IMPACT OF WORKING CONDITION FACTORS ON THE MIGRATION OF DOCTORS AND NURSES IN HOSPITALS IN SLOVAKIA

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Abstract: The phenomenon of labour migration within the European Union is currently one of the most significant factors affecting economic and social development. A multitude of factors, encompassing economic, social, and political elements, give rise to the dynamics of migration flows. One aspect of this issue is the migration of Slovak doctors and nurses for employment purposes. It is evident that there is a demand for healthcare professionals. This will result in a shortage of labour in hospitals. The probable causes are the challenging working conditions of healthcare professionals and the perception of their quality compared to working conditions abroad. The aim of the article is to interpret the results of part of the research project, entitled 'Setting up personnel management processes in hospitals and their impact on the migration of doctors and nurses for work abroad'. The problem is examined from the perspective of the perceived influence of various aspects of working conditions in Slovak hospitals on migration. The degree of influence of the identified factors is modelled using the statistical method of Structural Equation Modelling (SEM).

Keywords: labour migration, factors of migration, questionnaire, SEM.

1 Introduction

The personnel management processes within the organisation prioritise employees as a key production factor. The correct implementation of these processes allows for the optimal utilisation of all resources, thereby ensuring the quality of healthcare delivery. The intensification of competition for the workforce in the healthcare system has led to a migration of qualified healthcare workers to other regions or abroad. This situation has a negative impact on the sustainability of the healthcare system's staffing with the necessary workforce. The issue is not, as is often presented, a lack of healthcare workers. In Slovakia, according to the OECD, the average number of doctors and nurses per 1,000 citizens is approximately the same as in other EU countries. However, a concerning aspect is the average age of these employees, particularly that of nurses.

A significant proportion of medical professionals in Slovakia commence their careers after completing their studies, but subsequently opt to relocate for employment purposes. What are the principal factors that influence this decision? Previous surveys have indicated that wage levels and professional growth are the main motives influencing the decision to migrate for work in general. The aforementioned factors, namely the number of hours worked, overtime, work schedule organisation, and the amount of administrative work, are rated very negatively by healthcare workers. The outflow of labour from the healthcare sector, coupled with a perceived deterioration in the quality of Slovak healthcare, represents a negative trend. Consequently, it is imperative that this trend is subjected to rigorous analysis and supported by robust evidence. The impact of migration on the functioning of Slovak healthcare is considerable. The formulation of political decisions aimed at influencing migration is often problematic, as valid data is often not available.

The labour market is undergoing significant changes, with a notable imbalance between supply and demand. The healthcare and social assistance sector is one of the most affected, with a significant mismatch between the two. It is likely that the migration of healthcare workers to economically more developed countries will continue in the coming years. This is due to the fact that the profession of doctors and nurses in the healthcare sector is not tied to a specific country or nation. The provision of healthcare is comparable worldwide, with the main differences being in the level of services provided, the level of staff knowledge, cultural practices, and the availability of more or less modern equipment.

The European continent has long grappled with the challenge of medical professionals seeking opportunities elsewhere. The labour markets of developed countries have become more open, and there is a real risk that Central and Eastern European countries will continue to act as source countries to replace the shortage of qualified workers in better-off countries. This will have both positive and negative consequences. From the perspective of long-term sustainability, it is essential for Slovakia to create a favourable environment, improve working conditions for all healthcare workers, and utilise new technologies to meet the demand for these services not only in developed regions, but also in less developed ones.

2 Literature review

The international migration of healthcare workers is largely driven by the fact that the profession of doctors and nurses in the healthcare sector is not tied to a specific country or nation. It is possible to make a comparison between healthcare systems worldwide, although there are differences in the level of services provided, the level of staff knowledge, and cultural practices. The mobility of healthcare workers is on the rise, particularly in light of the ageing population and the shortage of qualified personnel in some economies (Lozano et al., 2015; Buchan, 2006).

