Analysis of the factors determining the situation of healthcare workers in Serbian general hospitals in rural areas

Theses of the PhD dissertation

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1. Introduction

Healthcare is a complex activity organised by the society to maintain and improve the health of its citizens. Improving the operating conditions of healthcare systems, including various issues related to health workforce, leads to reducing inequalities in access to health services and is crucial in the continuous fight for healthier populations. In this way, health equity and the minimisation of disparities within the population, including between different regions, could be achieved (Li, et al., 2018). Coordinating and managing the factors that influence the provision of healthcare is an extremely complex activity, and thus requires strong healthcare management (Mitrasevic, et al., 2020).

In my dissertation, I conducted research on human resources in four public general hospitals in Serbia. These four institutions are located in two regions of Serbia, three in Vojvodina and one in South and East Serbia. These two regions belong to the northern and southern group of regions in Serbia, but what is more noteworthy is that both regions represent less developed regions than the Belgrade region, according to different indicators. In fact, we are talking about "rural" areas of Serbia, where inpatient care is mainly provided by general hospitals, although at a secondary level. According to 2023 data, general hospitals in Serbia had the largest inpatient capacity (15 618 hospital beds in total), which represents 38% of the national inpatient capacity and the largest share (Institut za javno zdravlje Srbije "Dr Milan Jovanović Batut", 2024). Therefore, it can be concluded that the theoretical framework and the empirical research results, in addition to providing important information on the human resource situation of the institutions studied, point to certain conclusions about the characteristics of the health workforce in the districts outside the central region and its impact on the overall population and regional economic development. In my research, I have also addressed the ethical and moral principles of healthcare workers, which are even considered among the primary requirements in healthcare.

Serbian legislation on public health is only partially in alignment with EU standards. According to a report by the European Commission (European Commission Directorate-General for Neighbourhood and Enlargement Negotiations, 2023), the national plan for human resources in the health sector in Serbia has still not been fully implemented. In the aforementioned 2023 report, the European Commission highlights in particular the lack of strong management in the Serbian health sector.

As a preface I would also like to point out that I was motivated and encouraged to choose my topic by the fact that as a practicing physician and economist, in particular as a health economist, I have gained insight into the various components of the healtcare system. Research on the determinants of the situation of healthcare employees in Serbian rural general hospitals seems to be an unresolved issue because previously there has been no significant amount of research on this topic, which provides a multi-factorial approach (e.g. simultaneous investigation of employees' perceptions of management and quality of care, employee satisfaction, intention to migrate and ethical behaviour). Furthermore, it should be noted that there is no apparent focus on rural health facilities in the research conducted so far, despite the many challenges. Therefore, I believe that a multi-faceted research on employees' perceptions of human resource management and quality of care, their ethical behaviour, job satisfaction and migration willingness of employees of Serbian rural general hospitals would significantly contribute to knowledge in this field.

2. The methodological framework of the dissertation

2.1. Research questions and objectives

The research questions of my dissertation concern the determination of the features of human resources in healthcare in Serbia. Based on the literature resaerch and my personal experience, assuming significant regional differences within Serbia, my aim is to investigate and map the characteristics of the workforce in rural general hospitals (Figure 1).

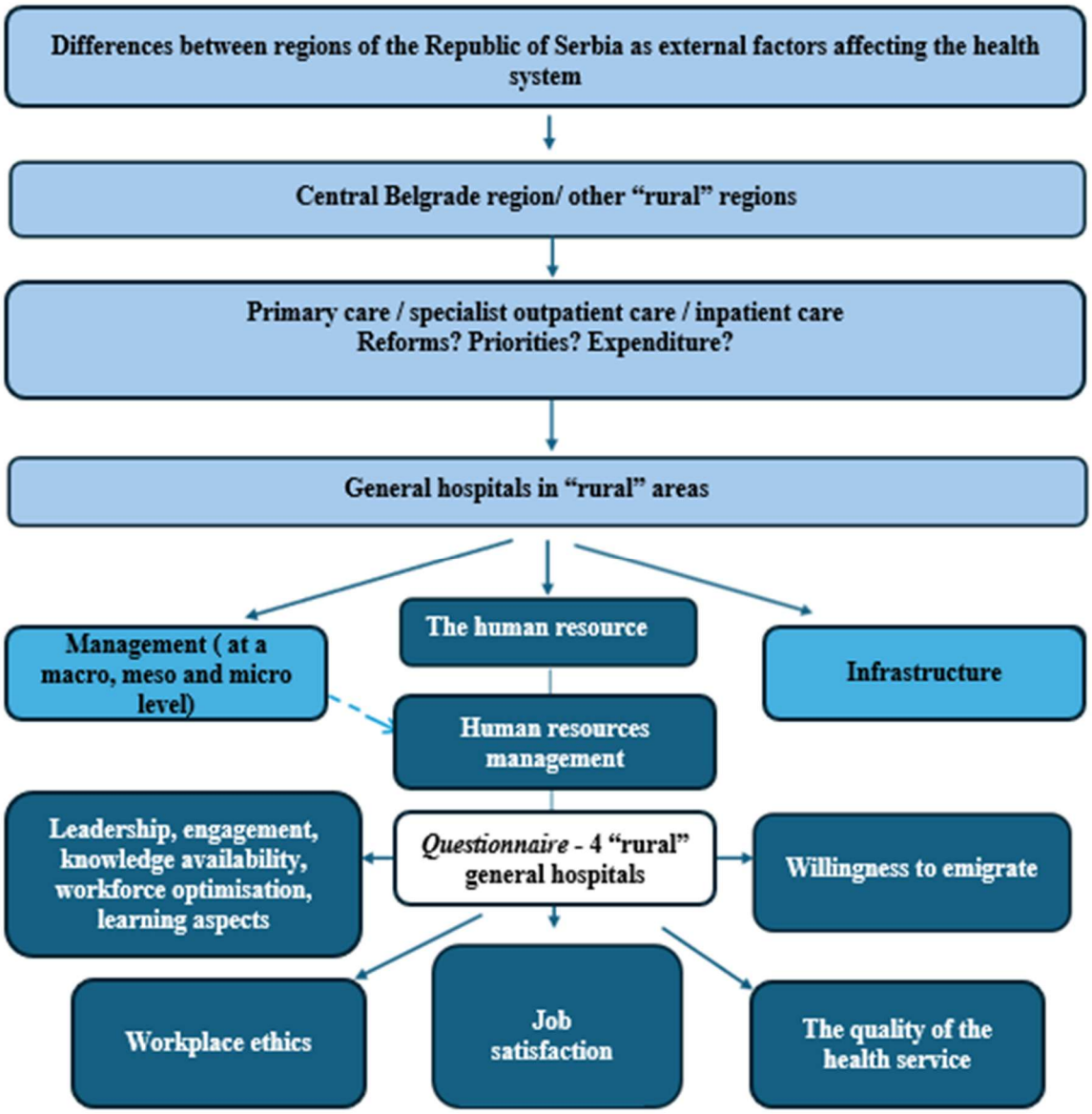

Figure 1: Flowchart of the dissertation
Source: own editing, 2024

In my research, I used the input-process-output (IPO) model to help understanding the different influences, relationships and activities in the workplace and how they affect outcomes. Three basic activities - input, process and output - provide what the institution or organisation needs. In addition, environmental actors interact with the organisation and its systems (Laudon & Laudon, 2022). This model serves as a conceptual framework model for my research, as it is

well suited for the study of human resource management and organizational behavior, and it clearly illustrates the relationships between variables and highlights the focus of analysis (Figure 2).

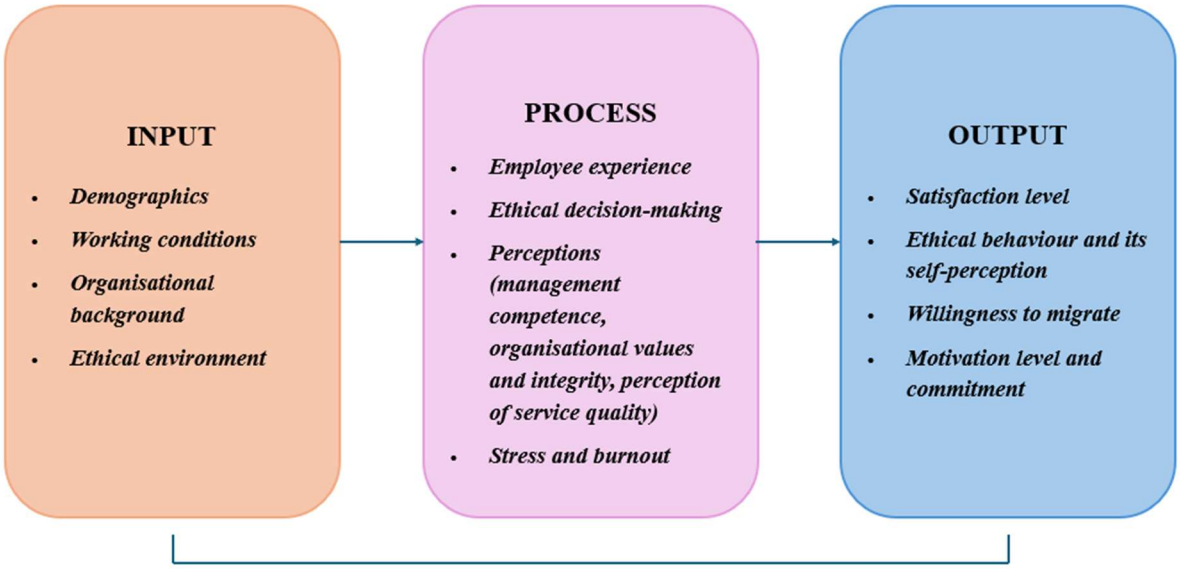

Figure 2: Input-Process-Output (IPO) model of the determinants affecting the situation of health workers
Source: own editing, 2025

To summarise, I would like to highlight the scientific, social and practical objectives of my dissertation.

1. Scientific objectives:
   - the scientific objective of my research is to determine, through empirical analysis, the human resource management practices in rural general hospitals in Serbia from the perspectives of leadership (communication, supervision, leadership skills), employee engagement, knowledge access (collaboration and teamwork, information sharing), workforce optimization (processes, conditions, responsibilities, employment decisions) and learning capacity (innovation, training, development, value, support);
   - research of the ethical behaviour of the healthcare workforce, their adherence to ethical standards and the resolution of potential ethical dilemmas among employees of general hospitals in rural Serbia;
   - to assess the perception of the employees of Serbian rural general hospitals regarding the quality of healthcare in their institutions;
   - to map and study the job satisfaction of healthcare workers in rural general hospitals in Serbia and the factors impacting on it;
   - to explore the extent to which the employees' job roles, health professional experience, gender and age influence their perceptions and attitudes towards health services and the management of healthcare workers;
   - to assess the willingness of the employees of Serbian rural general hospitals to emigrate and the motives behind it.
2. Social objectives:
   - contributing to the development of the Serbian healthcare system by identifying the vulnerabilities of Serbian rural general hospitals in terms of human resources;

- contributing to quality healthcare and equal access by considering the opinions of the health workforce in rural regions and emphasising the importance of this approach;
- supporting the appropriate organisations and decision-makers by identifying critical points (e.g. manager training, employee training and satisfaction programmes, courses, rewards) that need intervention, based on the research findings.

3. Practical objectives:
   - to formulate recommendations that can be used by the management of Serbian rural hospitals to increase employee satisfaction and engagement;
   - to develop proposals on how to improve the quality of healthcare in the institutions concerned, taking into account the opinions and evaluations of the employees of Serbian rural general hospitals;
   - to review, update and monitor the hospital's ethical codes based on the results of the ethical behaviour of its employees and any ethical dilemmas identified;
   - suggestions for strategies and programmes to improve the working environment, which could help to reduce the emigration willingness of employees in Serbian rural general hospitals.

2.2. Hypotheses

Based on the evidence in the literature and general observations from my professional experience in healthcare, I concluded that the efficiency and quality of the Serbian healthcare service is influenced by the work ethics of healthcare workers and the management of healthcare organizations in several aspects. I have formulated hypotheses, which I test in my dissertation based on my research among employees in Serbian rural general hospitals. At the end of each chapter, I summarized the results in the form of theses.

My hypotheses are the following:

Hypothesis 1: Rural general hospitals are among the most vulnerable institutions in the Serbian healthcare system in terms of capacity and performance, compared to inpatient healthcare institutions in the capital, due to the existing regional disparities.

