"Migration intentions of nurses and nursing students from Slovakia: A study on drivers"

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BUSINESS PERSPECTIVES

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MIGRATION INTENTIONS OF NURSES AND NURSING STUDENTS FROM SLOVAKIA: A STUDY ON DRIVERS

Abstract

Nurses are an essential resource in health systems. However, the shortage of skilled nursing workforce is a global phenomenon with negative consequences – many factors, including individual, occupational, and socio-political aspects, influence nurse migration. Thus, the aim is to explore the migration intentions of nurses and nursing students, forcing them to seek work abroad.

An online survey was conducted among nurses and nursing students as part of the APVV and VEGA projects. The questionnaire focused on the essential characteristics of the respondents and staffing approaches in hospitals in Slovakia. Data were obtained from a survey of 752 hospital nurses and 423 university nursing students. The statistical analysis consisted of factor and correspondence analysis. The findings highlight the factors influencing the migratory sentiments of nursing students and working hospital nurses. They are organization of work, staff remuneration, employee benefits, workroom equipment, shortage of nurses, bureaucracy, communication and relations with colleagues, superiors, and patients, training and career development, material and spatial security, instrumentation, digitization of work, the prestige of the medical profession, and current situation in the Slovak Republic.

The paper identifies and evaluates groups of push factors of migration intentions – satisfaction/dissatisfaction with hospital working conditions. The results of the factor analysis indicate that such factors as material and spatial security, communication and relations with colleagues, work organization, lack of personnel, bureaucracy, the prestige of the medical profession, and the current situation in Slovakia affect their working conditions and pleasure.

Keywords	migration intentions, labor migration, nurses, nursing students, pull and push factors, working conditions, job satisfaction
JEL Classification	I10, F22, J15, J18, J20

INTRODUCTION

The problem of nursing migration is an urgent and challenging issue that affects healthcare systems in different parts of the world. Nurses, as critical representatives of medical staff, often face different challenges. Many countries and regions lack skilled health workers, which leads to the need to hire nurses from other countries. However, this can cause problems for donor countries that lose their own nurses through migration.

Nurses are an essential pillar of the healthcare system, and their adequate representation and skill combination ensures a safe level of staff, contributing to the Sustainable Development Goals through improved patient safety and nurse outcomes. Nursing staff represent the largest group of health workers, with specialist nurses being key players in advanced nursing practice (Poku et al., 2023; Kim et al., 2021). The "brain drain" of nurses in healthcare is the result of the interaction of various factors, including individual, occupational, economic, and

socio-political factors that attract them to other countries (Tosunöz & Nazik, 2022; Aliyev & Gasimov, 2023). Many countries face a shortage of healthcare workers. This situation can lead to severe psychological overload for available workers, prone to burnout (Chemali et al., 2019; Sarihasan et al., 2022). Nurses are a vital resource in nursing because they are the primary caregivers who directly impact patients.

Nurses, nursing students, and their migration intentions to leave Slovakia are significant topics in relation to global healthcare systems. Nurses' skills are essential for patient safety and the sustainable development of healthcare facilities. The lack of nurses negatively affects home countries, not least the quality of care provided. Several factors influence nurses' decision to migrate. It is, therefore, essential to explore the various factors and their impact on nurses' decisions to seek work abroad.

1. LITERATURE REVIEW

The loss of a skilled workforce can pressure the source country's healthcare system, resulting in increased workload and decreased satisfaction for nurses who remain in the source country (Stokes & Iskander, 2021; Glinos, 2015). However, little is known about the factors that influence new graduates' entry into employment in the hospitals where they were trained or about their migration intentions (Deasy et al., 2021). Nurses are thought to experience reality shock, a discrepancy between expectations and reality when experiencing a role change from student to nurse. However, if new nurses are unable to mitigate reality shock, they experience burnout (Kim et al., 2020; Sundari et al., 2022; Prakash & Nandini, 2024). Hospitals and healthcare organizations face challenges in recruiting and retaining qualified nurses. Significant nursing staffing shortages negatively impact health systems' performance, quality of patient care, and nurses' mental and physical health (Roth et al., 2021; Komari & Djafar, 2023). High nurse turnover contributes to the global shortage of nursing staff. The shortage of nurses is a critical global phenomenon that has become an ongoing problem in the healthcare field (Kim et al., 2021). According to the World Health Organization (WHO, n.d.), there is a shortage of 7.2 million workers in the health sector, with an estimated shortage of nurses reaching 12.9 million by 2035. In the last decade, the WHO has reported a 60% increase in health workforce emigration to higher-income countries (Marć et al., 2019; Poku et al., 2023). Healthcare worker migration challenges health systems, including workforce planning, and can cause imbalances in healthcare delivery. It can also be a symptom of imbalances in transitioning from the education sector to the labor market and ineffective workforce retention policies (Ferreira et al., 2020).

Job satisfaction is vital in nursing and may influence nurses' migration decisions. Job satisfaction is essential in driving forces that promote nurses' migration flows. In a systematic review, different dimensions of job satisfaction were identified, such as job description, autonomy, growth/development, financial reward, promotion, supervision, communication, co-workers, meaningfulness, workload, and job demands (Eriksson et al., 2023). Nursing students' main push and pull factors in relation to migration are socio-political factors and working conditions, primarily related to salaries at entry, career development, and subsequent salary increases (Öncü et al., 2021; Adzei & Sakyi, 2014). Efendi et al. (2021) add other important factors related to the definite plan to work abroad: family income, foreign language proficiency, and knowledge about nurses' migration. According to Acea-López et al. (2021), poor working conditions in nursing, including increased workload, understaffing, temporary contracts, lack of supplies, and inadequate remuneration, create work overload, fatigue, physical and mental exhaustion, and high levels of stress in the profession. In addition, Kamau et al. (2023) mention the aging population, increased demand for care, an aging nursing workforce, and a high number of skilled nurses not working in the healthcare sector as other factors contributing to nursing workforce shortages. Nurses face significant professional and personal challenges, such as excessive workload, lack of job control and social support, and psychological distress early in their careers (Fernet et al., 2017). These factors also influence nurses' intention to migrate as they contribute to the challenges they face in their professional and personal lives.