A number of studies have demonstrated that the migration of doctors and nurses abroad from new EU member states was less than the intentions of these workers to leave (Becker and Teney, 2020; Wismar et al., 2011). The departure of doctors and nurses has a detrimental impact on the provision and quality of healthcare services (Botezat and Ramos, 2020; OACD, 2019). A significant challenge is the uneven distribution of healthcare workers across different regions of the country. The migration of healthcare professionals from less attractive regions and the current lack of interest in migrating to these regions have a number of economic and social consequences for patients, doctors, hospitals, and the state. For hospitals and the state, this implies elevated levels of stress among staff and the public, in addition to increased financial expenditure (Williams et al., 2020; Hajian et al., 2020). From the perspective of long-term sustainability, it is essential for Slovakia to create a favourable environment, improve working conditions for all healthcare workers, and utilise new technologies (Tupá et al., 2020).

The shortage of healthcare personnel has been a long-standing issue in Western European countries. Following the enlargement of the European Union, these countries have increasingly relied on immigration of highly skilled workers from newly admitted countries as a source of labour in this sector (Yates, 2011; Kovacheva et al., 2015; Pichlhöfer et al., 2015). Labour migration is inextricably linked to changes in the labour market. A number of studies have indicated that the influx of highly skilled migrants into the healthcare sector can result in a reduction in wages and the displacement of domestic healthcare workers seeking similar job opportunities (Krajňáková et al., 2020; Lo Sasso, 2021; Lee et al., 2019).

The research indicates that the factors that motivate doctors to leave their home country and relocate to another country (push-pull factors) include poor wages and working conditions, as well as limited opportunities for personal growth and advancement in their home environment. From the perspective of the countries receiving migrants, the advantages include the offer of significantly higher income, an improved working environment, and better living conditions for themselves and their families. In the context of push and pull theory, the primary economic factors driving migrants' decisions to leave their home country and seek employment abroad are wages, lower unemployment rates, and a greater number of job openings (Tupá, 2020). In this context, the Slovak Republic is regarded as a potential source country that could contribute to the supply of healthcare professionals to affluent EU countries. It is well documented that

young doctors and nurses are dissatisfied with their salaries. Furthermore, their proficiency in foreign languages and the absence of significant administrative obstacles to working abroad contribute to their attractiveness as potential migrants. In Slovakia, the risk of these healthcare workers leaving is often associated with the threat to the availability and quality of healthcare. The Health Policy Institute, in its document (Pálenік, 2021), presents a summary of the projected imbalance between the demand and supply of labour in the Slovak healthcare labour market, concluding that the current equilibrium is unsustainable.

It is evident that there is a pressing need for greater alignment between human resources policies in healthcare and health systems and management in EU countries. However, workforce management in healthcare in the EU is affected by a lack of uniformity in reforms, as well as a lack of coordination between planning, management, and policy (Buchelt et al., 2021; Cometto et al., 2020; Correia et al., 2020). Strategies aimed at quantitatively solving staff numbers through educational programmes are ineffective and inaccessible. This is due to demographic changes (Apostu et al., 2020). There is a lack of specialised studies that apply management theory to healthcare workforce issues. There is no model that specifies and transforms multiple levels of healthcare management into empirically observable dimensions (Creese et al., 2021; WHO, 2016). Kuhlman et al. (2019) examined a number of key areas related to healthcare workforce challenges, including migration, the integration of healthcare workers, education reforms, and management strategies focused on work-life balance for doctors working in hospitals. Tupá (2024) identified the primary factors influencing the intention of various actors in the healthcare labour market in Slovakia to migrate for work. She concentrated on factors related to satisfaction with human resources management processes and discussed potential solutions to address their negative impacts.

The aim of the study is to identify and signify differences in the perception of the impact of various working conditions factors of doctors and nurses in Slovak hospitals on their decision to emigrate for work based on empirical data.