Testing: literature synthesis
Model or theory associated with hypothesis: resource dependency theory; the association between health and social inequalities

Hypothesis 2: There is a strong association between the job roles (doctor, nurse, other employee) of employees in Serbian rural general hospitals participating in the research and the evaluation of aspects related to human resource management in the workplace (leadership, employee engagement, availability of knowledge in the workplace, workforce optimization and learning capacity).

Testing: descriptive statistics, cross-tabulation analysis
Model or theory associated with hypothesis: Maslow's hierarchy of needs; Herzberg's two-factor theory; Hackman and Oldham's work motivation model; Adams' equity theory; Social Identity Theory

Hypothesis 3: It can be assumed that the gender and age of respondents do not influence the evaluation of aspects related to morals and workplace ethics, as these are presumably universal.

Testing: descriptive statistics, Pearson's chi-square test

Model or theory associated with hypothesis: theory of cognitive development - Lawrence Kohlberg's theory of moral development; Kant's categorical imperative; theory of utilitarianism

Hypothesis 4: Healthcare workers with different job roles (doctor, nurse, other employee) have different perceptions of the quality of healthcare at their workplace, but in all respondents there is a positive correlation between whether their supervisor is satisfied with their work and whether their patients are satisfied with the healthcare delivered.

Testing: descriptive statistics, Pearson's chi-square test
Model or theory associated with hypothesis: workplace roles and organisational perspectives model; organisational culture model (Schein)

Hypothesis 5: Overall, the majority of research participants are more dissatisfied than satisfied with their jobs and working conditions

a. financial compensation/rewards for their work is one of the aspects they are least satisfied with;
b. direct collaboration with colleagues and managers is one of the aspects they rate most highly;
c. positive correlations can be found between respect and reward for work, direct interaction with colleagues and managers, and patients' attitudes towards health workers.

Testing: descriptive statistics, Pearson's chi-square test, cross-tabulation analysis, variance homogeneity test, correlation analysis, factor analysis, cluster analysis
Model or theory associated with hypothesis: Herzberg's two-factor (or motivation-hygiene) theory; the Job Demands-Resources (JD-R) model; empirical research

Hypothesis 6: The majority of the Serbian rural general hospital workers surveyed (regardless of gender, job role or age) have already considered moving to another country to work in the health sector.

Testing: descriptive statistics, Pearson's chi-square test, variance homogeneity test, factor analysis, cluster analysis
Model or theory associated with hypothesis: push-pull theory of migration; empirical research

A more detailed description of the models and theories associated with each hypothesis can be found in the relevant chapters and sub-chapters of the literature section.

3. Literature review

3.1. Regional disparities in Serbia

There have always been significant regional disparities in Serbia. These disparities have worsened over the last two decades and are now among the highest in Europe (Uvalić & Bartlett, 2021). Reducing disparities between regions and helping lagging regions to catch up is an important aspect of European integration (Csolák, et al., 2023).

Serbia signed the Stabilisation and Association Agreement (SAA) with the European Union (EU) in April 2008 and subsequently had to establish statistical regions (NUTS) in order to facilitate the provision of data on socio-economic development at the regional level to the EU (Uvalić & Bartlett, 2021).

In Serbia, two main geographical regions have been defined at NUTS 1 level (major socio-economic regions): Northern Serbia and Southern Serbia. At NUTS 2 level (base areas for the application of regional policies), four statistical regions have been defined, which allowed for the planning and monitoring of regional development policy: Belgrade (NUTS RS11), Vojvodina (NUTS RS12), Šumadija and Western Serbia (NUTS RS21) and Southern and Eastern Serbia (NUTS RS22) (Figure 3).

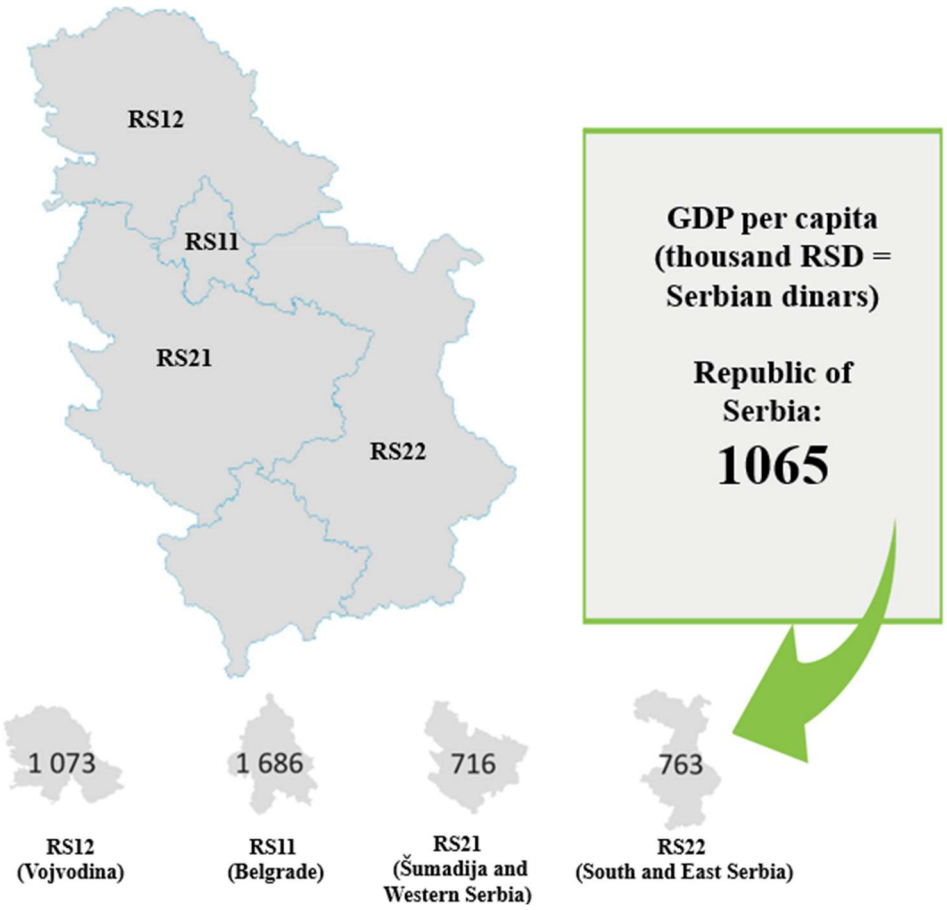

Figure 3: Regions of the Republic of Serbia at NUTS 2 level and GDP per capita per region (in thousands RSD; data for 2023)

Source: own editing based on Republički zavod za statistiku, 2024b

The NUTS 3 level (smaller regions for specific purposes) refers to administrative districts (oblast). A total of 25 districts have been defined at NUTS 3 level (Belgrade region is represented by an independent district, seven districts in Vojvodina, eight districts in Šumadija and Western Serbia, nine districts in Southern and Eastern Serbia). These districts (except Belgrade) do not have any independent authority and do not have separate public administration functions (Golić & Joksimović, 2017).

According to the data of the Statistical Office of the Republic of Serbia for 2022 (Republički zavod za statistiku, 2024c), the population of Serbia was 6 647 003, with an average population density of 85,7 persons per km2, which is lower than the EU average population density in 2022 (109,1 persons per km2) (Eurostat, 2024d). The population density of each region in 2022 was as follows: Belgrade 519,9 persons/km2; Vojvodina 80,5 persons/km2; Šumadija and Western Serbia 68,7 persons/km2; Southern and Eastern Serbia 53,6 persons/km2. Rural areas, even in the more developed regions of Vojvodina, are characterised by depopulation due to lack of local development and employment opportunities (Lović Obradović & Matović, 2018). However, in terms of age composition, there are no significant differences between regions. According to 2023 data, the population in 15-64 age group represented 64,4% of the population in the Belgrade region, 63,5% in Vojvodina, 62,5% in Šumadija and Western Serbia, and 62,7% in Southern and Eastern Serbia (Republički zavod za statistiku, 2024b).

Serbia has large regional disparities in GDP per capita, which are among the largest in Europe. Two regions in the north of the country (Belgrade and Vojvodina) account for more than two thirds of the country's GDP. Table 1 shows the gross domestic product (GDP) of each region in Serbia.

Table 1: Regional GDP in Serbia, participation of regions in the GDP and level indexes of the Republic of Serbia

	GDP (million RSD)	GDP (million USD)	Growth index (2022/2021)	Share of regions in national GDP (%)	GDP per capita (thousands RSD)	GDP per capita (thousand USD)	Change in GDP per capita (Serbia =100)
Serbia	**7 097 629**	63 450,58	**113,2**	100,0	**1 065**	9,52	**100,0**
Belgrade	**2 839 814**	25 387,05	**112,7**	40,0	**1 686**	15,07	**158,3**
Vojvodina	**1 871 367**	16 729,43	**115,8**	26,4	**1 073**	9,59	**100,8**
Šumadija and Western Serbia	**1 306 248**	11 677,45	**111,4**	18,4	**716**	6,40	**67,2**
Southern and Eastern Serbia	**1 077 359**	9 631,25	**112,2**	15,2	**763**	6,82	**71,7**

Source: own editing based on Republički zavod za statistiku, 2024a

The table below (Table 2) shows the regional GDP expressed in purchasing power standard (PPS) and the level index compared to the EU27 level.

Table 2: Regional GDP in Serbia, expressed in purchasing power standard (PPS) (2022)

	GDP (million PPS)	GDP per capita (thousand PPS)	Change in GDP per capita (EU27=100)
EU (27)	15 907 189	35,5	100
Serbia	103 668	15,6	43,9
Belgrade	41 478	24,6	69,5
Vojvodina	27 333	15,7	44,2
Šumadija and Western Serbia	19 079	10,5	29,5
Southern and Eastern Serbia	15 736	11,1	31,4

Source: own editing based on Republički zavod za statistiku, 2024a

Belgrade (RS11) is considered the most innovative region in Serbia and the only one of the four regions mentioned that is classified as moderately innovative. In 2023, the innovation performance of three regions (Belgrade, Vojvodina and South and East Serbia) increased at a higher rate, while the performance of Šumadija and West Serbia increased at a lower rate than the innovation performance of the European Union (8,5% increase) (European Commission: Directorate-General for Research and Innovation, et al., 2023). For rural areas, innovation can provide solutions to existing problems, including various social problems (Lipták, 2023).

According to the data of the Statistical Office of the Republic of Serbia, the share of the population with college/university education is highest in the Belgrade region (35,59%, higher than the national level), followed by the Vojvodina region (19,8%), South and Eastern Serbia (17,6%), and Šumadija and Western Serbia (17,6%). At the national level, no data on education is available for 0,4% of the population (Republički zavod za statistiku, 2024c).

Employment rates are highest in Belgrade and lowest in Southern and Eastern Serbia. Table 3 shows the labour force survey indicators for the regions in the official Serbian statistical data for 2023 (Republički zavod za statistiku, 2024c).

Table 3: Population of the Serbian regions by labour market status (proportions of working age population (15-64 years old) %) in 2023

	Serbia	Belgrade	Vojvodina	Šumadija and Western Serbia	Southern and Eastern Serbia
Activity rate	71,7	76,3	71,8	70,1	67,8
Employment rate	64,7	70,8	65,3	62,9	58,8
Unemployment rate	9,7	7,2	9,1	10,3	13,2
Share of people outside the labour market	28,3	23,7	28,2	29,9	32,2

Source: own editing based on Republički zavod za statistiku, 2024c

The important correlation between the economy and healthcare and the health status of the population should be highlighted. There is a multi-directional and complex relationship between different aspects (e.g. health status-economic development, economic development-health status improvement, healthcare system-health status). It is important to mention two theories that are related to the first hypothesis of my dissertation. These are the resource dependence theory, which describes how dependence on resources outside the institution is related to organizational actions and outcomes (Pfeffer & Salancik, 1978). Top managers need to develop plans and strategies to reduce dependence on external resources (Csedő & Zavarkó, 2021). Also associated with the first hypothesis is the theory according to which social and economic differences significantly determine the health status of a society (Győri, 2022). In

rural areas, the determinants of health (e.g. greater poverty, ageing population, transportation obstacles) are generally overall worse than in metropolitan areas, thus placing a greater burden on local hospitals and reducing their adaptability.

