studies conducted in Poland and Romania, where individuals are motivated to seek better economic opportunities abroad. In addition, the salary gap has encouraged nurses in India to explore opportunities overseas.^{9,50,51} Political stability and the promise of a better quality of life also emerged as critical pull factors, as seen in the motivations of Pakistani-educated nurses to migrate due to wage disparities, political upheaval, and working conditions in their home country.⁵²

The temporal dynamics of migration intentions, particularly in response to global events, underline the need for adaptive policies that swiftly address the changing needs of healthcare workforces and systems in flux. This observation is further augmented by applying the (im)mobility theory, which posits that migrants' movements are often shaped involuntarily by geopolitical shifts.^{53,54} Such a theory illustrates the reactive nature of migration in response to international crises. It exposes the nuanced ways in which global mobility is often a privilege that can be quickly restricted or facilitated by those in power.⁵³ For instance, during the COVID-19 pandemic, several developed countries adjusted their immigration policies to expedite the entry of foreign-trained health professionals.⁵⁵⁻⁵⁷ This strategic easing of visa regulations underscores a reactive, rather than proactive, approach to health workforce planning, revealing a systemic reliance on the developing world's labor

resources in times of crisis.⁵⁸ The power dynamics allow wealthier nations to rapidly mobilize global health resources to their advantage, often without adequately addressing the long-term impacts on the source countries' health systems.

Cultural and familial ties continue to shape the migration decisions of nursing students. Studies in India and Indonesia demonstrate the enduring power of familial obligations and cultural attachments as deterrents to migration, even with potential economic benefits.^{28,31,36} This support network is crucial, especially for nursing students navigating the demanding healthcare education and practice landscape. The concept of social capital, emphasizing the value of social networks⁵⁹, offers insights into how these ties can influence nursing students' decisions, potentially making leaving their support network less appealing. However, the COVID-19 pandemic has dramatically altered the landscape.

The heightened health risks and economic fallout have emphasized the importance of familial support and stability, influencing students' priorities and decisions regarding their professional paths and the possibility of leaving their families for educational or work opportunities.^{60,61} In Ghana and Turkey, some students now see migration as a means of protecting their families through economic remittances and accessing safer healthcare environments.^{15,35} Whereas, Indonesian nursing students intending to work in Japan were influenced by a desire for better opportunities and the potential to contribute positively to healthcare in both the source and destination countries.²⁸ Furthermore, the COVID-19 pandemic has brought the interconnectedness of healthcare systems worldwide to the forefront, highlighting the need for a more global approach to healthcare. This may profoundly impact students' attitudes towards migration, encouraging them to seek opportunities for broader societal impact beyond their home country. This shift in attitude reflects elements of the Altruistic Theory of Migration, which suggests that individuals may choose to migrate

based on a desire to contribute to the greater good of society.⁶²

The COVID-19 pandemic has dramatically reshaped how nursing students perceive the potential impact of migration on their quality of life. Globally, stark disparities in healthcare resources, highlighted by the pandemic, have reinforced the belief that migration could lead to significantly improved working conditions, remuneration, and overall job satisfaction.^{63,64}

Studies from Nigeria and Slovakia provide empirical evidence that many nursing students are motivated by the prospect of better work conditions, higher remuneration, and greater job satisfaction in more developed healthcare systems.^{13,30} While economic and professional betterment remain potent motivators, relocation's psychological and social challenges during a global crisis must now be factored into decision-making. Ghanaian students, for example, weigh the potential economic gains against the emotional toll of social isolation, cultural dislocation, and the psychological burden of migrating amidst a pandemic.¹⁵ This highlights that the pandemic has forced a recalibration of quality-of-life expectations beyond immediate material benefits.

Furthermore, the pandemic has also highlighted the interconnectedness of educational opportunities, policy landscapes, and global health workforce mobility. Educational systems play a crucial role in shaping intentions. In Romania and Indonesia^{28,33}, aligning local curricula with international standards enhances students' perception of their employability abroad, fueling migration motivations. Whereas in Ireland³² educational opportunities, career prospects, and the overall learning environment impact students' intentions to seek employment abroad. This reflects elements of "Brain Circulation," where educational exchange could benefit both sending and receiving countries.^{65,66}

However, the COVID-19 pandemic has exposed limitations within this model, highlighting the stark disparities in healthcare education between developed and developing countries.

Witnessing more advanced systems abroad can intensify the desire among students in lower-resource settings to migrate.¹⁵ This underscores the urgent need for policies that invest in healthcare education and infrastructure within these regions, potentially reducing the 'push' factors that drive students to seek opportunities elsewhere.

Strengths and limitations

This scoping review offers a comprehensive and timely examination of factors shaping nursing student migration intentions, particularly during the COVID-19 pandemic. The narrow focus on this period enhances its value to future researchers seeking to compare pre- and post-pandemic influences.

This work lays a strong foundation for understanding this complex issue and holds clear implications for policy and practice interventions. However, limitations include the reliance on mostly cross-sectional data, highlighting the need for longitudinal studies to track actual migration against initial intentions. Further, incorporating more qualitative research would enrich our understanding of students' subjective experiences under the influence of the pandemic. Additionally, broadening the scope to include non-English language studies and considering relevant grey literature could offer a more globally inclusive perspective.

Conclusion

The migration of nursing students represents a complex and multifaceted challenge with significant implications for global healthcare. This scoping review identifies a diverse array of factors influencing nursing students' decisions to migrate, ranging from aspirations for a better quality of life and professional opportunities, which are perceived to be superior in more developed healthcare systems. However, the impact of cultural and familial ties, alongside the changing policies and educational systems, plays a crucial role in either facilitating or restraining these migration flows.

The COVID-19 pandemic has particularly underscored the dynamic nature of these factors, where global crises can rapidly alter migration patterns and intentions. Addressing these underlying intentions is crucial for strengthening nursing workforces and mitigating global shortages. Effective strategies to address these root causes must focus on early student intentions, as the inclination to migrate often begins during training and solidifies upon graduation. Implementing retention initiatives during the educational phase could be more effective in anchoring emerging talent. By adequately addressing the needs of nursing students and fostering their willingness to serve domestically, we can cultivate sustainable workforces essential for the future of healthcare systems.

Author contribution

Conceptualization- AG; Methodology- AG and BT; Software- AG; Validation, AG, BT and MKR; formal analysis, AG; Investigation, AG; resources, AG; Data curation, AG, BT and MKR; Writing original draft- AG.; Revision and editing- BT.; Visualization- AG, BT and MKR.; Supervision- BT; Accountability- All authors have read and agreed to the final version of the manuscript.

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Conflict of interest

None

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Data availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Supplementary material description

This supplementary material provides additional resources to enhance the understanding and transparency of the scoping review. The appendices include:

Appendix A: Detailed search strategy and summary of the search conducted.

Appendix B: Characteristics of the included studies.

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