3 Materials and methods

The primary objective of the research was to conduct an analysis of the personnel management processes in Slovak hospitals and to determine their impact on the migration of doctors and nurses for work abroad. This entailed the identification of the significant aspects of working conditions in hospitals that are reasons for work-related emigration. Given the wide diversity of factors influencing the phenomenon of emigration, it was necessary to create a sufficiently comprehensive database that allowed the study of the effects of economic, social, and institutional factors on emigration. In order to achieve the research objectives, it was necessary to construct a new, previously unvalidated survey tool, a questionnaire. A qualitative field survey was conducted to gain insight into the factors influencing the decision to emigrate. Based on the findings of this study, four areas were identified as having a significant impact on this decision: The following factors were identified as influencing the decision to emigrate: material working conditions, organisational culture, the internal setting of personnel activities, and the external setting of working conditions. In the pilot survey, items were divided into these areas. From the quantitative analysis of responses, five domains (D1 – D5) were constructed to model the studied areas: D1 - Satisfaction with working conditions before the COVID-19 period, D2 - Attitude to changes in working conditions during the COVID-19 pandemic, D3 - Attitude to the impact of working conditions on emigration, D4 - Attitude to differences in working conditions at home and abroad, D5 - Attitude to the possibility of emigration. Domains D1 – D4 saturate the construct related to the perception of working conditions of doctors and nurses (CONDITIONS). Domain D5 fulfills the construct that characterizes the decision to emigrate for work (EMIGRATION). In the operationalization phase, the constructs were characterized by measurable variables (items) that filled the factors (constructs) in the individual domains. Scales of

satisfaction and attitudes were defined. The responses of respondents in the pilot survey were statistically analyzed using exploratory factor analysis (Kaiser-Meyer-Olkin Measure of Sampling Adequacy KMO=0.823, Bartlett's Test of Sphericity Sign.<0.000). Four factors (F1 – F4) were identified and named: F1 - Material working conditions (EQUIPMENT), F2: Management and organizational culture (COMMUNICATION), F3 - Internal setting of personnel activities (EVALUATION), F4 - External setting of working conditions (SOCIAL CLIMATE). Based on item analysis, it was determined how well a set of questions (items) measures one construct and identified questions that are problematic using Cronbach's alpha (CA). Questions that did not sufficiently saturate the studied factors or correlated with each other were omitted. The validity and reliability of the questionnaire were assessed.

The structure of the final version of the questionnaire consisted of 95 closed questions (14 of which concerned the demographic and social characteristics of the respondent) and one open question. The questionnaire was divided into several parts. The first part contained demographic and social data of the respondent. The second part contained questions concerning the independent variable (push factors), domains D1 – D4. Each domain was filled with 15 identical items (I1 - I15). Each item saturated one factor. The items reflected the respondent's satisfaction or attitude. The respondent could express the degree using a five-point Likert scale. The third part contained questions about the dependent variable, (pull factors), domain D5, which was the respondent's emigration (EMIGRATION). The research problem model, which emerged from the results of the pilot survey, defined phenomena, domains, factors, and corresponding items, is illustrated in the following figure.

Figure 1: Design of the complete model
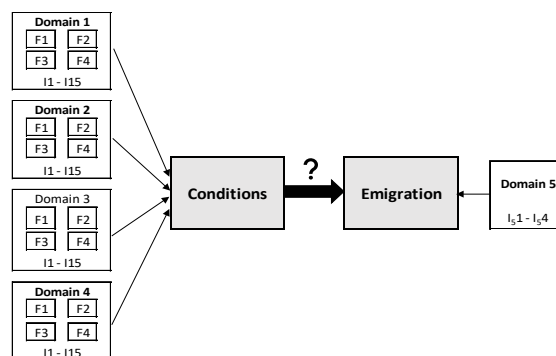
The causal relationship of the individual constructs is evident from the figure. The aim of the questionnaire was to determine the effect size (rate arrow) of each domain and the factors included in them on the constructs. Comprehensively processed research results were published by Tupá (2024).