Regional disparities, as a feature of the economic situation in Serbia, can have an impact on many aspects of human resources for health. The differences between the northern and southern regions have been highlighted several times in the previous sections, but especially the differences between Belgrade (capital and region) and the other three regions, the „separation" of the Belgrade region from the rest of the country. From this point of view, it is important to investigate and evaluate the characteristics of the personnel working in healthcare institutions in these three less developed regions (Vojvodina, Šumadija and Western Serbia and Southern and Eastern Serbia).

3.2. The Serbian healthcare system

The public health system in Serbia has been facing major problems since the beginning of the last century. Serbia entered the economic transition process with the "welfare state" model. In the early 1990s, the disintegration of Yugoslavia, civil wars, various international political and economic sanctions and the restoration of capitalism led to a deterioration in the health of the population (Adzic & Adzic, 2009). In the post-2000 period, a number of proposals and draft documents were made to define health policy and development strategy. Already the legislation from 2005 has been adapted to the practice of the European Union, and the latest law on healthcare was adopted by the National Assembly of the Republic of Serbia on 3 April 2019 (Zakon o zdravstvenoj zaštiti Službeni glasnik RS, br. 92/2023).

According to the World Health Organization (WHO), in 2021, the ratio of public health expenditure to GDP in Serbia was 10,01%. In Hungary, the share of health expenditure to GDP was 7,38% in the same year, while the average in Europe was 8,65% (The Global Health Observatory - World Health Organization (WHO), 2024b). Public health expenditure per capita in Serbia in 2021 was US$ 919,17, while in Hungary it was US$ 1 381,62 (The Global Health Observatory - World Health Organization (WHO), 2024a).

The Republic of Serbia has a compulsory health insurance model. Since 2004, the main financier of public healthcare in Serbia is the Republic Health Insurance Fund, with a 94% share. It is 67% financed by employee and employer contributions, 22% by the Pension Fund, 4% by contributions from the self-employed and 7% by public transfers to vulnerable groups of the population (Gajic-Stevanovic & Stevanovic, 2023). The share of costs covered by compulsory health insurance varies between 65% and 95% depending on the type of service. The share of health expenditure from out-of-pocket payments was 37% in 2019. Voluntary (private) health insurance plays only a marginal role, accounting for less than 1% of current health expenditure in 2019 (European Observatory on Health Systems and Policies & World Health Organization. Regional Office for Europe, 2022). There is still substantial room for improvement in the efficiency of the Serbian health system. Currently, there are no systems in place to monitor health system performance and assess its allocative efficiency (Bjegovic-Mikanovic, et al., 2019).

3.2.1. The organizational structure of the healthcare system in Serbia

The health system in Serbia is organised and managed by three main institutions. These are the Ministry of Health, the Public Health Institute "Dr Milan Jovanovic - Batut" and the Republic Health Insurance Institute. In Serbia, health institutions are predominantly state-owned (European Observatory on Health Systems and Policies & World Health Organization. Regional Office for Europe, 2022). Public healthcare is provided directly by the network of

state healthcare institutions, which is defined by the Regulation on the Healthcare Institution Network Plan (Uredba o planu mreže zdravstvenih ustanova Službeni glasnik RS, br. 101/2024-32). In 2023, there were 332 public health institutions in the Republic of Serbia: 159 primary healthcare centres, 38 institutes, 40 general hospitals, 33 specialised hospitals, 4 clinical hospital centres, 4 university clinical centres, 7 clinics, 24 public health institutes and 23 pharmacies (Institut za javno zdravlje Srbije "Dr Milan Jovanović Batut", 2024).

Healthcare in Serbia is provided at primary, secondary and tertiary levels (Figure 4). Each level has its own characteristics, especially in terms of the types of services (Mitrović & Gavrilović, 2013).

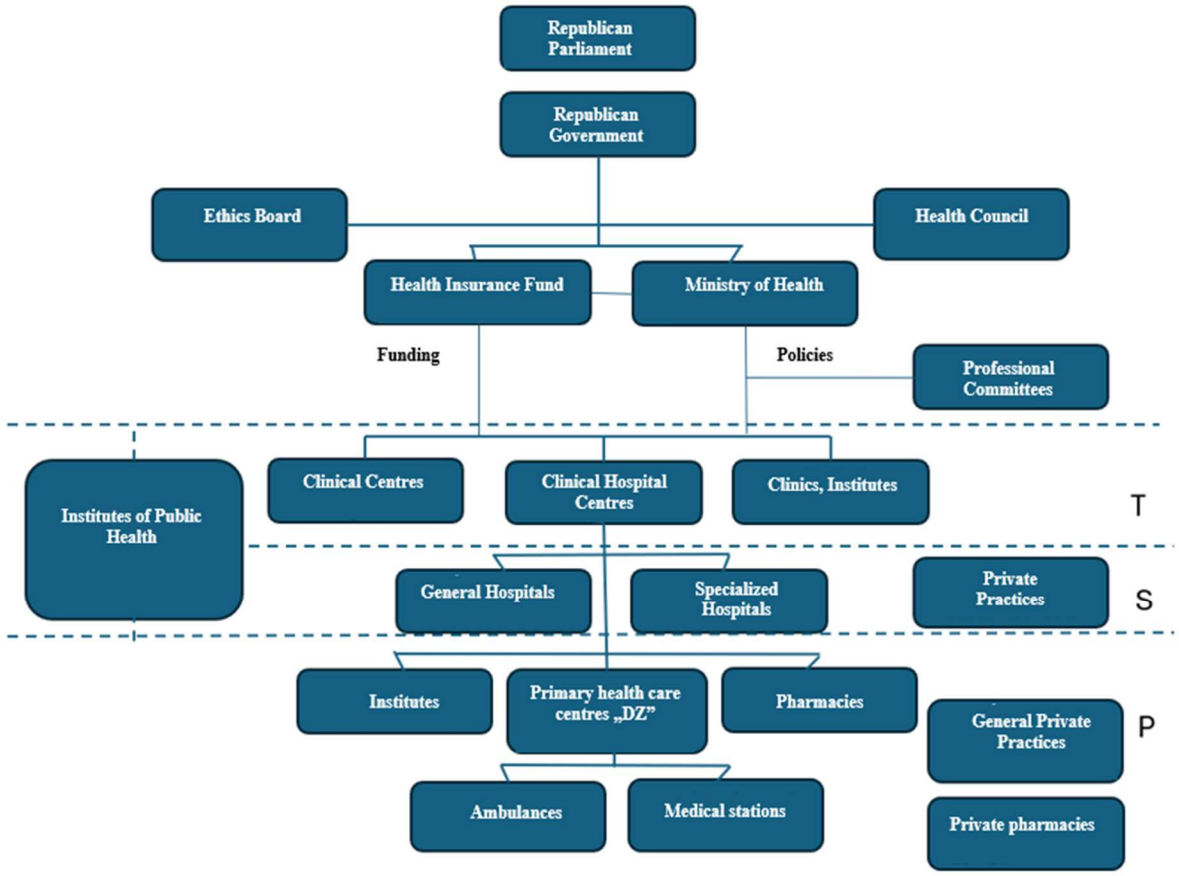

Figure 4: Organisational structure of the health system in Serbia
Source: own editing based on Bjegovic-Mikanovic, 2016
P=primer, S=secondary, T=tertiary, "DZ"=Dom Zdravlja (Serbian)

Primary care is mainly provided by a network of state-owned primary healthcare centres ("dom zdravlja") and financed on a capitation basis (European Observatory on Health Systems and Policies & World Health Organization. Regional Office for Europe, 2022). In primary healthcare centres, healthcare is provided by the physician selected by a patient, who may be a general practitioner, a general medicine specialist, an occupational health specialist, a paediatrician, a gynaecologist or a dentist (Zakon o zdravstvenoj zaštiti Službeni glasnik RS, br. 92/2023). This system is currently highly centralised (European Observatory on Health Systems and Policies & World Health Organization. Regional Office for Europe, 2022).

The secondary level is responsible for managing more complex health problems in general and specialised hospitals, with the appropriate specialised personnel and using higher medical technology. The largest number of patients are treated at the secondary level in outpatient specialised care and inpatient care is only provided if the nature of the illness or

injury makes it absolutely necessary (Zakon o zdravstvenoj zaštiti Službeni glasnik RS, br. 92/2023).

Tertiary level care includes the most complex forms of specialist, consultative and inpatient care, as well as research and education activities. Clinics, institutes, clinical hospital centres and university clinical centres are tertiary-level healthcare institutions (Zakon o zdravstvenoj zaštiti Službeni glasnik RS, br. 92/2023). Currently, there are four university clinical centres in Serbia: in Belgrade (Univerzitetski klinički centar Srbije), in Novi Sad (Univerzitetski klinički centar Vojvodine, Novi Sad), in Kragujevac (Univerzitetski klinički centar Kragujevac) and in Niš (Univerzitetski klinički centar Niš).

The number of beds in each healthcare institution in Serbia is determined by the Regulation on the Healthcare Institution Network Plan (Uredba o planu mreže zdravstvenih ustanova Službeni glasnik RS, br. 101/2024-32). In 2023, a total of 43 278 beds were in use in all healthcare institutions in the Republic of Serbia. The largest number of beds was in general hospitals, with a total of 15 618 beds. This was followed by specialised hospitals with a total of 8 805 beds and clinical centres with 8 062 beds (Institut za javno zdravlje Srbije "Dr Milan Jovanović Batut", 2024).

Currently, there are 40 general hospitals in Serbia (14 of which are located in health centres). All Serbian districts (NUTS3 regions) have at least one hospital, and smaller towns most often have their own hospital, which ensures good geographical coverage (Uredba o planu mreže zdravstvenih ustanova Službeni glasnik RS, br. 101/2024-32). Based on the evidence from the literature, I have come to the conclusion that general hospitals in Serbia have the largest bed capacity, thus they can provide inpatient care for the largest number of patients (at the secondary level), but also have the highest patient discharge rates at the national level and the lowest average length of hospital stay. Looking at each type of inpatient hospital, it can be seen that the shortest average hospital stay was in general hospitals, more precisely 5,33 days (5,62 days in Northern Serbia and 5,22 days in Southern Serbia) (Institut za javno zdravlje Srbije "Dr Milan Jovanović Batut", 2024). In 2023, general hospitals had the lowest bed occupancy rate, with an average of 41,16% (39,8% in Northern Serbia, 41,69% in Southern Serbia), while the highest bed occupancy rate was in specialised hospitals, with an average of 66,03% (60,93% in Northern Serbia, 71,2% in Southern Serbia) (Institut za javno zdravlje Srbije "Dr Milan Jovanović Batut", 2024).

According to some authors (Green, 2002), the target for bed occupancy is usually 80-85% of total bed capacity for large hospitals and 45% for small hospitals (due to lack of economies of scale). Other authors consider a bed occupancy rate of 60-85% to be ideal (Siyoto & Tule, 2019). Based on these results, bed occupancy in Serbian general hospitals is below what is considered optimal internationally. In addition, almost half (45%) of Serbian general hospitals have a bed capacity lower or higher than the 200-600 beds considered optimal based on literature (Medarević & Vuković, 2021) (12 hospitals have a bed capacity below 200 and 6 hospitals have a bed capacity above 600). All this suggests that, considering the overall inpatient healthcare in Serbia, several indicators on the efficiency of general hospitals are deviating (or deviating more than for other types of institutions) from the optimal values and thus from the optimal level of efficiency. On this basis, examining and improving the efficiency of general hospitals could be an important task for the future.

The main characteristics of the four general hospitals in Serbia covered by my research

I would like to briefly present the general hospitals in Serbia that participated in my research. Figure 5 shows the geographical location of the four general hospitals studied, more precisely, the districts in which the four hospitals are located.

The general hospital in Subotica (Subotica, Vojvodina) is located in the North Bačka district and provides secondary outpatient and inpatient care to the population of the district. At the end of 2022, it had 1236 employees, of which 227 were doctors, 758 nurses (high school and college graduates in total) and 234 non-medical administrative and technical staff (Opšta bolnica Subotica, 2022). The general hospital in Zenta (Senta, Vojvodina) is located in the North Banat district and, together with the general hospital in Kikinda, which is also located in the same district, provides secondary care for the population of the district. As of 1 January 2024, the general hospital in Senta had 410 employees, of which 72 were doctors, 259 nurses (with secondary school and college degrees in total) and 76 non-medical administrative and technical staff (Opšta bolnica Senta, 2024). The general hospital in Sremska Mitrovica is located in the district of Srem. In 2023, the hospital had a total of 1,025 employees, of which 229 employees had an university degree, 71 had a college degree, 579 had a secondary school degree and 146 had a primary school degree (Opšta bolnica Sremska Mitrovica, 2023). The general hospital in Aleksinac is located in the Nišava district (South and East Serbia) and is the only hospital in the district providing secondary care to the population. In 2023, the hospital had a total of 262 employees, of which 59 were doctors, 155 nurses (with secondary school and college degrees in total) and 45 non-medical administrative and technical staff (Opšta bolnica Aleksinac, 2023).