Migration of human resources from low-employment countries is a global health problem with implications for both sending and receiving countries. Individual factors, such as better job opportunities and salaries, motivate people to migrate, while systemic factors, such as weak healthcare systems and political instability, contribute to the phenomenon (Toyin-Thomas et al., 2023; Aliyev et al., 2023; Khalid & Urbański, 2021). Destination countries use foreign labor to fill healthcare worker shortages and reap the benefits of cultural diversity and savings in time and resources. At the same time, source countries face health workforce sustainability challenges due to shortages and an aging workforce (Goštautaitė et al., 2018). The migration of international healthcare workers is driven by macro, meso, and micro drivers at international, national, professional, and personal levels. Davda et al. (2018) showed that macro drivers for nurses are career advancement, training, safety and security, migration networks, and social and political factors of a tolerant society. Meso drivers represent professional factors of perceived opportunities for career advancement and training. Micro drivers rank economic and personal factors as necessary, including personal fulfillment, desire for life change and a better quality of life, education for children, and ability to speak English. These drivers represent the concept of attracting nurses to the UK. Szabo et al. (2020) point to the importance of retaining health professionals and increasing attention to policies that reflect the characteristics and behaviors of health professionals. This requires increased availability, quality, analysis, and use of health workforce data to inform planning, policymaking, governance, and accountability at national, regional, and global levels. Migration is a complex process influenced by personal, social, and structural factors, including pull and push factors and international recruitment (Covell et al., 2016; Oliinyk et al., 2022). Therefore, it is essential to identify the most significant and less significant factors in the migration model that influence the migration intentions of nurses and future nursing graduates.

2. METHODS

Data were obtained from a questionnaire survey of hospital nurses and medical students. The questionnaire was administered between April 2022 and November 2023. It was designed and validated within the framework of the APVV project No. 19-0579, "Setting up personnel management processes in hospitals and its impact on the migration of doctors and nurses for work abroad," and VEGA project No. 1/0691/22, "Economic aspects of emigration of university graduates in medical disciplines in the context of the sustainability of the staffing of health care institutions in the Slovak Republic." The first part of the questionnaire was devoted to the basic characteristics of the respondents and the hospital facilities in which they worked. The second part captured the respondents' assessment of their satisfaction with the setup of hospital staffing processes and explored their intentions to go abroad for work. The questionnaire was distributed through Google Forms online by directly approaching the management of hospitals and universities. The sample consisted of 752 nurses and 423 nursing students studying in universities.

For research purposes, it was necessary to obtain a minimum of 380 completed questionnaires from nurses (one sample set) out of 31,190 nurses (registered nurses in 2021) and 359 completed questionnaires from nursing students (second sample set) out of 5,140 nursing students in both full-time and part-time undergraduate and postgraduate nursing courses in 2021. The sample size of respondents (for nurses and nursing students) was verified with the following parameters: an error probability of 5% and a confidence interval of 99%. The size analysis for the sample sets of respondents by job position was done in G*Power software.

The data obtained were subjected to the normality of distribution testing through histogram, with the Gaussian curve showing that the data did not have a normal distribution in either set of respondents. The study then verified the results of the Kolmogorov-Smirnov test (n > 50) and Shapiro-Wilk test (n < 50), which confirmed the previous findings.

The analysis of the obtained data and the evaluation of the empirical survey was carried out by applying mathematical and statistical methods: descriptive statistics, correspondence analysis, Kaiser-Mayer-Olkin test (KMO), Bartlett's test of sphericity, and factor analysis.

3. RESULTS

To investigate the migration intentions of nurses and nursing students and to identify the factors that influence their decision-making, through correspondence analysis, the influence of selected background characteristics of the respondents on their thoughts about seeking work abroad was analyzed.

The difference between nurses' considerations of looking for work abroad and gender is not statistically significant (Table 1). The calculated value of χ^2 test is 3.52912 at the degree of freedom df = 4 (p = 0.4735); therefore, it can be concluded that at the significance level α = 5%, there is no significant relationship between the gender of nurses and their propensity to look for a job outside the Slovak Republic. Age was examined as an additional variable, and Table 1 discusses the identified differentials in nurses' considerations of migration concerning the age category.

The χ^2 test value is 17.2549 at the degree of freedom df = 16 (p = 0.3693), so there is no significant relationship between the nurses' age and their migration considerations at the chosen significance level, as seen in Figure 1.