4 Findings

A more detailed account of the results obtained from analysing responses in domain D3, which related to the respondents' attitude towards the extent of the impact of the specified working conditions (attributes) on emigration, will be provided. Two research questions were formulated, and the relevant statistical hypotheses were specified accordingly. RQ1: It is assumed that there are differences in the perception of working conditions in Slovak hospitals between nurses and doctors, as well as among different age categories. RQ2: To what extent does the perception of working conditions by doctors and nurses influence their attitude towards work migration? The respondent was given a choice of responses, which included "not at all," "to a small extent," "to a moderate extent," "to a considerable extent," and "to a great extent." The statistical analysis was primarily concerned with identifying the differences between the attitudes of two groups: doctors and nurses. A total of 751 nurses and 211 doctors completed and submitted the questionnaire. The

research problem model, which is presented in Figure 2, outlines the results of the study.

Figure 2: Submodel design

The structure of respondents was found to be an adequate representation of the actual structure of doctors and nurses in Slovak hospitals. The mean age of respondents in the medical profession was 43.69 years, while that of nurses was 45.43 years. The largest group in terms of marital status was that of respondents who were married. For doctors, this figure was 63.03%, while for nurses it was 60.32%. A notable discrepancy was observed in the 30-40 years age category within the practice category. The proportion of nurses in this category was 27.30%, while that of doctors was only 8.06%. For each item, a score was assigned. The coding direction was aligned with the researchers' objective of identifying the working conditions that exert the greatest influence on the emigration of doctors and nurses. Consequently, the higher the value, the more the examined attribute of working conditions was perceived to be influential on emigration. The difference between doctors' and nurses' evaluations of the influence of individual attributes of working conditions was identified using the Mann-Whitney U test. Table 1 presents the p-value of the Z-test.

Table1: Factors and questionnaire items

Factor and Items		Mean		
		Doctors AIS	Nurses AIS	p*
F1 - EQUIPMENT				
I4	Office equipment	3,02	3,97	0,000*
I11	Material and spatial provision	4,13	4,15	0,793
I12	Instrumentation	4,13	4,16	0,621
I13	Computerisation (digitisation) of work	3,61	3,89	0,000*
F2 - COMMUNICATION				
I1	Organisation of work, assignment of tasks, time frame, cooperation with colleagues	4,06	4,18	0,075
I7	Communication and relations with colleagues	2,76	3,27	0,000*
I8	Communication and relations with supervisors	3,48	3,63	0,095
I9	Communication and relations with patients	2,65	3,00	0,000*
F3 - EVALUATION				
I2	Remuneration for work	4,69	4,84	0,000*
I3	Employee benefits, perks, etc.	4,2	4,53	0,000*
I10	Training, professional and career development	4,06	3,50	0,000*
F4 - SOCIAL CLIMATE				
I5	Workload, overtime, duty, emergencies	4,39	4,66	0,000*
I6	Bureaucracy, administration	3,96	4,08	0,096
I14	Prestige of the medical profession	3,49	4,27	0,000*
I15	Current political, economic and social situation in Slovakia	4,35	4,35	0,766

- significant at the level of significance α=0,05, p – probability level, AIS - average item score

When assessing the impact of the type of occupation and age of hospital employees on attitudes towards migration, four age categories were created. Using one-way ANOVA, we assessed whether there is a statistically significant difference in attitudes between the defined age groups regarding the importance of working conditions factors on attitudes towards migration. In the Post Hoc multiple comparison, based on the observed homogeneity of variances, the Scheffe test was used. Significantly (at the significance level of 0.05), respondents expressed different attitudes in factor F3 (p<0.05). In the case of the occupation factor, different attitudes were identified between doctors and nurses in all four factors (p<0.000).

