

Unveiling the drivers of Brain Drain: Divergent motivations of Healthcare and Non-Healthcare Professionals in Karachi

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Abstract

Background: The ongoing sociopolitical instability in Pakistan has led to significant migration of both laborers and highly skilled professionals, known as “brain drain.” Young professionals, including healthcare workers from Karachi, are increasingly inclined to migrate for better opportunities, impacting society significantly.

Objectives: This pilot study aimed to assess various methodological aspects for a larger research project and explore factors influencing migration intentions among healthcare and non-healthcare professionals.

Material and Methods: A cross-sectional survey was conducted in Karachi, dividing respondents into Non-Healthcare (NHC) and Healthcare (HC) groups. A structured questionnaire with a five-point Likert scale was used, and data was analyzed using descriptive statistics and logistic regression with SPSS.

Results: The study demonstrated feasibility for a larger investigation and revealed distinct motivations for migration between HC and NHC professionals.

Migration Intentions: NHC: 26% strongly agreed, 32% agreed on migration intentions. HC: 21% strongly agreed, 39% agreed on migration intentions.

Push Factors: HC: Lack of program/field of interest. NHC: Lack of program/field of interest, security risks.

Pull Factors: NHC: Political stability, economic stability, nationality/residency permits. HC: Educational opportunities, social stability, political stability, economic stability, nationality/residency permits.

Conclusion: The study highlights significant migration intentions among respondents, with distinct push and pull factors influencing these intentions, laying groundwork for comprehensive research.

Keywords: Migration intentions, brain drain, push factors, pull factors.

Introduction:

The World Health Organization (WHO) emphasizes the critical role of health workers in health systems. A projected shortfall of 10 million health workers by 2030 will mostly affect low and lower-middle-income countries, exacerbated by under-investment, training mismatches, rural deployment challenges, and international migration. Investing in the health workforce, especially given that 67% are women, can promote economic growth and resilience.

On June 17-18, 2024, the WHO’s Expert Advisory Group reviewed the Global Code of Practice on International Health Personnel Recruitment, amid record levels of health worker migration. The review aims to develop solutions and ensure fair working conditions for migrant health workers, international collaboration, and adequate national health workforce production.

Since its establishment in August 1947, Pakistan has faced persistent political instability, which has negatively impacted economic growth,

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led to rising inflation and unemployment, and caused widespread uncertainty. This has resulted in a significant migration of healthcare professionals, influenced by various push and pull factors, distinct from other social groups.

This study explores migration intentions among Karachi residents, focusing on healthcare and non-healthcare professionals, considering push and pull factors and preferred destinations.

Significance of the problem: Between 1971 and 2022, over 6 million skilled individuals migrated from Pakistan, including 50,110 healthcare professionals. This migration has impacted teaching institutions, healthcare infrastructure, socio-economic development, research, and the nation's overall growth.

Many Pakistani intellectuals struggle to reintegrate upon returning from developed countries, contributing to a brain drain. The migration of faculty members also negatively affects the global rankings of Pakistani universities. Migration incurs tangible and intangible costs, affecting productivity, client relationships, and employee morale. It also impacts social and family dynamics, creating challenges for those left behind.

Objectives of the study: Evaluate the practicability of the recommended pilot model for a larger-scale survey. Examine the motivating factors for migration intentions among healthcare and non-healthcare professionals.

Research Questions: What push factors influence the migration intentions of healthcare and non-healthcare professionals? What pull factors influence the migration intentions of healthcare and non-healthcare professionals? How are healthcare professionals uniquely influenced compared to non-healthcare professionals?

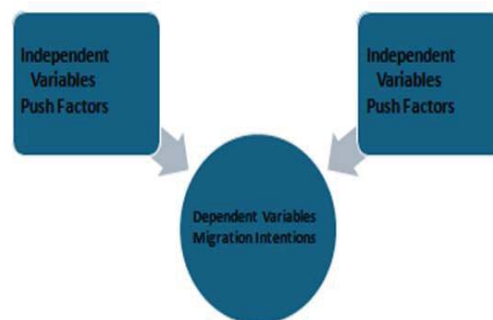
Scope of study: The study includes professionals from various scientific disciplines in Karachi, aiming to retain human capital and enhance services by addressing their needs.

Hypotheses: H1: Push factors (e.g., lack of program/field of interest, political instability) have

positive relationships with migration intentions. H2: Security risk has a negative relationship with migration intentions. H3: Pull factors (e.g., availability of educational opportunities, political stability) have positive associations with migration intentions.