Table 1. Relative frequencies of nurses' response: Migration considerations and age

Answer	Up to 30 years	31-40 years old	41-50 years old	51-60 years	Over 61 years	Total
No	8.54473	10.28037	20.96128	18.95861	3.204272	61.9493
Rather no	2.53672	3.87183	9.87984	7.07610	0.667557	24.0320
Neither yes/nor no	1.06809	1.73565	4.67290	2.93725	0.534045	10.9479
Rather yes	0.13351	0.53405	1.20160	0.26702	0.267023	2.4032
Yes	0.00000	0.13351	0.40053	0.00000	0.133511	0.6676
Total	12.8304	16.55541	37.11615	29.23899	4.806409	100.0000

Note: Row variables: reflections on migration (5); Column variables: age (5).
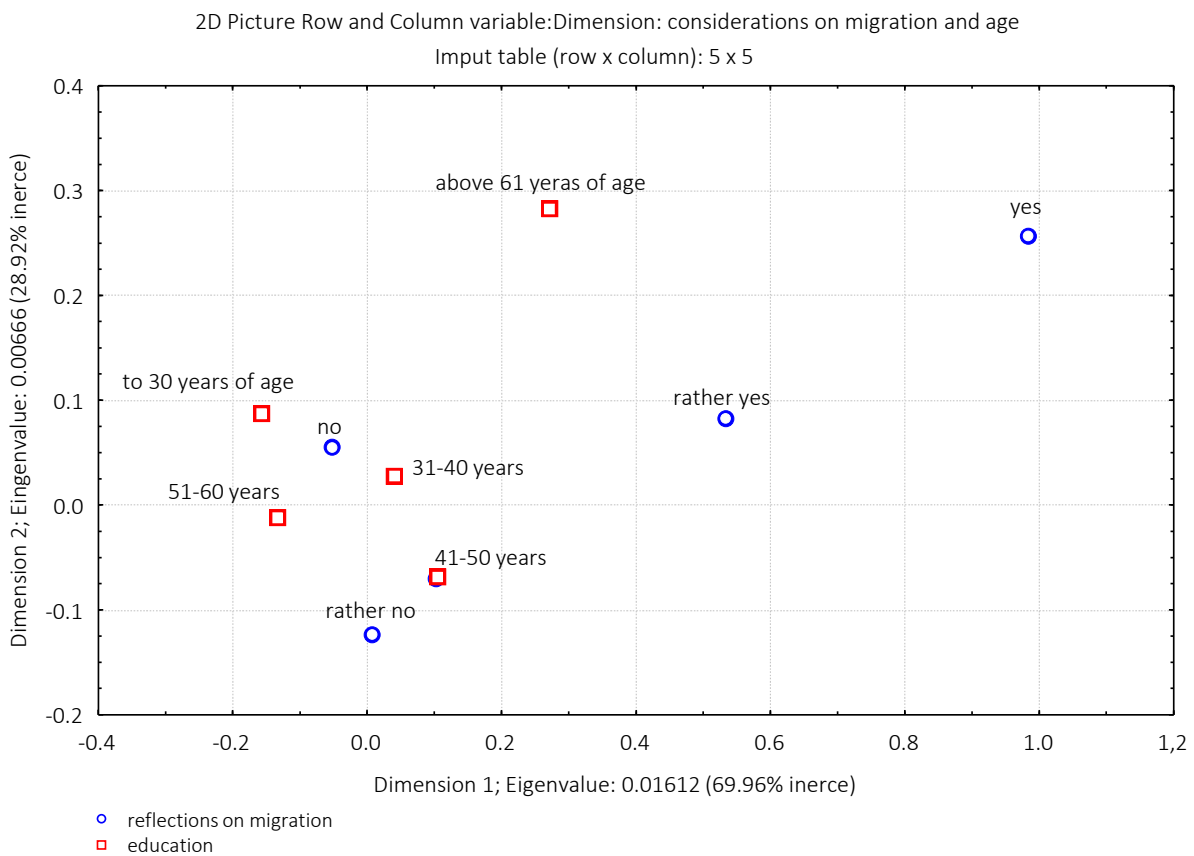
Figure 1. Correspondence map to age and migration analysis – nurses

2D Figure Row and Column variable, Dimension: reflections on migration and education

Imput table (row x column) : 5 x 3
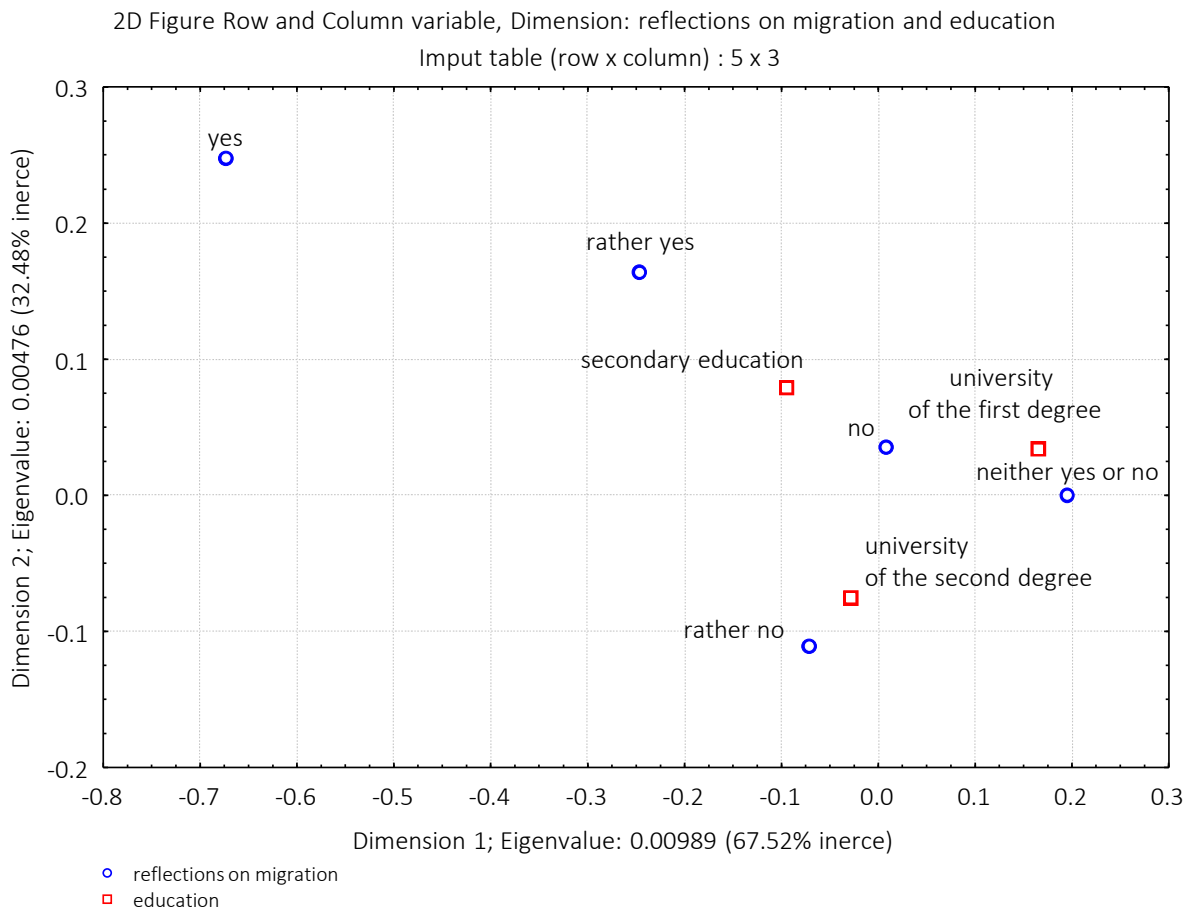
Figure 2. Correspondence map to education and reflections on migration analysis – nurses