For a comprehensive assessment of the impact of the working conditions factors of Slovak doctors and nurses on migration, the model, proposed after the pilot survey, was verified on the obtained data using the SEM method. The convergent validity of the questionnaire was verified using confirmatory factor analysis (CFA). CFA was carried out using the robust maximum likelihood (MLR) method, which corrects for possible non-normality of item distributions. The complex structural model consists of four partial models. The model includes four measurement models, and the latent variables from these measurement models then have regression relationships among them, thus creating an analogy to path analysis. The resulting model includes four confirmatory factor analyses (measurement models) for the variables Equipment, Communication, Evaluation, Social Climate (independent variables) and Emigration (dependent variable). These are constructs that measure the D3 phenomenon using items I1 to I15. Domain D5 was measured by four items, but only the first three were included in the final model. During the process of evaluating reliability and validity, it was found that this item very minimally saturates domain D5 (Cronbach's Alpha = 0.35). In constructing the complex structural model, attention was first paid to the partial models and their modifications. To confirm a good fit of the model, the results of the chi-square test and some absolute, comparative, and informational criteria were used: the ratio of χ^2/df, AGFI, CFI, TLI, RMSEA, AIC, BIC. The recommended values for these criteria for a suitable model are: $\chi^2/df=2$ (tolerance 0.5), AGFI>0.9, CFI>0.9, TLI>0.9, RMSEA<0.08. The values of AIC and BIC should be as small as possible. Diagrams for the modified measurement models for individual constructs are in the following figures (standardized results).

Figure 3 Measurement models for individual factors
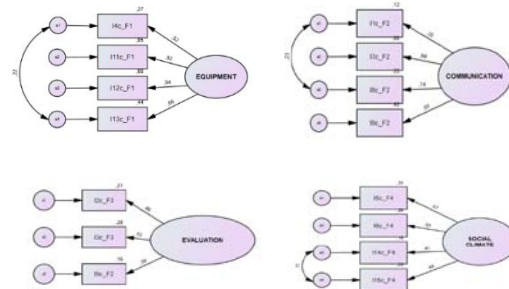
In the next step, we constructed an approximate regression model. We assume that there is a regression relationship between factors F1-F4 and D5, with the endogenous dependent variable (Emigration) and four exogenous (independent) variables (Equipment, Communication, Evaluation, Social Climate). This relationship is also intertwined with the realistically expected mutual relationships between the exogenous variables. The correlation coefficient was R=0.485, indicating that the accuracy of the prediction is not high. From the ANOVA analysis, we inferred that the linear regression model appropriately predicts the dependent variable (Sig. p<0.000). In terms of statistical significance tests, the impact of factors F3 (Evaluation) and F4 (Social Climate) can be considered significant. The impact of factors F1 and F2 was not statistically significant. It might be appropriate to link both factors with a covariance relationship. The complex structural model was created by combining individual modified measurement models. After certain modifications, the best-fit model is shown in the following diagram. The results of the confirmatory factor analysis and the

assessment of model fit were evaluated using the previously mentioned coefficients (χ^2/df=2.753; AGFI=0.929; CFI=0.964;

Figure 4 A Comprehensive Structural Model for Emigration
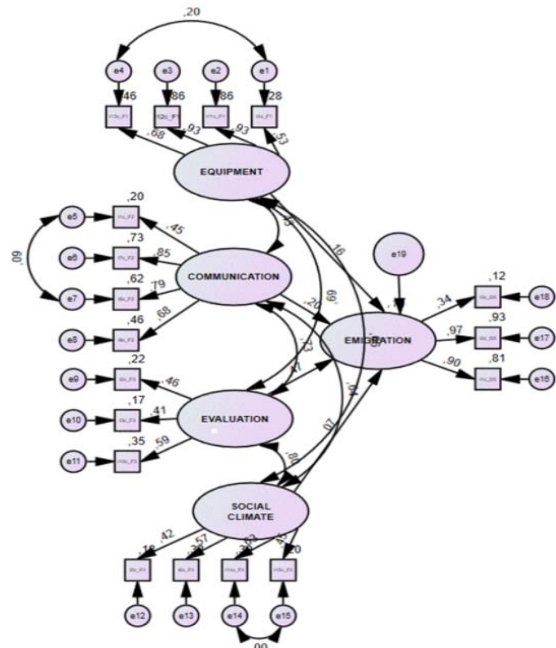
TLI=0.948; RMSEA=0.053; AIC=520.652; BIC=842.076). When comparing the final comprehensive model with the preliminary regression model, the conclusions about the positive relationship of the observed factors with the Emigration factor hold true. The regression coefficients in the preliminary regression model are slightly smaller than those in the comprehensive model. Factors F3 and F4 are statistically significant. The strength of the relationship between the exogenous variables was also significant, with correlation values shown in the table 2 (abbreviations are used for factor names).