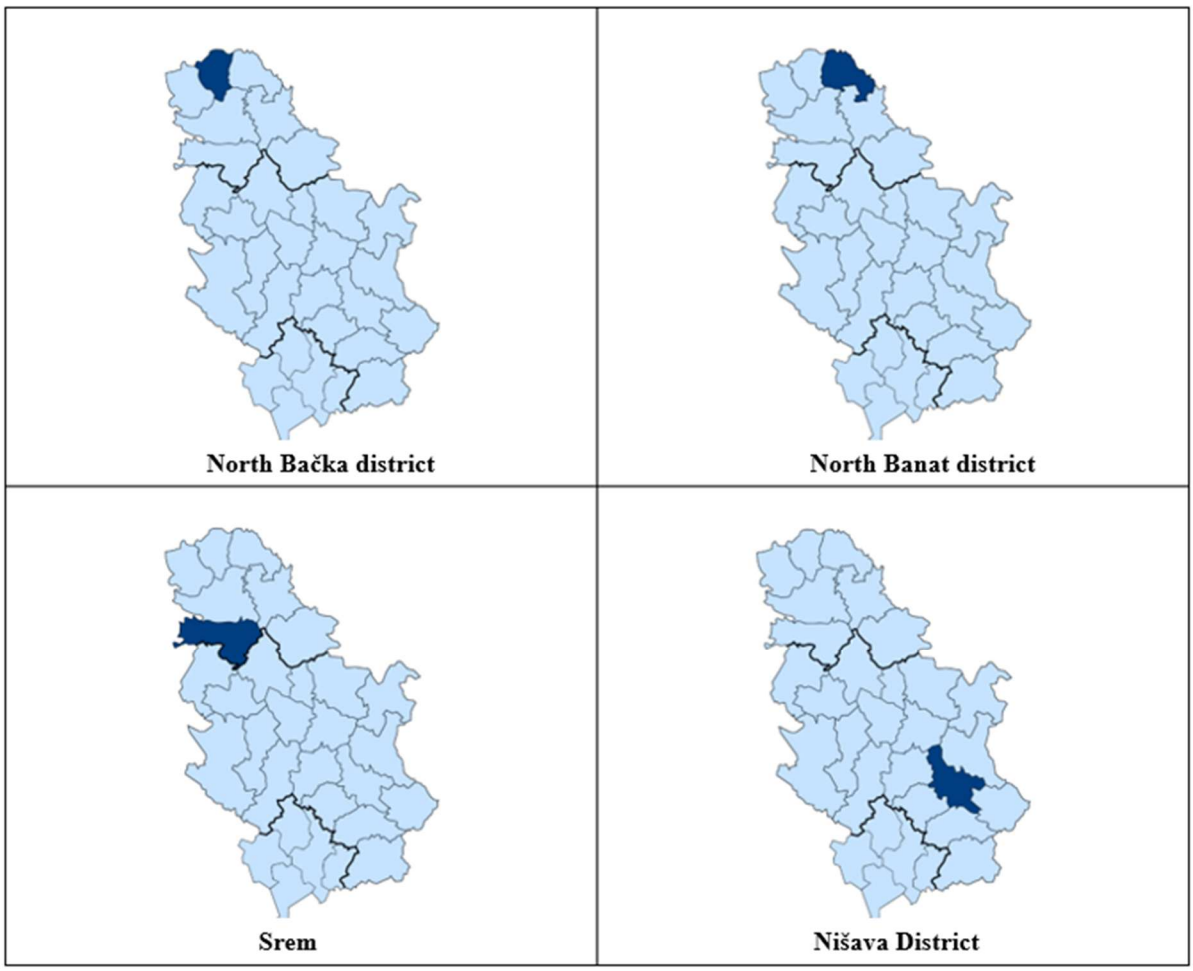

Figure 5: The geographical location of North Bačka District, North Banat District, Srem and Nisava Districts

Source: own editing based on Wikipedia.org, 2024

3.2.2. Human resources in the Serbian health sector

According to data from the Institute of Public Health of Serbia for the year 2023, there were 110,929 employees in the Serbian public healthcare system. The number of physicians was 21 343, dentists 1 616, pharmacists 1 332 and nurses (total number of secondary school and college graduates) 46 106 (Institut za javno zdravlje Srbije "Dr Milan Jovanović Batut", 2024). Public health institutions employed 23 043 non-medical workers (21% of total staff), of which 5 484 (24%) were administrative and 17 559 (76%) were technical personnel (Institut za javno zdravlje Srbije "Dr Milan Jovanović Batut", 2024).

Human resources are the fundamental determinant of the healthcare system in Serbia, in terms of prevention, diagnosis and treatment, and are the largest and most valuable resource that requires continuous improvement. According to the World Health Organization, the number of doctors and nurses in Serbia is above the average for the WHO European Region and the EU. These data refer to licensed doctors and nurses and not to practitioners, and may overestimate the number of health workers actively engaged in the health system (European Observatory on Health Systems and Policies & World Health Organization. Regional Office for Europe, 2022). According to Eurostat data for 2020 (Eurostat, 2024b), the number of practising doctors per 100 000 inhabitants in Serbia (288) is lower than the number of licensed doctors (496) and lower than in many European countries (e.g. 314 in Hungary and 509 in Norway in 2020). According to Eurostat data for 2022 (Eurostat, 2024b), the number of practising nurses per 100 000 inhabitants in Serbia (659) was lower than the number of licensed nurses (1 179), but higher than in many European countries, e.g. 441 in Hungary and 236 in Croatia in 2022. In addition, there are significant variations in the health workforce across the country. Despite these challenges, Serbia currently lacks a formal health workforce strategy (Bjegovic-Mikanovic, et al., 2019).

Table 4 shows that among all types of inpatient hospitals in Serbia, general hospitals employ the largest number of doctors and nursing personnel.

Table 4: Number of medical professionals working in different types of inpatient facilities in the Republic of Serbia (data for 2023) and data for other neighbouring countries (Montenegro and Slovenia)

Inpatient hospitals	Doctors			Nursing personnel		
	Serbia	Montenegro*	Slovenia **	Serbia	Montenegro*	Slovenia **
Institutes	1 179	73	2 402	3 412	164	6 305
Clinics	385	29		1 156	65	
Clinical Centres	3 042	539		7 605	1 383	
Clinical Hospital Centres	826	-		2 190	-	
General Hospitals	3 684	380	1 469	11 839	1 141	4 365
Specialized Hospitals	587	66	278	2 551	287	1 068
Day Hospitals	324	-	-	843	-	-

** data for 2021; ** data for 2022*

Source: own editing based on Institut za javno zdravlje Srbije „Dr Milan Jovanović Batut", 2024; Institut za javno zdravlje Crne Gore, 2023; Nacionalni Inštitut za Javno Zdravje, 2022

Additionally, the table above shows the current situation of medical and nursing professionals in two neighbouring countries, Montenegro and Slovenia.

Thesis 1: General hospitals are the „backbone" of inpatient and outpatient specialised care in rural Serbia in terms of the volume of care. At the same time, they are one of the most vulnerable points of the Serbian healthcare system. Considering the bed capacity and the low bed utilization rate, significant inefficiencies are assumed. In addition, they employ the largest number of doctors and nursing professionals at the national level, which in the absence of a formal health workforce strategy, systems to monitor performance and evaluate efficiency, and salary structures to encourage quality improvement, makes the functioning of general hospitals highly vulnerable, due to the prevailing regional disparities.

3.3. The healthcare management

Essentially, healthcare management can be described as an intertwining of medical practice, organisational administration and ethical decision-making (Ilori, et al., 2024). It encompasses a range of tasks, from resource allocation and policy development to the provision of high quality patient care. It can be said that the main objective of healthcare management is to optimise the quantity and quality of services provided by healthcare organisations.

In the context of healthcare management and managers, it is important to highlight Mintzberg's leadership roles. Fifty years ago, Canadian academic and management theorist Henry Mintzberg identified ten managerial roles, which he grouped into three categories. These categories are the interpersonal, informational and decision-making roles (Mintzberg, 1973). These roles are well suited to healthcare management because they help to organise and understand the complex and multifaceted tasks of managers.

Healthcare is also a specific area in terms of the workforce. Employees in the health sector can be divided into several categories. These include managers, doctors, dentists, other health personnel and non-health personnel working in healthcare institutions. Each of these groups has different views of what it means to provide an effective service, which can lead to tension and conflict between different groups (B. Nagy, 2008). Reducing conflict and motivating healthcare workers has a positive impact on efficiency and performance.

3.4. General elements and role of human resource management in the healthcare system

There is a widespread belief that effective human resource management is a key element in achieving organisational success (Cayrat & Boxall, 2023). Human resource management engages and supports all categories of employees and facilitates the acquisition of new skills and competences by managers (Trifu & Croitoru, 2013).

One of the theoretical foundations for the development of human resource management is Dave Ulrich's human resource role model, which offers a structured approach to the effective separation of roles and responsibilities of human resource functions that can be applied to the healthcare sector. The Ulrich model identified four roles for managers: change agent, employee champion, strategic partner and administrative expert (Ulrich, 1997). Also related to human resource management and associated with the second hypothesis of my dissertation are Hackman and Oldham's work motivation model (Hackman & Oldman, 1975), Adams' theory of equity (Bauer & Mitev, 2016) and social identity theory (Tajfel & Turner, 2004).

In the context of human resource management, I would like to highlight Laurie Bassi and Daniel McMurrer's study „Maximizing Your Return on People", which proposes new tools for monitoring employee skills (Bassi & McMurrer, 2007). The authors claim that the strengths and weaknesses of organisations in human resource management can be assessed by monitoring the performance of practices in five broad categories (leadership, employee engagement, knowledge availability, workforce optimisation, learning capacity). These are the drivers of human resource management.

The human resources management is an important component of high quality and efficient healthcare. The functioning of healthcare management, employee satisfaction, quality of care, ethical behaviour and willingness to migrate are all closely interlinked (Figure 6).

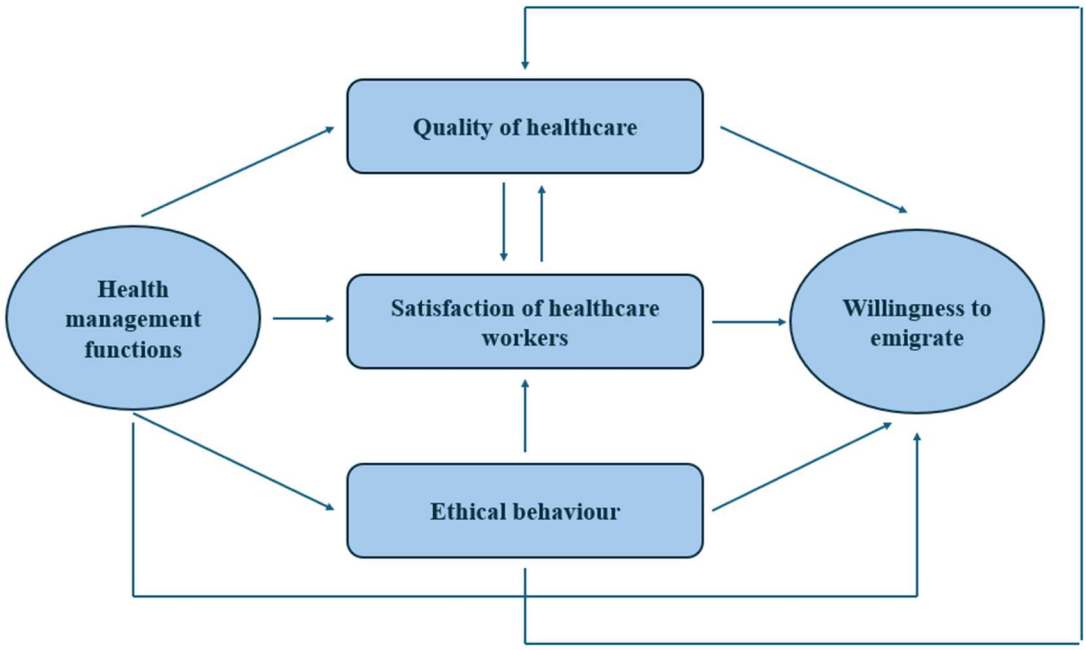

Figure 6: Relationships and interactions between health management practices, employee satisfaction, quality of care, ethical behaviour and willingness to migrate
Source: own editing, 2025

3.4.1. The management of human resources for health in Serbia

Serbia is systematically rebuilding its health system, which has been severely underfunded and affected by the economic situation. As part of the overall health reforms since 2000, rehabilitation and modernisation of health facilities and equipment, as well as improvements in technology, are being carried out continuously, partly supported by extensive international humanitarian aid (Bjegovic-Mikanovic, et al., 2019).