Table 2. Relative frequencies of nurses' responses: Migration considerations and educational attainment

Answer	Vocational secondary education	University – undergraduate	University – graduate	Total
No	20.02670	15.88785	26.03471	61.9493
Rather No	7.07610	4.93992	12.01602	24.0320
Neither Yes/Nor No	2.80374	3.60481	4.53939	10.9479
Rather Yes	1.06809	0.40053	0.93458	2.4032
Yes	0.40053	0.00000	0.26702	0.6676
Total	31.37517	24.83311	43.79172	100.0000

Note: Row variables: reflections on migration (5); Column variables: education (2).

The χ^2 test value for nurses is 10.9719 at the degree of freedom df = 8, reaching a significance level of 0.2033 at the chosen significance level α = 5%. It can be concluded that there is no significant relationship between nurses who have completed secondary vocational education and university education and considerations of looking for a job abroad (Table 2 and Figure 2).

In terms of differences in attitudes to migration by specialty training, differences statistically signifi-

cant at the chosen significance level were identified (Table 3). The χ^2 test value for nurses is 0.936352 at degrees of freedom df = 4, reaching a significance level of 0.9193 at the chosen significance level of α = 5%. It can be concluded that there is no significant relationship between nurses with completed specialization and considerations of looking for a job abroad.

In the case of nursing students, the relationship between their considerations of migration after

Table 3. Relative frequencies of nurses' responses: Migration considerations and completed specialization

Answer	Without specialty training	With specialty training	Total
No	18.42457	43.52470	61.9493
Rather No	6.40854	17.62350	24.0320
Neither Yes/Nor No	3.07076	7.87717	10.9479
Rather Yes	0.66756	1.73565	2.4032
Yes	0.26702	0.40053	0.6676
Total	28.83845	71.16155	100.0000

Note: Row variables: reflections on migration (5); Column variables: specialization (2).

Table 4. Relative frequencies of nursing students' responses: Migration considerations and gender

Answer	Women	Men	Total
No	25.53191	2.127660	27.6596
I have not considered it yet	14.42080	0.236407	14.6572
Yes	54.37352	3.309693	57.6832
Total	94.32624	5.673759	100.0000

Note: Row variables: reflections on migration (5); Column variables: gender (2).

Table 5. Relative frequencies of nursing students' responses: Migration considerations and study year

Answer	Vocational secondary	University – undergraduate	University – graduate	Total
No	4.72813	17.96690	4.96454	27.6596
I have not considered it yet	2.60047	10.16548	1.89125	14.6572
Yes	8.51064	44.44444	4.72813	57.6832
Total	15.83924	72.57683	11.58392	100.0000

Note: Row variables: reflections on migration (5); Column variables: education (3).

graduation concerning gender is insignificant (Table 4). The calculated value of χ^2 test is 2.80302 at the number of degrees of freedom df = 2 (p = 0.2462) at the significance level α = 5%.

Education is significant, with a χ^2 test value of 8.73796 at degrees of freedom of df = 4, the p-level is 0.0490 (Table 5).

Figure 3 graphically depicts the association between education and migration considerations for nursing students, and it can be seen that undergraduate students have a higher propensity to migrate than high school or master's students. Graduate university students do not consider studying abroad; this may be because they usually study the degree in an external form, as they are immediately employed after completing their bachelor's degree. This is also evidenced by NCZI (n.d.) statistics.

Examining satisfaction with the study and its impact on migration is insignificant (Table 6). The χ^2 test value is 6.06780 at a degree of freedom df = 8 (p = 0.6396) at the α = 5% significance level. The students are satisfied with their nursing studies.

Table 6. Relative frequencies of nursing students' responses: Migration considerations and study satisfaction

Answer	Dissatisfied	Rather dissatisfied	Neither satisfied/ nor dissatisfied	Rather satisfied	Satisfied	Total
No	0.709220	5.43735	0.709220	15.13002	5.67376	27.6596
I have not considered it yet	0.472813	2.12766	0.945626	7.32861	3.78251	14.6572
Yes	2.364066	12.29314	3.309693	30.02364	9.69267	57.6832
Total	3.546099	19.85816	4.964539	52.48227	19.14894	100.0000

Note: Row variables: reflections on migration (5); Column variables: satisfaction with study (5).