Table 2: The strength of the relationship between the exogenous variables

			Corr.	Cov.	C.R.	p-value
EQ	↔	COMM	0.395	0.349	10.629	0.000*
EQ	↔	EV	0.652	0.479	12.244	0.000*
EQ	↔	SOC_CLIM	0.456	0.198	8.061	0.000*
COMM	↔	EV	0.702	0.436	11.976	0.000*
COMM	↔	SOC_CLIM	0.626	0.229	9.047	0.000*
EV	↔	SOC_CLIM	0.926	0.282	8.529	0.000*

*- significant at the level of significance α=0,05, p – probability level

A further comparison will be made of the factor loadings, which indicate the extent to which individual indicators are explained by the model. The table presents the results of the four-factor model of attitudes of doctors and nurses in Slovakia regarding the influence of working conditions on consideration of emigration. Table 3 presents the estimated standardized regression weights of the final model.

When evaluating the model as a whole, it can be noted that the chi-square test indicates inadequacy of the model, but given the large sample size, this test is not a good indicator of model quality. Commonly used indicators (AGFI, CFI, TLI, RMSEA) suggest that the model is relatively decent. Overall, it can be stated that our conceptual model was not refuted; minor modifications were necessary, which can be substantiated factually. Validity and reliability were assessed based on the results of CFA and item analysis using Cronbach's Alpha coefficient (CA=0.870). The index of internal consistency was

expressed for each domain (CA_D1=0.879; CA_D2=0.878, CA_D3=0.868, CA_D4=0.893, CA_D5=0.651). In methodology, the usual minimum requirement for the reliability of a research tool is 0.80. It is evident that the coefficient of internal consistency for domain D5, which reflects the respondent's attitude toward potential work migration, does not meet this requirement. The average inter-item correlation was approximately the same across all domains (r_D1=0.327, r_D2=0.336, r_D3=0.310, r_D4=0.384, r_D5=0.378). In our case, a scale of attitudes was used, where reliability is usually slightly lower. There are some issues with domain D5, which, however, is saturated with a low number of items. When using the questionnaire repeatedly, it would be appropriate to supplement the dimension with additional items.

Table 3: Saturation of items by factors

			Estimate	p-value
EMIGRATION	<---	EQ	0.164	0,870
EMIGRATION	<---	SOC_CLIM	0.366	0,021
EMIGRATION	<---	EV	0.475	0,007
EMIGRATION	<---	COMM	0.202	0,620
I13c_F1	<---	EQ	0.676	0.000*
I12c_F1	<---	EQ	0.929	0.000*
I11c_F1	<---	EQ	0.926	0.000*
I4c_F1	<---	EQ	0.534	0.000*
I9c_F2	<---	COMM	0.680	0.000*
I8c_F2	<---	COMM	0.785	0.000*
I7c_F2	<---	COMM	0.855	0.000*
I1c_F2	<---	COMM	0.448	0.000*
I10c_F3	<---	EV	0.591	0.000*
I3c_F3	<---	EV	0.414	0.000*
I2c_F3	<---	EV	0.464	0.000*
I15c_F4	<---	SOC_CLIM	0.449	0.000*
I14c_F4	<---	SOC_CLIM	0.628	0.000*
I6c_F4	<---	SOCIAL_CLIM	0.566	0.000*
I5c_F4	<---	SOCIAL_CLIM	0.421	0.000*
I3c_D5	<---	EMIGRATION	0.342	0.000*
I2c_D5	<---	EMIGRATION	0.966	0.000*
I1c_D5	<---	EMIGRATION	0.899	0.000*