The previous practice in Serbia did not show significant improvement in the managerial knowledge and skills, especially in terms of strategic decision making on the functioning and development of the healthcare system. In general, management education is also a problematic aspect of the healthcare system.

Serbia does not have a formal strategy for the health workforce at the moment. In addition, planning for the healthcare workforce has been completely centralised. Intention to work abroad is high, although information on labour migration trends is lacking and official statistics do not exist (Pillars of Health, 2022). Also a major challenge is the discrepancy between the number of health professionals (especially doctors and nurses) and their employment capacity, which contributes to high unemployment and emigration (Santric Milicevic, et al., 2015a). Other persistent problems are the oversupply of non-medical personnel in the health system and the unequal geographical distribution of the healthcare workforce. In addition, the quality of nursing activity and care needs to be strengthened. In summary, the main challenges facing the Serbian health system are the lack of transparency in the healthcare system and the high unemployment of qualified nurses and doctors (Santric Milicevic, et al., 2015b).

3.5. Satisfaction at work

Job satisfaction is one of the most complex areas for management. Job satisfaction depends to a large extent on the personality of the employee, the characteristics of the organisation and it is the basis for organisational success (Sahin, et al., 2014).

Employee satisfaction is very important to work effectively and deliver the desired results. Abraham Maslow and Douglas McGregor stated that only a satisfied worker is a productive worker (McGregor, 1960). Maslow's theory, which is associated with the second hypothesis of my dissertation, outlines five categories of human needs (physiological needs, security, love and belonging, esteem and self-actualization), assuming their sequential satisfaction (Maslow, 1954; Rojas, et al, 2023). Employees are at different levels of motivation according to their different job roles (job functions). As a result, they will have different expectations and priorities from organisational management and will evaluate its aspects differently.

In the context of job satisfaction, it is important to highlight Herzberg's two-factor theory (also known as motivation-hygiene theory), which was influenced by Maslow's hierarchy of needs (Galanakis & Peramatzis, 2022). The two groups of factors that influence job satisfaction are hygiene factors and motivational factors (Dajnoki, et al., 2021). In the context of employee satisfaction, it is also worth mentioning the Job Demand - Resource (JD-R) model, which is associated with the fifth hypothesis of my dissertation, and which explains how the organisational environment affects employee well-being and performance. Job strain leads to lower job performance, while motivation leads to higher work productivity (Tummers & Bakker, 2021).

An employee satisfaction survey conducted in 2019 among employees of a public healthcare institution in Serbia (324 institutions and 59 997 respondents) showed that the greatest dissatisfaction is caused by the monthly remuneration of work and that significant workplace stress is also prominent (Institut za javno zdravlje Srbije “Dr Milan Jovanović Batut”, 2020).

3.6. Ethics and moral principles at work

The ethical schools of Western philosophy broadly fall into three different ethical branches. The first draws on the work of Aristotle (virtue ethics) and argues that virtues predispose the possessor of virtues and society to how they should act (Aristotle, 1983). The second position is most prominent in Kant, who believed that practical reasoning could be sufficient to derive moral principles and thus created the categorical imperative (K. I.) (Kant, 1998). A third school is utilitarianism, which holds that the guiding principle of ethical conduct is the pursuit of the greatest happiness or the reduction of sorrow for the benefit of those concerned, or more precisely, “the best good for the greatest number of people” (Stanford Encyclopedia of Philosophy, 2025b).

Among contemporary research on ethics, morality and psychology, I would highlight the work of the American Professor Jonathan Haidt, who argues that moral reasoning can correct and override moral intuition (Haidt, 2007). Jonathan Haidt and Jesse Graham have also developed the Moral Foundations Questionnaire (MFQ30) (Moral Foundations, 2025). Also worth mentioning, associated with the third hypothesis of my dissertation, is the theory of Kohlberg (American psychologist Lawrence Kohlberg), which outlines how individuals move through the six stages of moral reasoning (Snarey & Green, 2011).

One of the approaches to medical ethics is based on four principles for decision-making: the principle of beneficence, „Primum nil nocere!", respect for autonomy and the principle of justice (Dobos, et al., 2020). For third world countries, it is clearly true that the topic of medical ethics needs more attention and more research with human participants on ethical issues. In Serbia, the guidelines on medical ethics are contained in the Code of Medical Ethics of the Serbian Medical Chamber (Kodeks Medicinske Etike Lekarske Komore Srbije Službeni glasnik RS, br. 104/2016) and the Code of Ethics of the Serbian Chamber of Nurses and Health Technicians (Etički Kodeks Komore Medicinskih Sestara i Zdravstvenih Tehničara Srbije Službeni glasnik RS, br. 67/2007). These are the socially accepted ethical principles and rules that govern the conduct of healthcare workers.

3.7. Quality of the healthcare service

A poor quality health system will result in low quality of health services, which can often have permanent or even fatal consequences for users (Živaljević & Vrcelj, 2015). For this reason, quality control and its continuous improvement is a social obligation of all healthcare institutions and it is based on quality values adopted in their daily practice (Strategija za stalno unapredjenje kvaliteta zdravstvene zaštite i bezbednosti pacijenata Službeni glasnik RS, br. 15/2009).

I would like to mention two models related to the quality of healthcare, which are also related to the fourth hypothesis of my dissertation. These are the model of workplace roles and organizational perspectives, which deals with the roles and behaviors assumed by social actors (Jackson, 1998) and Schein's three-layer model of organizational culture (Role Theory). According to Edgar Schein's theory, the superficial layers can provide some indication of what a culture is really like, while the deeper layers provide much greater insight (Málovics & Behrends, 2004). These theories suggest that organisational culture and the cultural characteristics of individual groups influence the assessment of quality.

In the context of quality of healthcare, the World Health Organization's (WHO) WHO HRH Framework for Action (Fort, et al, 2015), which aims to support governments and health managers in developing and implementing strategies to achieve an effective and sustainable health workforce, should be also highlighted.

3.8. Willingness to migrate among health workers

International migration of health workers is a major problem at global level. The recruitment of health workers from developing countries not only results in the loss of skilled labour, but also hinders economic development and leads to the weakening of health systems in countries of origin (Yakubu, et al., 2022). Labour outflows exacerbate existing health workforce shortages.

According to push-pull theory, migration is approached from two angles. These two forces ("push" and "pull") are necessary for migration to occur (Kline, 2003). Push factors are specific to the country of origin (e.g. low income, limited career development opportunities, lack of infrastructure), while pull factors are specific to the host country (e.g. better quality of life, higher income, more career development opportunities) (Ogujiuba, et al, 2019). This model is well applicable to Serbian health workers, as the outflow of health professionals in Serbia is of alarming proportions. Moreover, the "brain drain" represents an irreversible loss of money invested in human resource development (Institut za javno zdravlje Srbije " Dr Milan Jovanović Batut", 2015).

In Serbia, there is no valid and complete information on trends in labour emigration, although research provides evidence of a high intention to emigrate for work abroad (Pillars of

Health, 2022; Tripković, et al., 2021). There is no professional authority in Serbia to organise and register the mobility of healthcare workers (Pillars of Health, 2022).

Also worrying is the significant gap between labour supply and demand in the Serbian health sector, with the number of unemployed health workers exceeding the public sector's capacity to employ them (Pillars of Health, 2022). Given the country's surplus of doctors, the level of 'attrition' caused by emigration does not pose an immediate threat to the functioning of the healthcare system (Institut za javno zdravlje Srbije 'Dr Milan Jovanović Batut', 2015).

4. The research methodology

General hospitals are the “backbone” of inpatient and outpatient care in rural areas, both in the northern and southern regions of Serbia. However, general hospitals face significant inefficiency problems throughout the country. The health workforce is a significant factor in the implementation of measures to optimise the efficiency of care. Therefore, it is important to examine the attitudes and opinions of employees in general hospitals regarding hospital management, the results of ongoing changes and possible additional aspects that could be improved. In addition, due to the nature of their care, general hospitals allow for a simultaneous examination of the broadest professional profile of healthcare workers in Serbia.

In April-November 2023, I conducted an electronic questionnaire survey among healthcare workers in 4 general hospitals in Serbia: in the general hospitals of Subotica (Vojvodina), Senta (Vojvodina), Sremska Mitrovica (Vojvodina) and Aleksinac (South and East Serbia). In the first round, I contacted all (40) general hospitals in Serbia to include them in my research. Of these, 4 hospitals responded (10% of general hospitals) and accepted to participate in the research. My research was conducted in the form of an electronic questionnaire. Respondents completed the questionnaire anonymously. Validly completed and returned questionnaires were taken into account for data processing. The questionnaire was considered valid if it had no more than two missing answers.

In my research, I used simple random sampling, which ensures that each member of the population is selected with equal probability. I intended to study 20% (586) of the employee population (2933 in total) of the four hospitals and this was done by sending out an email, randomly selecting the subjects. 420 employees completed the questionnaire (71,67% responded, 28,33% did not/refused to respond). The questionnaire was completed anonymously and voluntarily. Regarding the inclusion criteria, it should be highlighted that the age composition of the respondents in the survey ranged from 20 to 69 years, with a roughly equal gender ratio (female, male), and that the respondents had different educational levels (high school, college and university) and professional experience (number of years in the health sector), and worked in different jobs (doctor, nurse, other employee). All employees with a medical doctor's qualification, regardless of their title (hospital ward doctor, outpatient doctor, head of department and other managerial positions) and specialisation (general practitioner, specialist) are included in the category of medical doctor. The nursing category includes nurses with secondary school, college and university degrees, regardless of their position (ward nurse, head nurse, ambulatory care assistant), and the other category includes all other hospital staff with health and non-health qualifications (laboratory staff, psychologists, administrative and technical staff). On the basis of professional experience (years in healthcare), staff were classified into seven groups (less than 1 year, 1-5 years, 6-10 years, 11-15 years, 16-20 years, 21-25 years and 26 or more years of healthcare experience)

In my research, I used a questionnaire created by Google Forms, which aims to evaluate the opinion of employees on certain aspects of the management of healthcare institutions and their consequences and impacts. The questionnaire contained 6 sets of questions:

- The first part of the questionnaire was used to record the independent variables describing the sample.
- The second part of the questionnaire related to the human resource management in their workplace and included statements grouped into five subgroups
  I. Evaluation of human resource management from a leadership perspective;
  II. evaluation of human resource management from the perspective of employee engagement;
  III. evaluation of human resource management in terms of knowledge availability;

IV. Evaluating human resource management from a workforce optimisation perspective;

V. Assessment of human resource management in terms of learning capacity;

- The third set of questions concerned morale and workplace ethics.
- The fourth set of questions concerned the quality of health service.
- The fifth set of questions concerned the satisfaction of healthcare workers with their jobs.
- The sixth group of questions concerns the intention of health workers to move abroad.

Each set of questions in the questionnaire covers the specific variables that form the basis of my research on human resource management. These variables are derived from metrics in previous research and theories related to the literature on the topic. The second set of questions is based on the tools for human resource management developed by Bassi and McMurrer ("Drivers of human resources") (Bassi & McMurrer, 2007). The third set of questions was based on the questionnaire on moral foundations developed by Haidt and Graham (Moral Foundations, 2025). The fourth set of questions was based on the questionnaire of the Anti-Corruption Agency of the Republic of Serbia for risk control and analysis of the success of self-assessment of public authorities/health systems (Agencija za borbu protiv korupcije Republike Srbije, 2013). The fifth set of questions is based on the questionnaires of the annual surveys on the satisfaction of employees of public health institutions conducted by the Serbian Institute of Public Health "Dr Milan Jovanovic Batut" (Institut za javno zdravlje Srbije " Dr Milan Jovanović Batut", 2020) and the sixth set of questions is based on the questions of the cross-sectional and comprehensive survey on the emigration of doctors conducted in Saxony in 2012 (Pantenburg, et al, 2018).