2D Figure Row Column variable; Dimension: 1 x 2   Eigenvalue table (row x column): 3 x 3
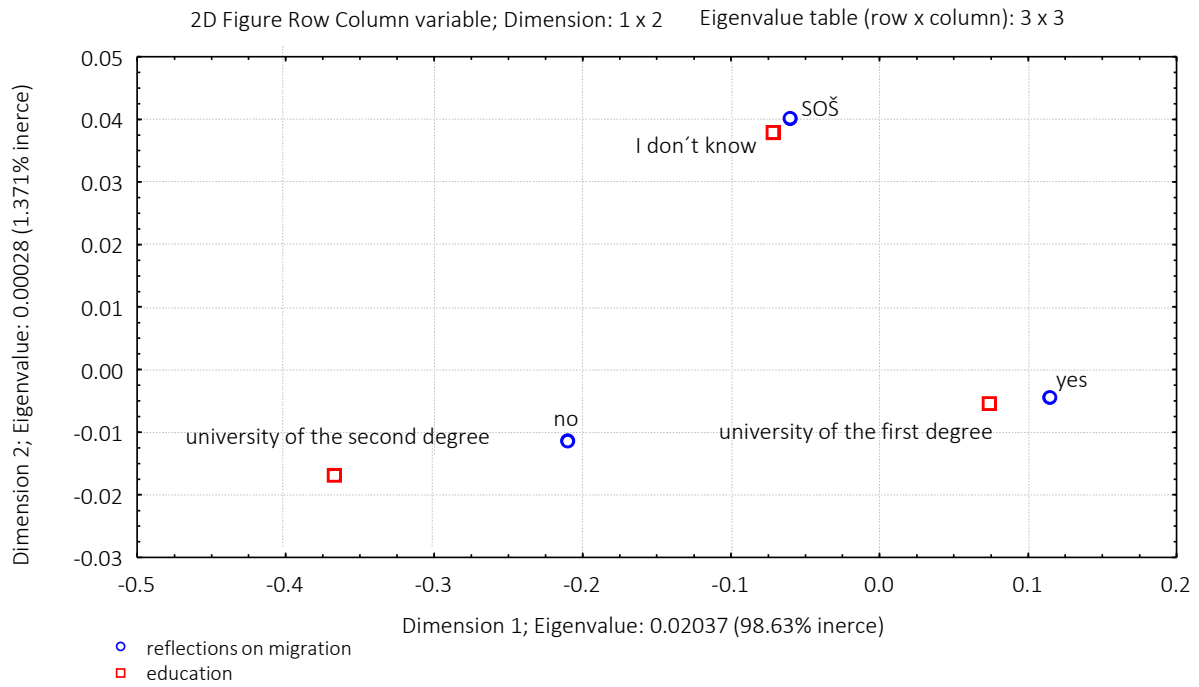
Figure 3. Correspondence map to education and of migration considerations – nursing students

2D Figure Row and Column variable; Dimension: 1 x 2   Eigen table (row x column) : 3 x 5
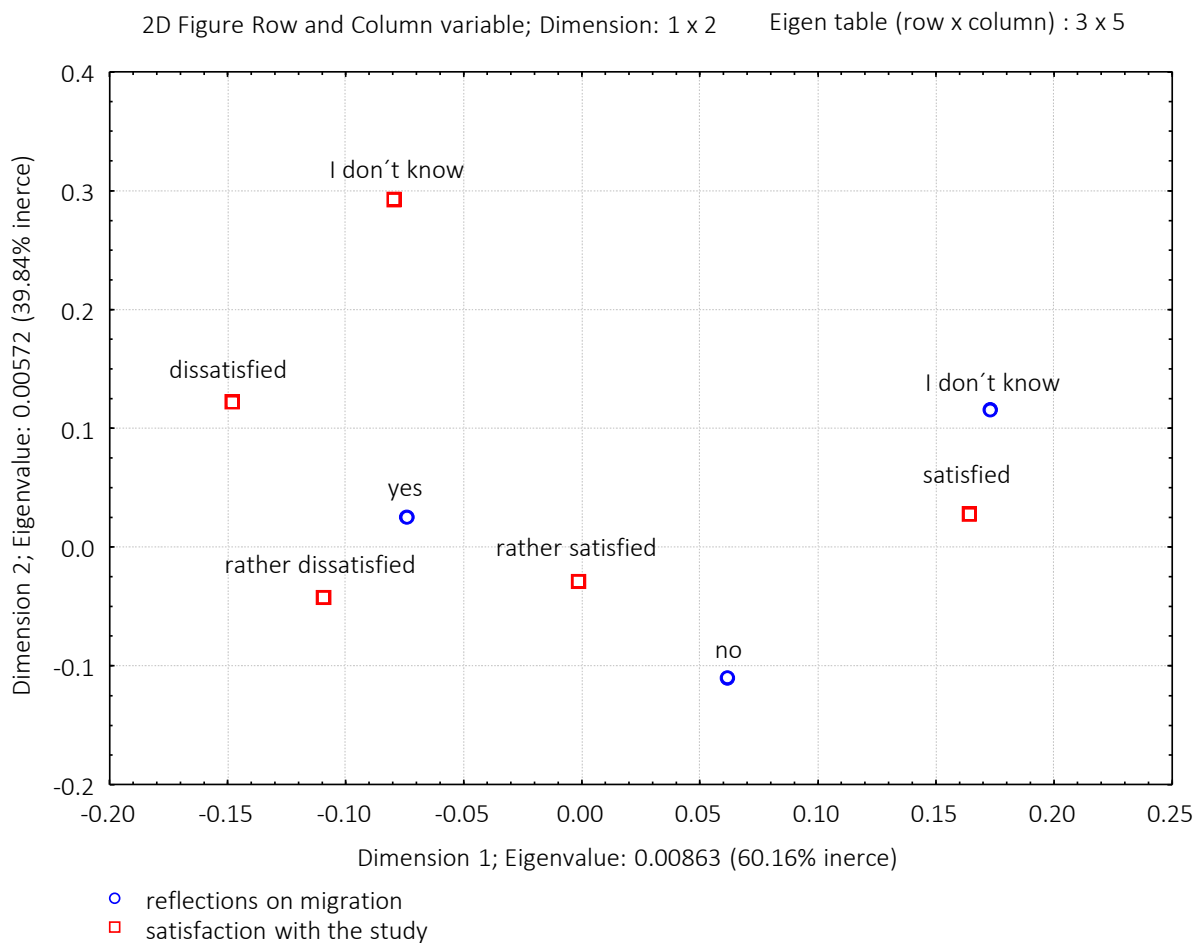
Figure 4. Correspondence map to satisfaction with the study
and reflection on migration – nursing students