Conceptual framework: Migration intention was a dependent variable while push and pull factors were independent variables influencing migration intentions.

Figure 1. Proposed variables and conceptual framework. The Push and Pull factors are independent variables and they directly influence Migration Intentions.



Research Gap: While much research has focused on migration intentions of human capital, few studies compare healthcare professionals' intentions with those of non-healthcare workers. This study addresses this gap by identifying different drivers for these groups.

Review of Literature: In a recent international review in which 25 articles fulfilled the inclusion criteria. The study addressed the relocation intentions of healthcare professionals. Pull and push factors were the most reliable variables to explain the driving forces for migration. In the study, political instability, poor income/wages, unfavorable socio-economic environment, lack of educational and professional opportunities-together with personal and family concerns are discovered as significant common factors influencing migration. Although there are diverse motivations behind healthcare workers' decisions to migrate, they generally follow a similar

pathway when choosing whether to stay in or leave their home countries. Unmet expectations at home, combined with media-influenced perceptions of life abroad, can foster a positive attitude toward the potential for a higher quality of life through migration. Once individuals transcend the irnational identity and the obstacles associated with migration, the decision to migrate becomes more attainable.⁷ Any such study that is focusing only the healthcare workers is not available.

Over a span of 51 years, from 1971 to 2022, a total of 6,019,888 highly qualified and skilled individuals emigrated from Pakistan. These emigrants can be categorized into three groups based on the irexpertise: highly qualified, highly skilled, and skilled professionals. Specifically, 251,677(4.18%) were highly qualified, 455,097(7.55%) were highly skilled, and 5,314,004(88.27%) were skilled professionals. Scrutinizing the specialists within the exceptionallyskilled group unveils that 50,110(0.83%) were from the healthcare segment. This subgroup was mainly composed of doctors, making up 31,418(62.69%) of the total, after those nurses at 12,853(25.64%), and pharmacists at 5,839 (11.65%).⁸

Reviewing data from 2022, it is evident that a significant number of skilled professionals, amounting to 832,339 individuals, departed Pakistan for better opportunities. In this group, 17,976(2.15%) were highly qualified, and 20,865(2.50%) were categorized as highly skilled. This equates to an average of 2,312 individuals leaving the country per day during the year. Specifically, 2,464(0.29%) were doctors, while 1,768(0.21%) were nurses and paramedics. The trend of braindrains, marked by the migration of skilled individuals from Pakistan to other countries, has been significant from 1971 to 2022. This movement has been primarily towards Gulf States such as Saudi Arabia, the UAE, and Oman, as well as developed countries including South Korea, the UK, the USA, Switzerland, China, and Germany. In 2022 alone, most emigrants moved to KSA(514,909 or 61.86%), followed by the UAE(128,477 or 15.43%), and

Oman(82,380 or 9.89%). Additionally, significant relocation was seen to other states, summing 23,693 individuals (2.845%).⁸

Concerning the departure points of these migrants from Pakistan in 2022, major cities like Karachi, Islamabad, Lahore, Peshawar, and Faisalabad were notably significant, each contributing different proportions to the emigrant populace.⁹ Numerous elements drive brain drains, such as the quest for improved living conditions, higher salaries, advanced technological access, and political stability in foreign countries. Moreover, issues like unemployment, inflation, poverty, security concerns, and economic difficulties prompt both the youth and middle-aged individuals to pursue opportunities abroad.¹⁰

The effect of brain drain on academia and research in Pakistan is profound. Political instability, scarce resources, and a lack of employment opportunities impede the development of universities and academic institutions.¹¹ The departure of faculty members worsens this problem, leading to lower global rankings and a loss of scientific knowledge and innovations.^{12,13} The financial burden of migration and turnover intentions also creates difficulties for organizations. Turnover costs, both direct(e.g., recruitment expenses) and indirect(e.g., loss of productivity), can substantially affect an organization's performance.^{14,15} Additionally, turnover and migration can strain employee-customer relationships and lower the morale of remaining staff, resulting in reduced productivity and job satisfaction.^{10,16}

Material and Methods:

Study design: The research adopted a cross-sectional survey design for its pilot study, aimed at gathering preliminary data to inform a larger, more comprehensive investigation. This design is ideal for assessing the prevalence of various factors at a single point in time, enabling the identification of relationships between variables.