In order to ensure the validity and reliability of the questionnaire used in the research, I applied a multi-stage validation process (content validation and pilot testing). My aim was to create a tool that would truly measure the constructs under study and provide meaningful and reliable results. The reliability (internal consistency) of the scales used in the questionnaire was tested using a Cronbach's alpha index. The alpha values for each subscale ranged from 0.84 to 0.98, indicating good internal consistency.

The primary results from my research were analysed using descriptive statistics methods, Pearson's chi-square test, cross-tabulation analysis, variance homogeneity test, factor analysis, cluster analysis and correlation. The analyses were performed using the Statistical Package for Social Sciencies (SPSS) software, as this software has adequate statistical and data analysis functions.

In addition to the primary research, I used the theoretical assumptions and results of previous research from the literature to write my dissertation, relying on analysis, synthesis, abstraction, generalisation, deductive reasoning and inductive reasoning as research methods.

5. Research results

In this chapter, I would like to present the results of my online survey, which were analysed using different statistical methods. In total, 420 questionnaires were completed in the four general hospitals listed, of which 395 were evaluated. 41% of the respondents (162) were male and 59% (233) were female. In terms of job role, doctors made up 34% (133), nurses 57% (227) and other staff 9% (35). In addition, the responding employees were grouped by age, work experience and education level and analysed accordingly. In the four general hospitals surveyed, a total of 2 933 employees worked during the study period (General Hospital of Subotica: 1236; General Hospital of Senta: 410; General Hospital of Sremska Mitrovica: 1025; General Hospital of Aleksinac: 262). In my research, I analysed the evaluable questionnaires completed and submitted by 395 respondents, which represents 13.46% of the total number of employees in the four hospitals surveyed. On this basis, we can say that the sample can be considered representative of the employees of the four general hospitals.

5.1. Evaluation of human resource management in the workplace

The research results show that of all the human resource management aspects, the general hospital employees who participated in the research scored the highest on collaboration and teamwork, knowledge availability and administrative systems in the workplace. The lowest scores were given to work tools (3,06), the specificity of the workplace appraisal system (3,13), workplace training (3,39), implementation skills (3,47) and information sharing (3,50).

Respondents are least satisfied with the working tools. This suggests that the facilities (medical, technical, office, rest and hygiene areas) in the general hospitals surveyed need to be upgraded, modified and improved. The working schedule also needs to be revised to better meet the needs and the mental and physical abilities of the staff. A similar assessment was made of the assessment system, more specifically the way and extent to which their organisation monitors employment trends and the data needed to improve service efficiency and user satisfaction. This is an activity that employees consider definitely needs further development.

The Cronbach's alpha for the internal consistency of the scale (Likert scale from 1 to 5) used for all questions (groups of questions) on human resource management in the workplace was 0,978 (for 20 questions, with a total sample of 395 participants and 386 valid responses), indicating that this study showed reliable results.

5.1.1. Examining the overall association between the assessment of aspects of human resource management and job roles

I used cross-tabulation analysis to examine the relationship between the assessment of leadership aspects of human resource management in the workplace and job role (doctor, nurse, other category). 50,6% of the respondents rated managerial communication with a response of "I rather agree" (score 4 on the scale) (49,3% of nurses, 51,1% of doctors and 57,1% of other posts). The Chi-square test showed a p=0,033, indicating a statistically significant test. The analysis revealed that job role influences the assessment of leadership communication and that Cramér's V coefficient is 0,145, indicating a weak relationship. Also in terms of leadership aspects, 54,9% of the surveyed employees rated supervisory skills as "I rather agree" (4 on the scale) (57,3% of nurses, 52,6% of doctors and 48,6% of other employees), while 31,4% of other employees rated supervisory skills as "I strongly disagree" (1). Chi-squared test showed a $p \leq 0,001$, indicating a statistically significant test and that job role influences the assessment of managerial supervisory skills. Cramér's coefficient V (V=0,201) indicates a moderate relationship. For the inclusion skills, which are also related to leadership aspects, and

implementation skills, the Chi-square test indicates that the relationship is not statistically significant, with p=0,053.

In the case of job descriptions, time management and job appraisal systems for employee engagement aspects, the cross-tabulation analysis cannot be performed because the condition that the proportion of cells with an expected value less than 5 should not exceed 20% is not met. In the case of management commitment towards employees, the Chi-square test indicates a statistically significant test (p=0,011) and the Cramér coefficient V indicates a weak relationship (V=0,158). Regarding the adequacy of management commitment towards employees, 31,4% of other employees, 9,7% of nurses and 10,5% of doctors "Strongly disagree".

Regarding the association between the assessment of the knowledge availability criteria for workplace human resource management and the job role, the cross-tabulation analysis cannot be performed for the knowledge and experience availability at the workplace, as the condition for the analysis is not fulfilled. The Chi-squared test indicates a statistically significant relationship between all other knowledge availability aspects in the questionnaire and job role, and the Cramér coefficient V for information sharing shows a weak relationship, while for collaboration and administrative systems in the workplace a moderate relationship (Table 5). Examining the association between collaboration, teamwork and job role, cross-tabulation analysis revealed that in all three job roles (nurse, doctor, other), the highest proportion of respondents rated collaboration and teamwork as "I rather agree" (4) (63,4% of nurses, 58,6% of doctors, 54,3% of other workers).

Table 5: Associations between knowledge accessibility criteria and job role (doctor, nurse, other category)

The aspect	Pearson chi-square, asymptotic significance (2-sided)	Cramér's V
The collaboration	<0,001	0,226
The information sharing	<0,001	0,197
The administrative systems used in the workplace	<0,001	0,208

Source: own editing based on results of own research, 2024

Looking at the relationship between workforce optimisation aspects and job roles, it can be seen that for work processes, responsibilities, recruitment and work tools, the cross-tabulation analysis cannot be performed as the condition for analysis is not fulfilled. The cross-tabulation analysis of working conditions also revealed that the highest proportion of respondents to the questionnaire survey rated this aspect with a "I rather agree" (4 on the scale). Moreover, this proportion is above 50% in all job groups (doctors 60,9%, nurses 60,3%, other employees 51,4%). According to the Chi-square test, there is a statistically significant association between working conditions and job role (p=0,001) and the Cramér coefficient V indicates a weak association (V=0,180).

For the learning capacity aspects, the cross-tabulation analysis cannot be carried out as the analysis condition is not met.

In summary, the associations between the aspects of human resource management in the workplace and the job role, which can be examined by cross-tabulation analysis, show that all three job groups of healthcare workers (doctors, nurses, other staff) of the general hospitals in Serbia that participated in the research, had the highest proportion of responses of "I rather agree" (4 on the scale) for all aspects.

Thesis 2: The survey found that there is indeed a statistically significant association between employee job role (doctor, nurse, other staff) and the assessment of leadership, employee engagement, knowledge availability, workforce optimisation and learning capacity aspects of workplace human resource management (excluding managerial inclusion and implementation skills), but only a weak and moderate association between these variables.

5.2. Results on workplace ethics and morals

Employees of the surveyed general hospitals in Serbia were asked to answer 23 questions on morals and workplace ethics. The table below shows the percentage of possible answers (no, don't know, partly agree, yes, absolute) for each question (Table 6).

Table 6: Assessment of the questions on morals and workplace ethics (N=395)

Questions	Answers in absolute numbers (%)				
	No	Don't know	Partly agree	Yes	Absolute
Have you ever treated some patients differently from others in the course of your work? (393)	216 (55%)	53 (13,5%)	78 (19,8%)	46 (11,7%)	0 (0%)
Have you ever openly shown that you do not respect authority? (395)	279 (70,6%)	36 (9,1%)	66 (16,7%)	13 (3,3%)	1 (0,3%)
Do you usually show concern for the weak and vulnerable? (395)	14 (3,5%)	29 (7,4%)	38 (9,6%)	216 (54,7%)	98 (24,8%)
Have you ever behaved unfairly in any aspect of your work?(394)	227 (57,6%)	120 (30,5%)	43 (10,9%)	2 (0,5%)	2 (0,5%)
Have you ever done any actions by which you betrayed your work group? (394)	337 (85,5%)	46 (11,7%)	8 (2,0%)	1 (0,2%)	2 (0,5%)
Do you usually respect social traditions or not? (393)	6 (1,5%)	10 (2,5%)	52 (13,2%)	282 (71,8%)	43 (10,9%)
Have you ever committed an act in the course of your employment that you consider abhorrent? (394)	335 (85,0%)	48 (12,2%)	6 (1,5%)	5 (1,3%)	0 (0%)
Have you ever acted cruelly towards someone at work? (394)	334 (84,8%)	45 (11,4%)	14 (3,5%)	1 (0,2%)	0 (0%)
Have you ever failed to show respect for the patient's rights? (394)	339 (86,0%)	55 (14,0%)	0 (0%)	0 (0%)	0 (0%)
Do you believe in God and do you act accordingly?(395)	28 (7,1%)	40 (10,1%)	65 (16,5%)	187 (47,3%)	75 (19%)
Do you believe that compassion for the sufferers is the most important virtue? (395)	32 (8,1%)	29 (7,3%)	114 (28,9%)	164 (41,5%)	56 (14,1%)
Do you support the importance of teaching all children to obey and respect authority? (395)	51 (12,9%)	37 (9,4%)	74 (18,7%)	129 (32,7%)	104 (26,3%)
Do you think that we should not be allowed to do wrong, even if we are not hurting anyone? (395)	43 (10,9%)	15 (3,8%)	108 (27,3%)	219 (55,4%)	10 (2,5%)

Do you believe that doing a good thing is better than doing a bad thing? (395)	0 (0%)	50 (12,7%)	58 (14,9%)	194 (49,1%)	93 (23,5%)
Do you think it's the worst possible thing to hurt a helpless animal? (395)	16 (4,0%)	64 (16,2%)	49 (12,4%)	202 (51,1%)	64 (16,2%)
Do you believe that justice is the most important social requirement?(393)	1 (0,2%)	32 (8,1%)	68 (17,3%)	236 (60,0%)	56 (14,2%)
Do you believe in being loyal to your family, even if a family member has done something wrong? (394)	19 (4,8%)	23 (5,8%)	105 (26,6%)	196 (49,7%)	51 (12,9%)
Do you believe that men and women have different social roles? (394)	110 (27,9%)	17 (4,3%)	136 (34,5%)	113 (28,7%)	18 (4,6%)
Do you believe that it is not right to kill a human being under any circumstances? (395)	0 (0%)	15 (3,8%)	57 (14,4%)	186 (47,0%)	137 (34,7%)
Is it morally wrong for the children of the wealthy to inherit a lot of money and the poor not to? (395)	109 (27,6%)	147 (37,2%)	70 (17,7%)	63 (15,9%)	6 (1,5%)
Do you think it is more important to be a good team player than self-expression?(395)	39 (9,9%)	15 (3,8%)	104 (26,3%)	195 (49,4%)	42 (10,6%)
If you were a soldier and disagreed with your superior's orders, would you still obey them because it would be your duty?(395)	32 (8,1%)	152 (38,5%)	76 (19,2%)	122 (30,9%)	13 (3,3%)
Do you believe that spiritual purity is an important and valuable virtue? (395)	1 (0,2%)	9 (2,3%)	2 (0,5%)	269 (68,1%)	114 (28,9%)

Source: own editing based on results of own research, 2024

5.2.1. Associations between the assessment of ethical questions and respondents' gender, age and job role

The associations between the answers to the questions on morals and workplace ethics and the gender, age and job role (doctor, nurse, other employee) of the participants were examined. The aim was to identify possible differences between the moral and ethical attitudes of respondents of different genders, different ages and with different job functions.

In terms of gender, respondents were classified into 2 groups (female and male). In terms of job role, respondents were classified into doctors, nurses and other staff, and into 10 groups by age (20-24 years, 25-29 years, 30-34 years, 35-39 years, 40-44 years, 45-49 years, 40-54 years, 55-59 years, 60-64 years, 65-69 years).