Figure 4 graphically depicts the association between satisfaction with studies and consideration of nurse migration; the more dissatisfied a nursing student is with the studies, the more likely he/or she is to consider looking for a job abroad.

3.1. Factor analysis of satisfaction with working conditions of nurses

Kaiser-Mayer-Olkin test (KMO) and Bartlett's test of sphericity were used to assess the appropriateness of using factor analysis to assess nurses' satisfaction with working conditions in hospitals. The KMO test value is 0.896, representing a very appropriate and justified use of factor analysis for processing research data. Subsequently, Bartlett's test was conducted; the significance value is less than 0.0001, less than the chosen significance level of $\alpha = 5\%$. Based on the results of KMO and Bartlett's test, it can be concluded that the realization of the sample correlation matrix with 15 satisfaction factors is not unitary, so the factor analysis method is suitable for processing these data.

The quality of the obtained factor model was assessed using the estimated correlation matrix and the residual correlation matrix. The results of the correlations are consistent with the model used.

An eigenvalue matrix was implemented to determine the number of common explanatory factors underlying the model. Based on the Kaiser criterion (R), the eigenvalue must be greater than one. Table 7 shows that four common factors stand behind the correlation matrix of data with 15 variables through the principal components factor extraction method, which cumulatively explains 63.46% of the total variance.

The use of other methods of principal factor analysis through commonality explains only 34.44%, iterated communality (MINRES) 33.95%, maximum likelihood factors 33.72%, centroid method 35.16%, and principal axis method 33.96% of the total variance.

The essence of factor analysis is the analysis of the factor loadings of the extracted factors. Table 8 shows the results of using the varimax factor rotation method: the sum of the variances of the individual items in a row.

The first factor, material and spatial conditions of work, correlates highest with material and spatial provision (0.813760), instrumentation (0.859079), office equipment (0.678306), and digitization of work (0.866538). The results of factor rotation show that the first factor accounts for 2.775078 of the total variance, which explains 19.82% with 15 variables. Working conditions have changed significantly in recent decades due to globalization, the contribution of new technologies, and demographic and socio-economic changes. These changes have led to an increase in more cognitively and emotionally demanding occupations. In this context, it is essential to recognize that the work environment influences employees' mental and physical health (Ronchetti et al., 2021). Adequate material and spatial provision in the healthcare environment allows for the availability of necessary resources and equipment, such as medicines, supplies, and cleaners. It provides sufficient space for them to carry out their work. Instrumentation, including technological tools and equipment, assists nurses in providing care and improves their work efficiency. Digitization of work, such as implementing digital tools and electronic systems, simplifies administrative tasks and offers better access to information and communication among team members.

The second factor, organizational culture, is most highly correlated with communication and rela-

Table 7. Eigenvalues of the sample correlation matrix (R) – nurses

No.	Eigenvalue	% of total dispersion	Cumulative eigenvalue	Cumulative %
1	5.383167	38.45119	5.383167	38.45119
2	1.319041	9.42172	6.702208	47.87291
3	1.146029	8.18592	7.848237	56.05883
4	1.036394	7.40281	8.884631	63.46165

Note: Extraction: main components.

Table 8. Factor loadings for the factor model of nurses' satisfaction with working conditions

Factors	Factor 1	Factor 2	Factor 3	Factor 4
Organization of work	0.232400	0.480291	0.500761*	0.119338
Staff remuneration	0.138012	0.099343	0.796053*	0.189184
Employee benefits	0.179205	0.138313	0.788043*	0.083027
Workroom equipment	0.678306*	0.086315	0.430038	0.088335
Shortage of nurses	0.188969	0.066181	0.455217	0.612052*
Bureaucracy	0.191045	0.011832	0.148391	0.818830*
Communication and relations with colleagues	0.052847	0.818596*	0.091380	0.004062
Communication and relations with superiors	0.244380	0.723455*	0.178852	0.110593
Communication and relations with patients	0.033559	0.523785*	-0.065777	0.519020
Training and career development	0.287883	0.453006*	0.362727	0.094133
Material and spatial security	0.813760*	0.115929	0.275242	0.135241
Instrumentation	0.859079*	0.124729	0.224743	0.122062
Digitization of work	0.866538*	0.150243	0.136419	0.131692
The prestige of the medical profession	0.375448	0.263076	-0.017781	0.608485*
Current situation and the Slovak Republic	0.363213	0.253246	0.308457	0.399253*
Variance	2.775078	2.116174	2.260464	1.732915
% total variance	0.198220	0.151155	0.161462	0.123780

Note: * means >.700000. Extraction: main components.

tionships with colleagues (0.818596), communication and relationships with supervisors (0.723455), communication and relationships with patients (0.523785), and education and career development (0.453006). The results of factor rotation show that the first factor accounts for 2.116174 of the total variance, which explains 15.12% with 15 variables.