Study duration: The study was conducted over a seven-month period, from December 15, 2022, to July 15, 2023. This duration allowed for the collection and analysis of sufficient data to

achieve the study's objectives.

Sample size: The study analyzed data from the first 150 respondents. This sample size was chosen to provide a manageable yet insightful dataset for the pilot phase, ensuring that preliminary findings could be robustly evaluated before scaling up the study.

Sampling technique: The study employed convenience and purposive sampling techniques. Convenience sampling was used to facilitate quick and easy data collection from readily available participants, while purposive sampling ensured that the sample included specific sub-groups of interest, namely healthcare and non-healthcare professionals residing in Karachi.

Study population and settings: The study focused on residents of Karachi, the largest city in Pakistan, known for its diverse population and significant healthcare workforce. The inclusion of a broad cross-section of Karachi's residents aimed to capture a wide range of perspectives on migration intentions.

Inclusion criteria included healthcare and non-healthcare professionals currently residing in Karachi. This criterion was set to compare migration intentions between these two groups and identify unique factors influencing each group's decision-making processes. **Exclusion criteria** included residents of Karachi who were living abroad at the time of the survey were excluded from the study. This exclusion ensured that the data reflected the perspectives of individuals currently experiencing the local socio-political and economic conditions.

Ethical considerations: The study's was reviewed by a panel of internal and external supervisors to ensure that all ethical aspects were addressed. Given that the survey did not collect any identifiable data, participant anonymity was maintained throughout the study. Participation was entirely voluntary, with individuals having the option to withdraw at any time without any repercussions.

Data collection procedure: Data were collected

using a structured, closed-ended questionnaire designed with a five-point Likert scale. This questionnaire was administered via Google Forms, distributed through social media platforms to individuals meeting the inclusion criteria. The use of an online survey ensured broad reach and convenience for respondents, facilitating higher response rates.

Data Analysis Procedure: The collected data were subjected to descriptive statistical analysis to summarize the basic features of the dataset and provide a clear understanding of the sample characteristics. Following this, logistic regression modeling was employed to identify and quantify the relationships between various push and pull factors and the migration intentions of the respondents. The statistical software SPSS was used for all data analysis procedures, ensuring robust and reliable results

Results:

This pilot study, based on 150 respondents, has demonstrated the feasibility of conducting a larger, more comprehensive study. The methodology, financial, and technical aspects support scaling up the research. The study was conducted through a cross-sectional survey in Karachi.

Migration intentions: The majority of respondents (59.3%) either agree or strongly agree with the intention to migrate, indicating a general positive attitude towards migration. Conversely, 24.6% either disagree or strongly disagree, reflecting resistance or reluctance, while 16% are neutral.

Migration intentions in different groups: Among the respondents, 66(44%) were from the healthcare (HC) group, and 84(56%) were from the non-healthcare (NHC) group. Both groups exhibited similar positive migration intentions: 61% of healthcare professionals and 58% of non-healthcare professionals agreed or strongly agreed with migrating. The non-healthcare group had a slightly higher percentage of respondents who strongly agreed to migrate (26%) compared to the healthcare group (21%).

Socio-Demographic Information**Gender distribution:**

- Male: 73 respondents (48.7%)
- Female: 77 respondents (51.3%)

Field of education:

- Medicine and Allied: 66 respondents
- Commerce and Allied: 31 respondents
- Engineering: 14 respondents
- Social Sciences: 12 respondents
- Computer & Information Technology: 5 respondents
- Arts and Humanities: 4 respondents
- Other fields: 18 respondents
- No specified field: 12 respondents

Ethnolinguistic identity:

- Muhajir (Urdu speaking): 105 respondents
- Punjabi: 12 respondents
- Sindhi: 9 respondents
- Other: 8 respondents
- Pashtun: 6 respondents
- Prefer not to disclose: 6 respondents
- Baloch: 2 respondents
- Kashmiri: 2 respondents

Due to the small sample size, further correlation analysis of socio-demographic data was not performed. Descriptive and inferential analysis will be conducted in the final study to ensure the reliability and validity of the results.