*- significant at the level of significance α=0,05, p – probability level

5 Discussion

The aim of the article was to examine the attitudes of doctors and nurses towards the extent to which working conditions influence migration. The research problem was defined as part of a larger scientific project and constituted only one of several domains. The objective was to identify any differences between doctors and nurses and between age groups of employees in this field. The analyses yielded some interesting conclusions. Fifteen items were subjected to analysis, which were subsequently divided into factors. The factors under consideration encompassed a broad spectrum of elements that could potentially influence the satisfaction of doctors and nurses with their work in Slovak hospitals. Together, these factors constituted the construct of job satisfaction. Our interest lay in determining the extent to which this construct influences the construct of emigration. The construct of emigration was saturated with items in the questionnaire, which enabled respondents to indicate the extent to which they considered work migration. Exploratory factor analysis identified four factors. The factors were Equipment, Communication, Evaluation, and Social Climate. The statistical analysis revealed significant differences in the following items: work equipment, work electronicisation, communication and relationships with colleagues and patients, remuneration, benefits, career growth, staff shortage, and the prestige of the medical profession. The remuneration for work

emerged as the most significant aspect cited by both doctors (4.69) and nurses (4.84) as a reason for considering emigration. The aspect of communication and relationships with patients was identified as the least important by both doctors (2.65) and nurses (3.00). When the four factors of working conditions were analysed from the perspective of age, it was observed that there were significant differences in the Evaluation factor (p=0.004). A statistically significant difference was observed between the youngest employees (up to 30 years) and other age categories (p < 0.05). The most significant difference was observed between the group of employees aged 45-60 years (p=0.005). As anticipated, remuneration is the most crucial factor for young doctors and nurses when considering work migration. For the older age group of doctors and nurses, influenced by established family and work backgrounds, remuneration is likely to become less important. This exhaustive description provides an answer to research question RQ1. The response to research question RQ2 was generated by developing a complex structural model utilising the SEM method within the IBM SPSS Amos environment. The final model comprised partial measurement models for individual factors of working conditions and the search for the most suitable model. The factor loadings, correlation coefficients, and coefficients of model goodness of fit indicate that the constructed tool for measuring the perception of working conditions by doctors and nurses in Slovak hospitals regarding consideration of work migration has, on average, been verified as suitable. The research findings indicated that the most significant push and pull factors were remuneration and social climate. Table 3 provides a means of assessing the degree to which individual factors saturate items. The factor with the most significant (statistically significant) impact on emigration is evaluation and social climate. Items that saturate these factors relate to remuneration, benefits, and employee career growth. There is scope for enhancement in personnel management processes that impact this aspect. It is evident that there is a need to facilitate the education and career advancement of doctors and nurses. It is widely acknowledged that the certification process for doctors in Slovakia is considerably more complex than in economically more developed European countries. Furthermore, the excessive bureaucracy also has a significant impact on the consideration of emigration. The introduction of an e-health system could be a potential solution to this problem. The shortage of medical personnel is a societal problem that is closely related to the perception of the social situation. Its solution is therefore a complex and multifaceted process that requires significant systemic changes within the country. The sooner improvements are implemented in hospitals and the wider healthcare system in Slovakia, the sooner the impact of working conditions on the decision to emigrate will be reduced.

6 Conclusion

Currently, labor migration represents an important economic, social, and political issue. The issue of labour migration is inextricably linked to changes in the labour market. The topic of labour migration of healthcare workers is a subject of considerable public interest. It is evident that healthcare systems can only function with healthcare workers, yet there is a shortage of them in the labour market. Consequently, it is of great importance to analyse the factors that influence the decision to migrate for work. The presented cross-sectional study examined the attitudes of doctors and nurses in Slovakia towards labour migration. It formed part of a research project that evaluated the setup of personnel management processes in hospitals and their impact on the migration of doctors and nurses for work abroad. The initial results of the published study identified specific push and pull factors. The resolution of these factors may reduce the outflow of Slovak healthcare workers abroad in the future. An understanding of the causes and motives that influence the decision to migrate can assist in the creation and comprehension of this model. The modelling of the causality or associations between the factors under study and the concept of labour migration was based on the acquisition of knowledge from the research project, information on hospital management, the labour market in the healthcare sector, statistical research, and official statistical databases.

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