To determine whether there is an association between the two categorical variables (gender/job role/age and rating), I used Pearson's Chi-squared test.

The research results showed that only the question “is it morally wrong for the children of the wealthy to inherit a lot of money and the poor not to” was not significantly associated with the respondents' gender and their assessment. For all the other questions (22 aspects), the Chi-square test indicates a statistically significant test and that the variables are associated.

When examining the association between the answers to the questions on morals and work ethics and the respondents' job role, it can be seen that there is no significant association between the variables for 8 aspects. For all other questions (15 aspects), the Chi-square test indicates a statistically significant test. For 5 aspects, there is no significant association between respondents' answers and their age. For all other questions (18 criteria), the Chi-square test indicates a statistically significant test.

Based on the associations between the responses to the questions on morals and work ethics and the respondents' gender (233 women, 162 men), job role (133 doctors, 227 nurses, 35 other employees) and age (10 age groups), it can be concluded that the highest number of significant associations between the variables is found for respondents of different genders (22 aspects), with moderate associations for 15 aspects and weak associations for 7 aspects. For respondents of different ages, a significant association between the variables is found for 18 ethical aspects (11 moderate, 7 weak), while for 5 questions there is no association. Among the survey categories, respondents with different job roles have the lowest number of significant relationships between variables (15 out of 23 aspects), with only 4 aspects showing a moderate relationship and 11 aspects showing a weak relationship (Table 7).

Table 7: Number of significant associations between variables for respondents of different gender, job role and age (N=395)

Category	No association	Association exists	Weak association	Moderate association
Gender	*1 szempont*	*22 szempont*	*7 szempont*	*15 szempont*
Job role	*8 szempont*	*15 szempont*	*11 szempont*	*4 szempont*
Age	*5 szempont*	*18 szempont*	*7 szempont*	*11 szempont*

Source: own editing based on results of own research, 2024

Of the ethical issues mentioned, I would highlight the question of "it is not right to kill a human being under any circumstances", partly because of its health implications, as it is closely linked to the ethical dilemma of euthanasia. Euthanasia is the deliberate termination of life by a doctor at the explicit request of the patient (Verhofstadt, et al., 2024). This is an ethical problem that affects the whole of society. 81,7% (47% yes, 34,7% absolute) of all respondents (395) believe that it is not right to kill a human being under any circumstances, 14,4% partly agree, while 3,8% could not give a clear answer on this issue. Statistically significant, moderate associations can be found between the responses of the research participants to this question and their gender and age. There is also a statistically significant weak association between the responses and the respondents' job role.

The assessment and analysis of the aspects related to workplace ethics and morality showed that healthcare workers in Serbian general hospitals participating in the research responded in accordance with socially accepted moral standards and healthcare ethics in European culture and Christian beliefs. The majority of the respondents agree that it is not right to kill a person under any circumstances, partly agree that the social roles of men and women differ, and have no strong opinion on whether they would obey the orders of their superior in a hierarchical organisation based on service (e.g. a military hierarchical organisation), even if they disagree with them. In addition, it should be pointed out that the gender, job role and professional experience (number of years in the health sector) of the staff surveyed partly influenced their assessment of moral and workplace ethics.

Thesis 3: In most of the questions on morals and work ethics (22 aspects), a moderate to weak statistically significant association between the gender of employees and their responses can be found. For only one aspect ("is it morally wrong for the children of the wealthy to inherit a lot of money and the poor not to") is there no significant association between the variables. When examining the association between the age of the responding health workers and the questions on morality and work ethics, it can be seen that there is no significant association between the variables for only 5 aspects, while for most aspects (18 aspects) there is a weak to moderate significant association.

5.3. Assessing the quality of the health service

Respondents to the survey were also asked questions about the quality of healthcare services. The Cronbach's alpha for internal consistency of the scale used for the evaluation (Likert scale from 1 to 5) was 0,902 (for 8 questions, with a total sample of 395 participants and 390 valid responses). This indicates that the study showed reliable results. The responses of employees of different job roles were analysed by sub-groups according to their professional experience.

That the employees in their healthcare institution have sufficient knowledge and experience and that they do their job professionally was rated highest on average (4,16) by those with 11-15 years of experience in the doctors' group, with a score of 4,07 by those with 21-25 years of experience in the nurses' group (and 5,00 for the nurses' group of one respondent with <1 year of experience), and with a score of 4,62 by those with 1-5 years of experience in the other staff group. The lowest mean score (3,33) for this aspect was given by the group of other staff with 21-25 years of experience.

The fact that their health institution has a sufficient number of health and non-health professionals was rated highest on average (3,16) by doctors with 11-15 years of experience, nurses with 21-25 years of experience (2,93) and other staff with 1-5 years of experience (2,50). Other staff with 21-25 years of experience (2,33) rated this aspect the lowest of all respondents.

Furthermore, I examined the perceptions of the surveyed staff regarding that all patients in their institution receive the same quality of service during admission and treatment. On average, doctors with 11 to 15 years of experience (3,84), nurses with 1 to 5 years of experience (3,76) and other staff with 1 to 5 years of experience (4,12) agreed with this statement. Of all the groups, those with 21 to 25 years of experience (2,33) rated this aspect the lowest.

Doctors with 26 or more years of experience (4,92), nurses with 1-5 years of experience (4,70) and other staff with 1-5 years of experience (4,25) were the most likely to agree that they always strive to do their job to the best of their ability, even when it is not being monitored. The least in agreement with this aspect are other employees with 21-25 years and 26 and more years of professional experience. Both groups scored an average of 3,67 on this aspect.

Based on the results presented above, it can be concluded that groups of workers with different job roles and professional experience (number of years in healthcare) rated aspects of healthcare quality differently in terms of average scores.

5.3.1. Associations between the different job roles of employees and their assessments of the quality of healthcare

To investigate the association between the job roles of employees and their assessment of the quality of healthcare, I used the cross-tabulation analysis and Chi-square test presented earlier. For the following questions, the cross-tabulation analysis cannot be performed because the condition that the proportion of cells with an expected value less than 5 cannot be more than 20% is not met:

- "The employees of your healthcare institution are professional and have sufficient knowledge and experience to work with patients",
- "You believe that your supervisor is satisfied with the work you do",
- "You believe that all your patients are satisfied with the healthcare you provide"
- "You always strive to do your job to the best of your ability, even when it is not being monitored".

Of the other four questions in the questionnaire on the quality of healthcare, the answers to only one question ("Do you think that the admission procedure is understandable for patients coming to your institution") showed the association with the job role. Agreement that the admission process is understandable for patients coming to their institution and the respondents' role were

significantly associated using the Chi-square test (p=0,041) and the Cramér coefficient V indicates a weak association (V=0,143). More specifically, this means that the respondents' job role influences the extent to which they think patients understand the admission process at their institution. The largest proportion of nurses (35,2%) rated their admission process as a 4, the largest proportion of doctors (41,4%) also rated it as a 4, while the largest percentage of other staff (25,7%) rated their admission process as a 3.

5.3.2. Correlation analysis of health workers' ratings of their supervisors' and patients' satisfaction with the quality of healthcare they provide

Pearson's correlation coefficient (r=0,425) indicated a moderately strong positive correlation between health workers' perceptions (ratings) of whether their supervisor is satisfied with their job and whether their patients are satisfied with the healthcare they provide. Based on the employees' perceptions, there is evidence that the satisfaction of the supervisor (manager) at work also increases with the increase in patient satisfaction. The hypothesis test also confirms the existence of the relationship, with significance <0,001.

Thesis 4: Among the factors related to the quality of healthcare, responses on the clarity of the admission procedure for patients arriving at their institution were associated with the job roles of healthcare workers (Cramer's coefficient V indicated a weak association).
A correlation analysis between health workers' opinions (ratings) on whether their supervisor is satisfied with their job and whether their patients are satisfied with the healthcare provided indicated a moderately strong positive correlation, suggesting that job supervisor (manager) satisfaction also increases with increasing patient satisfaction.

5.4. Job satisfaction of healthcare workers in Serbian general hospitals surveyed

5.4.1. Analysis of the overall job satisfaction

Survey participants were asked to answer a question on overall job satisfaction. The possible answers offered in the questionnaire were: very dissatisfied; dissatisfied; neutral position, neither satisfied nor dissatisfied; satisfied; very satisfied. A total of 394 responses were received to this question, out of a total of 395 questionnaires that could be evaluated. The percentage of very dissatisfied was 6,60%, the percentage of dissatisfied was 5,10%, the percentage of neither satisfied nor dissatisfied was 27,10%, the percentage of satisfied was 51,10%, and the percentage of very satisfied was 9,90% (Figure 7). From this result, it can be concluded that more than half of the employees of the general hospitals in Serbia that participated in the survey are satisfied with their work.

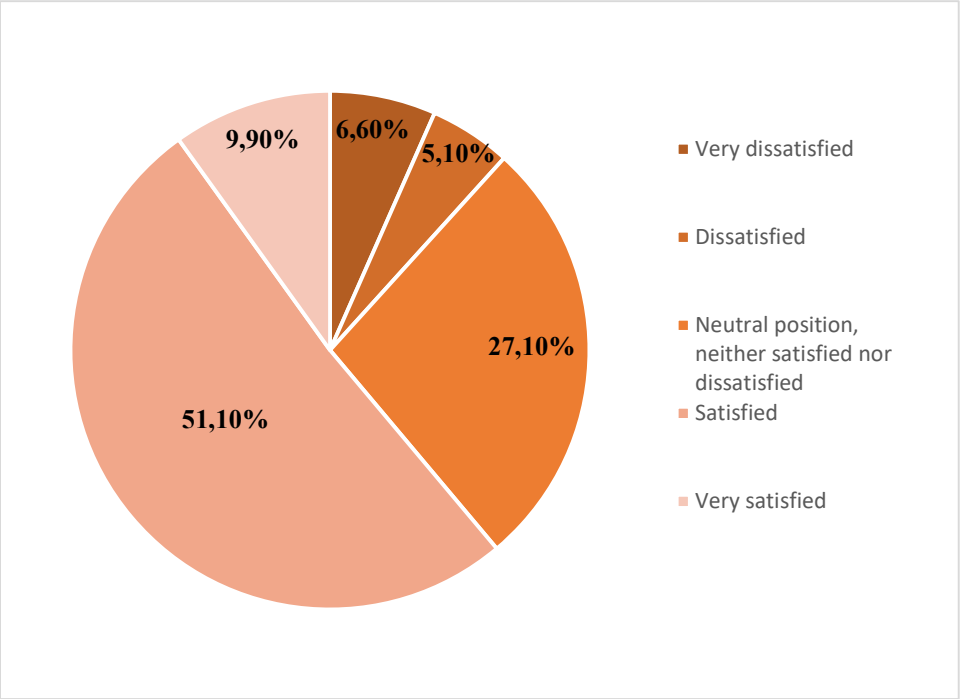

Figure 7: Job satisfaction of employees in surveyed four general hospitals in Serbia (percentage distribution) (N=394)

Source: own editing based on results of own research, 2024

The Chi-squared test revealed a significant association between satisfaction scores and respondents' job roles ($p < 0,001$) and gender ($p < 0,001$). The Cramér coefficient V also indicates a moderate relationship for job title (V=0,215) and gender (V=0,235). Also using the Chi-square test, no significant association was found between satisfaction scores and professional experience (years in healthcare) or education (university, college, high school). This means that the number of years of work experience and the level of education do not influence job satisfaction.

A cross-tabulation analysis of satisfaction and job role shows that the highest proportion of very dissatisfied is in the group of other employees (28,6%), while the highest proportion of very satisfied is in the group of nurses (12,4%). 57,1% of doctors, 49,1% of nurses and 42,9% of other employees are satisfied. 3,8% of doctors, 5,8% of nurses and 5,7% of other employees were dissatisfied. Also based on the cross tabulation analysis, 13% of men are very dissatisfied, 6,2% dissatisfied, 23,6% neither satisfied nor dissatisfied, 50,5% satisfied and 6,8% very satisfied with their job. For women, 2,1% very dissatisfied, 4,3% dissatisfied, 29,6% neither satisfied nor dissatisfied, 51,9% satisfied and 12% very satisfied.