Push factors in HC and NHC Groups**Lack of program/field of interest in Pakistan:**

- HC group: P-value = 0.008 (significant)
- NHC group: P-value = 0.034 (significant)

Security risk in Pakistan

- HC group: P-value=0.266 (not significant)
- NHC group: P-value=0.010 (significant)

Lack of quality education in Pakistan:

- HC group: P-value=0.056 (marginally significant)
- NHC group: P-value=0.224 (not significant)

Lack of high-rank Universities in Pakistan:

- HC group: P-value=0.621 (not significant)
- NHC group: P-value=0.632 (not significant)

Less Credibility of Education/Training in Pakistan:

- HC group: P-value=0.144 (not significant)
- NHC group: P-value=0.251 (not significant)

Political instability in Pakistan:

- HC group: P-value=0.081 (marginally significant)
- NHC group: P-value=0.219 (not significant)

Summary: The lack of program/field of interest is a significant push factor for both healthcare and non-healthcare professionals. Security risk is significant for non-healthcare professionals but not for healthcare professionals. Other factors like lack of quality education, lack of high-rank universities, less credibility of education/training, and political instability are not statistically significant, with some being marginally significant for healthcare professionals.

Pull factors in HC and NHC groups:

This study highlights the significant role of various pull factors in influencing migration intentions among healthcare (HC) and non-healthcare (NHC) professionals.

Summary of Results:**1. Availability of Educational Opportunities:**

- HC Group: Significant (p = 0.001)
- NHC Group: Not significant (p = 0.195)

2. Higher job opportunities after education/training:

- HC Group: Not significant (p = 0.144)
- NHC Group: Not significant (p = 0.114)

3. Higher Monetary Return After Education/Experience:

- HC Group: Not significant (p = 0.215)
- NHC Group: Not significant (p = 0.114)

4. Social Stability:

- HC group: Highly significant (p = 0.000)
- NHC group: Not significant (p = 0.067)

5. Political stability:

- HC group: Significant (p = 0.002)
- NHC group: Significant (p = 0.019)

6. Economic stability:
 - HC group: Significant ($p = 0.017$)
 - NHC group: Significant ($p = 0.010$)
7. Language (medium of education/working):
 - HC group: Significant ($p = 0.024$)
 - NHC group: Not significant ($p = 0.571$)
8. Relative already present:
 - HC group: Not significant ($p = 0.180$)
 - NHC group: Not significant ($p = 0.130$)
9. Low cost of living/education:
 - HC group: Not significant ($p = 0.159$)
 - NHC group: Not significant ($p = 0.433$)
10. Possess nationality or residency permit:
 - HC group: Significant ($p = 0.043$)
 - NHC group: Highly significant ($p = 0.007$)

Key insights:

- Healthcare (HC) Group: Significant pull factors include educational opportunities, social stability, political stability, economic stability, language, and possessing nationality or residency permits.
- Non-Healthcare (NHC) Group: Significant pull factors are political stability, economic stability, and possessing nationality or residency permits.

Discussion:

The sample size of 150 respondents was small, limiting the scope for detailed statistical analysis. Thus, descriptive and inferential statistics were not applied.

Tables 1 and 2 provide insights into the migration intentions of healthcare (HC) and non-healthcare (NHC) professionals. The majority of respondents (59.3%) showed a positive inclination towards migration. Within sub-groups, 61% of HC and 58% of NHC respondents agreed or strongly agreed with migration intentions. This percentage is lower than that reported by Subba et al.,¹⁸ where 99.2% intended to pursue postgraduate training abroad. Our findings align with a survey of final-year Indian medical students in 2004, where nearly 60% planned to go abroad. The similarity in results is likely due

to shared economic and social dynamics, as well as limited opportunities for advancement. Our results indicate a lower propensity for migration compared to other surveys from Karachi (95% and 65%) and Lebanon (96%) but align more closely with South Africa (50%).

The survey also revealed that 24.6% of respondents opposed migration. Analyzing their reasons could provide insights into factors that encourage professionals to remain in their native country.

Key findings indicated that the absence of programs or fields of interest in Pakistan was a significant impetus for migration for both HC and NHC groups. Security concerns were a substantial motivator for the non-healthcare workforce but not for healthcare workers. Other elements, such as the lack of quality education, scarcity of top-tier universities, diminished credibility of education and training, and political instability, were not statistically significant for either group, with some being marginally significant for healthcare professionals.

The lack of programs or fields of interest in Pakistan significantly influenced migration intentions, with P-values of 0.008 for HC and 0.034 for NHC groups. This is consistent with other studies showing a strong correlation between the absence of higher education and specialized training opportunities in one's native country and the propensity for migration.

Security issues in Pakistan were a substantial motivator for the non-healthcare workforce but not for healthcare workers. A Pakistani study published in 2011 reported that 81% of respondents believed security risk due to terrorism was a significant push factor for doctors' migration. However, our research conducted in 2023-2024 indicates that security risk has diminished significantly, likely due to the different time frames of the studies.