Internal communication has the potential to help organizations build and maintain long-term relationships with employees and support their behavior. Strategic internal communication can also help an organization manage crises, reshape its corporate image, and gain internal support (Lee, 2022). A positive organizational culture correlates with mutual trust, support, and respect in communication among nurses and supervisors.

The third factor, the internal setup of HR processes, correlates with work organization (0.500761), employee remuneration (0.796053), and employee benefits (0.788043). The results of factor rotation show that the first factor accounts for 2.260464 of the total variance, which explains 16.15% with 15 variables. Work organization, remuneration, and employee benefits significantly affect the job satisfaction of nurses. Good work organization and fair remuneration are significant factors for fairly compen-

sating nurses for their work, while employee benefits contribute to higher commitment and satisfaction.

The fourth factor, the external setting of working conditions, correlates with a shortage of nurses (0.612052), bureaucracy (0.818830), the prestige of the health profession (0.608485), and the current situation in Slovakia (0.399253). The results of factor rotation show that the first factor accounts for 1.732915 of the total variance, which explains 12.38% with 15 variables. The external setting of nurses' working conditions, such as shortage of staff, bureaucracy, prestige of the health profession, and the current situation in Slovakia, are the factors that affect their working conditions and satisfaction. Staff shortages and excessive administrative burdens can increase nurses' workload and exhaustion, while higher prestige and positive external factors can contribute to their motivation at work. The current situation in Slovakia, including economic and political aspects, may also impact the availability of resources and working means, which is highly correlated with the shortage of nurses in hospitals.

In addition to the parameters of the factor model, factor analysis also offers estimates of common factors, also referred to as factor scores. The values the common factors take on for the n-observations are useful for data diagnostics.

3.2. Factor analysis of general medical students' perceptions of working conditions in hospitals

The appropriateness of using factor analysis for students was verified by the Kaiser-Mayer Olkin test (KMO), which took a value of 0.769. The KMO test results show the appropriateness and validity of using factor analysis for processing data on the factors of students' satisfaction with working conditions in hospitals. Subsequently, Bartlett's test of sphericity was used with a significance value of less than 0.0001, which is less than the chosen significance level of α = 5%. The results of KMO and Bartlett's test show that the realization of the sample correlation matrix for 15 factors is not unitary, so it is appropriate to use the factor analysis method to process the data.

The quality of the obtained factor model was assessed using the estimated correlation matrix and the residual correlation matrix. The results of the correlations are consistent with the model used.

As with physicians, the aim is to identify several common explanatory factors underlying the model, and an eigenvalue matrix has been implemented. Based on the Kaiser criterion (R), the eigenvalue must be greater than one. In the background of the correlation matrix of data with nine variables through the principal component method of factor extraction, two common factors stand behind the correlation matrix, cumulatively explaining 57.09% of the total variance.

The use of other methods of principal factor analysis through commonality explains only 37.14%, iterated communality (MINRES) 36.8%, maximum likelihood factors 37.77%, centroid method 36.80%, and principal axis method 36.92% of the total variance.

Table 9 shows the results of the varimax factor rotation method, which extracted two factors combining nine variables. Factor 1 comprises the variables of work organization, equipment and material equipment, job evaluation and remuneration, and living standards.

The results of factor rotation show that the first factor accounts for 2.653998 of the total variance, which explains 29.49% with nine variables. Brain drain in the health sector, which is the most common and widespread problem worldwide today, is based on the migration of health personnel in search of better living conditions, higher salaries, access to advanced technologies, and a more stable political and working environment (Tosunöz & Nazik, 2022). In order to promote a positive work environment, it is essential to provide good working conditions and a flexible system that motivates nurses to perform their profession. Countries should increase the capacity of nurses and strengthen the nursing workforce through sufficient equipment and resources. Appropriate working conditions and fair remuneration are essential to promote the recruitment and retention of skilled nursing staff (Lee & Chang, 2022).

Factor 2 contains the following variables: professional and career development process setup, legal norms, regulations and job performance requirements, supervisors' conduct and behavior, relationships among colleagues, and favorable social climate in the country. The results of factor rotation show that the first factor accounts for 2.484329 of the total variance, which explains 27.60% with nine variables. Nurses' exhaustion is related to lack of training, problems in the work team, low value of work, and lack of support and communication (Table 10). Workload, lack of control, and shortage of staff and material resources contribute to this condition. Lack of autonomy and conflicts with physicians and supervisors are also related to nurses' migratory moods (Molina Zavala et al., 2022).

Table 9. Eigenvalues of the sample correlation matrix (R) – nursing students

	Eigenvalues	% of total dispersion	Cumulative Eigenvalues	Cumulative %
1	3.935893	43.73214	3.935893	43.73214
2	1.202434	13.36038	5.138327	57.09252
3	3.935893	43.73214	3.935893	43.73214

Note: Extraction: main components.

Table 10. Factor loadings for the factor model of nursing students' satisfaction with working conditions

Factors	Factor 1	Factor 2
Organization of work	0.278406	0.721243*
Instrumentation and material equipment	0.237655	0.688446*
Appraisal and remuneration for work	0.075233	0.830123*
Setting up professional and career development processes	0.544076*	0.391856
Legal standards. regulations and requirements for the performance of work	0.736607*	0.170335
Supervisors' conduct and behavior	0.791018*	0.234236
Relationships between colleagues	0.795364*	0.114574
Favorable social climate in the country	0.590333*	0.232305
Standard of living	0.262552	0.704662*
Variance	2.653998	2.484329
% total variance	0.294889	0.276037

Note: * means >.700000. Extraction: main components.