Significant pull factors for both HC and NHC groups included political stability, economic stability, and possession of nationality or residency

Table 1: Migration intentions of 150 respondents

Migration Intentions	Responses
Strongly Disagree	9 individuals (6%)
Disagree	28 individuals (18.6%)
Neutral	24 individuals (16%)
Agree	53 individuals (35.3%)
Strongly Agree	36 individuals (24%)
Total Respondents	150 individuals

Table 2: Migration (leaving Pakistan) intentions in groups NHC and HC

	Group Healthcare	Group Non-healthcare
Numbers of respondents 150	66 (44%)	84 (56%)
Strongly agree	14 (21%)	22 (26%)
Agree	26 (39%)	27 (32%)
Total number of strongly agree and agree for migration	40 (61%)	49 (58%)

permits. The HC group also valued the availability of educational opportunities and social stability, while the NHC group did not consider these aspects as important. This explains why Pakistan is a major source of doctors in the US and UK, driven by abundant educational and training opportunities.

Data from the Higher Education Statistics Agency for 2021/22 showed 23,075 Pakistani students enrolled in UK universities, and Australia had 15,875 Pakistani students in 2022. These findings align with numerous international studies, indicating that economic, social, and political pull factors are significant determinants of migration. Economic stability, characterized by better employment, higher income, and improved living conditions, is a universal driver of migration. Social and political pull factors also significantly influence migration, as seen in studies from Poland and Romania.

A recent study from Pakistan highlighted factors driving young people to move abroad, including a lack of economic opportunities, political instability, poor quality of education, strict social norms, and the allure of a better life. Addressing these root causes is crucial for reducing migration and fostering growth and innovation within the country.

Limitations: This pilot study, based on a sample of 150 respondents, has provided valuable insights and feasibility for a larger and more comprehensive study. However, several limitations need to be considered. Firstly, the small sample size limits the generalizability of the findings, and a larger sample would provide more robust data and more reliable conclusions. Secondly, the geographical scope of the study was confined to Karachi, which may not fully represent the diverse perspectives and experiences of individuals across Pakistan. Additionally, the cross-sectional design of the survey captures migration intentions at a single point in time, which may not account for changes in opinions over time. The study also had limited demographic variables; although various demographic variables were collected, the small sample size prevented a detailed correlation analysis, limiting the depth of the findings. Finally, potential biases could arise from the self-reported nature of the survey, as respondents may not always provide accurate or honest answers.

Conclusion:

The study reveals significant insights into migration intentions among healthcare (HC) and non-healthcare (NHC) professionals in Karachi. Key findings include that a majority of respondents (59.3%) expressed positive migration intentions, indicating a general inclination towards migrating. The lack of specific programs or fields of interest in Pakistan is a significant push factor for both HC and NHC groups, while security risks are a significant push factor for NHC professionals but not for HC professionals. Significant pull factors for the HC group include the availability of educational opportunities, social stability, political stability, economic stability, language, and possession of nationality or residency permits. For the NHC group, significant pull factors are political stability, economic stability, and possession of nationality or residency permits.

Way forward to build on the findings of this pilot study, the following steps are recommended for a larger, more comprehensive study. Firstly, it is essential to expand the sample size to ensure

more representative and statistically significant results. Secondly, broadening the geographic scope by conducting the study across multiple cities and regions in Pakistan will capture a more diverse range of perspectives. Implementing a longitudinal study design will help track changes in migration intentions over time and understand the evolving factors influencing these decisions. Additionally, with a larger sample, performing a more detailed correlation analysis of socio-demographic variables will uncover deeper insights. To address potential biases, methods such as anonymous surveys and random sampling should be utilized to minimize biases in respondents' answers.

Policy Recommendations:

Developing targeted policy recommendations based on the findings is crucial to addressing the root causes of migration intentions. These recommendations should focus on improving economic opportunities, enhancing the quality of education, and ensuring political stability.

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Role and contribution of authors:

Syed Asim Ali Jaffary, helped in designed the study, initial writeup, literature review, and discussion writing.

Syed Jehanzeb, helped in data collection, also helped in writing the abstract, introduction and collecting references.

Maleeha Zaidi, collected the references and helped in discussion writing.

Muhammad Arsalan Hashmi, helped in methodology, designing the google form, results and critical revied the article.

Faisal Sultan Qadri, supervised the whole study and made finale changes.

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