4. DISCUSSION

This study examined the relationships between nurses' considerations of migration and their age, highest attained education, and completion of specialized training. Based on the conducted analyses, it was found that there is no statistically significant relationship between the examined variables. Findings indicate the complexity of factors influencing nurses' decision-making regarding working abroad. Factor analysis was employed to investigate nurses' satisfaction/dissatisfaction with hospital working conditions as push factors influencing their migration considerations, aligning with previously published studies (Alameddine et al., 2020; Poku et al., 2023). Four key factors were extracted out of the 15 identified variables (work conditions), explaining 63.46% of the total variance. The first and most significant factor is material and instrumental working conditions (19.82%), encompassing variables such as material and spatial provision for job performance, instrumental equipment, workplace facilities, and digitalization of work. This factor directly relates to healthcare performance, directly impacting the patient, representing a financial dimension tied to the state's approach to healthcare, directly anchored in the state budget. The second factor is organizational culture (15.12%), influenced by variables such as communication and relationships with colleagues, superiors, patients, education, and career growth. The nursing team, relationships with superiors, and patient-client relationships significantly impact nurses' satisfaction. The management style of hospitals and individual departments significantly influences building organizational culture.

The third factor is the configuration of internal personnel processes (16.15%), with variables including work organization, remuneration, and employee benefits. Despite the healthcare sector's established salary table, the reward system significantly contributes to nurse satisfaction. Justice, transparency, and authenticity in reward systems are crucial variables. The fourth and final factor is the external setting of nurses' working conditions in hospitals (12.38%), influenced by variables such as a shortage of nurses, resulting in high workloads, bureaucracy, professional prestige, and the current situation in Slovakia. The results of the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity indicate the suitability of using factor analysis to address the defined problem. Autocorrelation between variables is low, confirming the correctness of the obtained results.

Among nursing students, a non-significant relationship was identified between their considerations of migration after completing their studies and gender or satisfaction with their studies. This is associated with the high degree of feminization in this profession and career choice, which is linked to the desire to help (perceiving nursing as a calling). At the same time, the results indicate a high level of satisfaction with their studies. Conversely, education proved to be a significant factor, with students in the bachelor's program showing a higher inclination for migration compared to high school students and master's program students. The reason is that bachelor's degree graduates quickly find employment (within three days of completing their degree) and continue their further studies externally. High school

students are less inclined to migrate for work due to the intention to pursue further education.

The results of suitability tests for using factor analysis for the sample of nursing students confirm correctness. Two key factors were identified through factor analysis, explaining 57.09% of the total variance. The first factor includes variables such as work organization, instrumental and material equipment, job assessment and rewards, and the standard of living, explaining 29.49% of the variance. This factor reflects the issue of brain drain in healthcare and emphasizes the importance of quality working conditions to retain qualified nursing personnel. The second factor, with 27.60% explained variance, includes the setting of professional and career growth processes, legal norms, interactions and behavior of superiors, relationships among colleagues, and a favorable social climate in the country. This factor reveals the importance of addressing issues in the workplace, work values, and support to maintain a qualified nursing workforce.

Overall, the analysis confirms the importance of working conditions and career growth in shaping nursing students' attitudes toward migration, aligning with existing evidence. The results demonstrate the impact of setting personnel processes in hospitals on the sustainability of the nursing workforce. The findings provide valuable information for optimizing the working conditions of nurses and nursing students, leading to increased satisfaction, reduced effectiveness of push factors, and, consequently, a lower inclination to migrate abroad for work. According to Aiken et al. (2013), the shortage of nurses is expected to persist as long as the working environment in hospitals does not improve, even if national economies are thriving. Reports from nurses about nursing care in European hospitals point to significant differences in nursing resources, human resources management, and quality of care. According to Liu et al. (2017), there is a need to prioritize further research on factors that influence the future number of healthcare workers.

CONCLUSION

Difficult working conditions and job dissatisfaction significantly impact nursing migration, which is an urgent and complex problem in the world's healthcare system. Migration not only affects countries that lack qualified health workers but also creates problems for donor countries that lose their own nurses to migration. The study aims to explore the migration intentions of nurses and nursing students, based on which factors they decide to seek work abroad.

The conducted factor analysis made it possible to investigate the satisfaction/dissatisfaction of nurses of the Slovak Republic with hospital working conditions as factors influencing their considerations regarding migration. Of the 15 variables identified, four key factors were identified. The first and most significant factor is material and instrumental working conditions, which include material and spatial provision of work, tooling, workplace facilities, and digitalization of work. The second factor is organizational culture, which is influenced by communication and relationships with colleagues, superiors, patients, education, and career development. A third factor is the configuration of internal HR processes with work organization, compensation, and employee benefits. The fourth factor is the external setting of the working conditions of nurses in hospitals, which is influenced by the shortage of nurses, resulting in high workload, bureaucracy, professional prestige, and the current situation in Slovakia. Among nursing students, little association was found between their post-graduation migration considerations and gender or academic satisfaction, with undergraduate students showing a greater propensity to migrate than master students.

In general, the analysis confirms the importance of good working conditions and career growth in shaping the attitude of nurses and nursing students toward migration. The adjustment of these factors has a direct impact on the stability of the nursing staff. The obtained data can serve as a basis for optimizing the working conditions of nurses and nursing students, leading to increased satisfaction, reduced effectiveness of stimulating factors, and, therefore, less tendency to migrate abroad.

AUTHOR CONTRIBUTIONS

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