5.4.2. Analysis of the different aspects of job satisfaction

Employees of the general hospitals in Serbia that participated in the survey were asked to answer 12 questions on different aspects of job satisfaction. The Cronbach's alpha index for internal consistency of the scale used in the study, ranging from 1 to 5, was 0,964 (for a total sample of 395 participants, of which 386 were valid responses). This allows us to conclude that the study showed reliable results.

For a more detailed assessment of the different aspects of job satisfaction, the responses of the surveyed employees were analysed in groups by job role and professional experience. Respondents gave the highest scores to direct collaboration with colleagues and managers, with

an average of 4,17. Doctors rated this aspect with 4,18, nurses with 4,12 and other staff with 4,51. Respondents with 21-25 years of professional experience gave a score of 4,35, respondents with 26 and more years of professional experience a score of 4,24, one respondent with less than 1 year of professional experience a score of 5, and respondents with 16-20 years of professional experience a score of 3,96 for direct collaboration with colleagues and managers.

Patients' attitudes towards healthcare workers were rated by respondents with an average score of 3,69. This was the sixth highest rated aspect, after direct collaboration with colleagues and managers, autonomy in work (3,84), opportunity to use professional knowledge (3,78), opportunity for professional development and training (3,75) and respect for their work (3,73). Within these, those with 1-5 years of professional experience scored the highest (3,77).

The employees of the general hospitals in Serbia that participated in the survey rated the financial compensation/reward for their work the lowest of all the satisfaction aspects, with an average score of 2,92. Doctors rated this aspect with 3,03, while nurses and other staff also rated it with 2,86. Looking at the different age groups, those with 16-20 years of professional experience gave a score of 2,73, one respondent with less than 1 year of professional experience gave a score of 2, those with 6-10 years of professional experience gave a score of 3,09 and those with 1-5 years of professional experience gave a score of 3,05.

5.4.3. Examining the association between health workers' job title, professional experience and satisfaction with different work-related aspects using analysis of variance

In the next step, I examined whether there is an association between the job role and professional experience of healthcare workers and satisfaction with different aspects of the job, using analysis of variance (one-way ANOVA). The ANOVA results showed that only for the aspect of direct collaboration with colleagues and managers, there were differences between the groups, with means not matching (significance 0,023).

The results of the analysis of variance show that there are no differences between groups of healthcare workers with different levels of professional experience in the evaluation of different aspects of satisfaction, with high significance for all the aspects indicated.

The Estimated marginal means graph (Figure 8) shows the average satisfaction of each group with direct collaboration with colleagues and managers, based on job role and professional experience. The largest differences between subgroups are observed in the group of other employees.

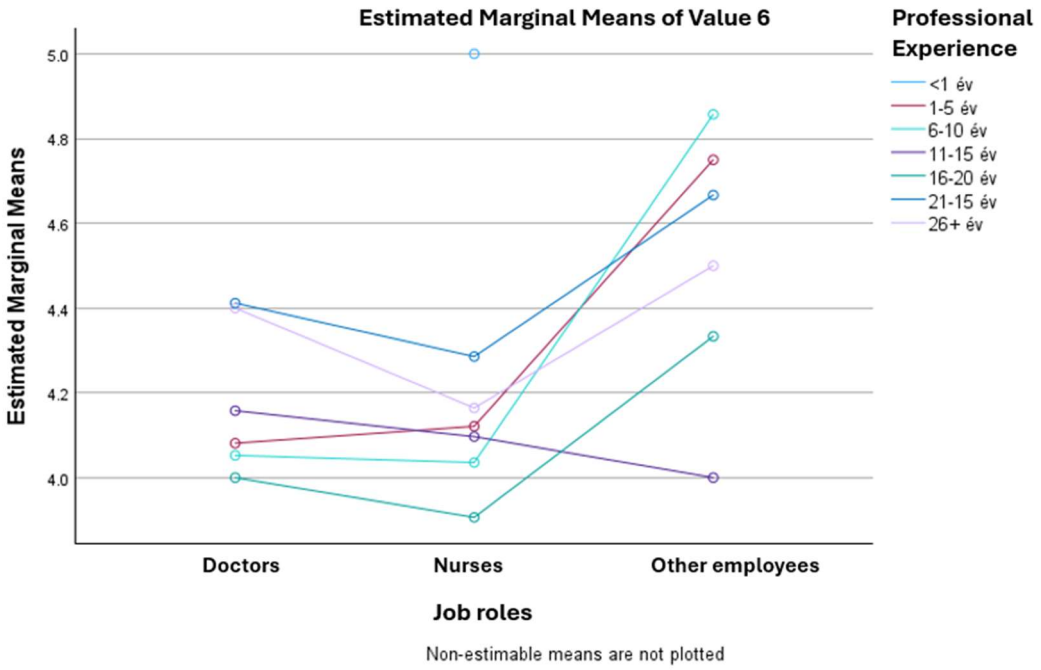

Figure 8: Estimated thresholds for satisfaction with direct collaboration with colleagues and managers

Source: own editing based on results of own research (SPSS software used to create the graph), 2024

Table 8 shows, in terms of significance, that job role influences satisfaction with the aspect examined, while work experience and job role and experience combined do not.

Table 8: Examining the overall associations between satisfaction with direct collaboration with colleagues and managers and job role, work experience and the combined effect of job role and experience

	Error Sum of Squares	df	Mean squared error	F	Sig.	Partial Eta Squared
Job roles* Professional Experience	4,305	10	0,430	0,681	0,743	0,018
Job roles	4,506	2	2,253	3,562	0,029	0,019
Professional Experience	4,230	6	0,705	1,115	0,353	0,018

Source: own editing based on results of own research, 2024

The next aspect examined in more detail was the financial compensation for work. The Estimated Marginal Means (Figure 9) shows that the largest difference in average satisfaction between teams with different years of experience is seen in the other staff category, while the smallest difference is seen in the nurse category. The results can also be interpreted as showing that in the group with 21-25 years of experience, doctors are the most satisfied with job compensation and other employees the least satisfied, while in the group with 16-20 years of experience, doctors are the least satisfied with job compensation and other employees the most satisfied.

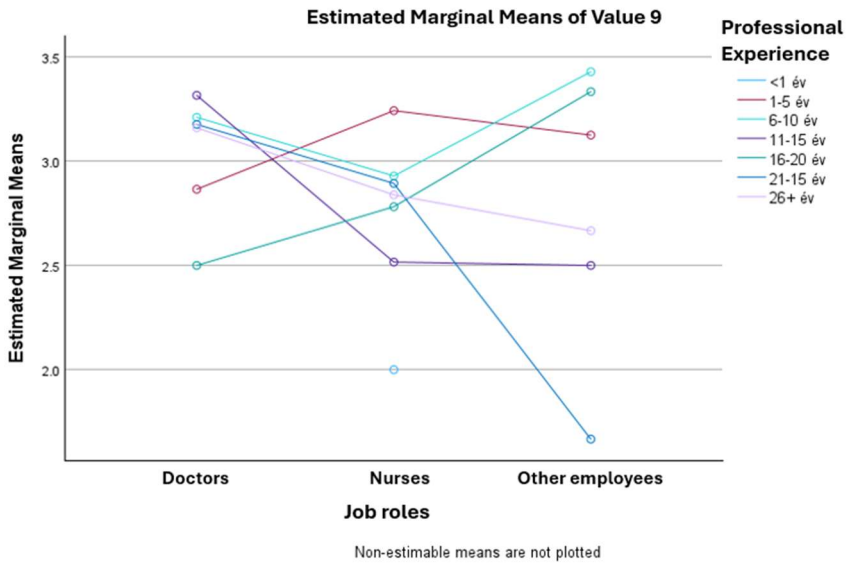

Figure 9: Estimated thresholds for satisfaction with financial compensation for work
Source: own editing based on results of own research (SPSS software used to create the graph), 2024

When testing the effects between the individual tests (job role and work experience), the significance of the test shows that neither job role (p=0,406) nor work experience (p=0,510), nor these two independent variables together (p=0,205), have an effect on satisfaction with job compensation.

5.4.4. Correlation between job satisfaction variables

First, the relationship between respect and appreciation for work and financial compensation for work was examined using bivariate correlation analysis. Participants in the study rated the respect and appreciation of their work at an average of 3,73 (on a scale of 1 to 5), while the average rating of the financial compensation for their work was 2,92. Pearson's correlation coefficient, r value, was 0,715, indicating a stronger than medium positive correlation, or more precisely, a moderately strong correlation and a direct proportionality between respect for work and its compensation. Based on the above, we can conclude with a 99,9% probability that the more satisfied the responding health workers are with their job compensation, the more satisfied they are with the respect and appreciation of their work.

I also analysed the correlation between respect and appreciation of work and direct collaboration with colleagues and managers. Pearson's correlation coefficient r=0,689, indicating a moderately strong correlation. The correlation coefficient is significant ($p < 0,001$) and on this basis we reject the null hypothesis that there is no linear relationship between the two variables.

An examination of the respect and appreciation of work and the adequacy of the facilities available in the institution revealed that the Pearson correlation coefficient for the two variables was r=0,102, indicating a weak positive correlation. The correlation coefficient is p=0,043, thus rejecting the null hypothesis of no linear relationship.

A strong correlation level was found between respect and appreciation of work and several aspects of satisfaction: patients' attitude towards health workers (r=0,724), opportunities for professional development and training (r=0,778), autonomy and decision-making in work (r=0,862), opportunity to use knowledge (r=0,877), opportunity to present ideas (r=0,795). In all the cases mentioned, the correlation coefficient is significant ($p < 0,001$).

5.4.5. Factor analysis

The assessment of the 12 aspects of health workers' job satisfaction allows factor analysis to be carried out, and the high correlation coefficients (r) and near-zero significance in the matrix table suggest that the data are suitable for factor analysis.

Based on the Kaiser criterion, a 3-factor solution was selected. The three factors together explain 85,119% of the variance. The factors defined on the basis of the rotated factor matrix were named as follows (the criteria associated with each factor are given in brackets):

- Factor 1: Appreciation (opportunity to present your ideas to your superiors; financial reward for your work; opportunities for professional development and training; patient attitudes towards you and your colleagues; respect and appreciation for your work)
- Factor 2: Organisation of work (management and organisation of work in your healthcare institution; amount of time available in your institution to carry out work and care for patients; clear guidance from superiors about what is expected of you in carrying out your work; adequacy of equipment available in your institution to carry out healthcare)
- Factor 3: Collaboration (direct collaboration with colleagues and managers; autonomy in work and decision-making; ability to use your professional knowledge, skills and abilities in your work)

In the cluster analysis, respondents were classified into homogeneous groups using variables generated by factor analysis (Table 9)

Table 9: Clusters of job satisfaction factors and their characteristics (N=389)

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6
N	67	60	139	39	65	19
Percentage (%)	**17,2%**	**15,4%**	**35,7%**	**10%**	**16,7%**	**4,9%**
F1 (Appreciation)	0,58	0,62	0,65	-1,33	-1,36	-1,35
F2 (Organisation of work)	-1,52	0,47	0,50	0,73	0,14	-1,81
F3 (Collaboration)	0	0,82	-0,33	-1,64	1,31	-1,53
Naming of clusters	**Employees satisfied with appreciation**	**Employees satisfied with all factors**	**Employees satisfied with both appreciation and organisation of work**	**Employees satisfied with the organisation of work**	**Employees satisfied with the collaboration**	**Employees dissatisfied with all factors**

Source: own editing based on results of own research, 2024

Based on the data presented, it is clear that the largest percentage of respondents belong to the group of those satisfied with both appreciation and work organisation, while the smallest percentage belong to the group of those satisfied with all factors.

Thesis 5: The majority of respondents (more than half) were satisfied with their job and working conditions, almost a third were neither satisfied nor dissatisfied, while the proportion of dissatisfied was only 5,1% and the proportion of very dissatisfied was 6,6%. Of all the satisfaction aspects, the lowest score was given to the financial compensation/reward for their job, with an average score of 2,92. Of the 12 aspects of satisfaction rated, direct collaboration with colleagues and managers is the aspect rated highest (4,17 on average), indicating a high level of satisfaction in this area. In addition, a moderately strong correlation was found between respect, appreciation and financial compensation/rewards for work, direct collaboration with colleagues and managers, and patients' attitudes towards health workers.

5.4.6. Examination of feelings of tension, stress and pressure at work

Participants in the survey were asked how stressed or under pressure they felt at work. 6,30% of the respondents did not feel stressed or under pressure at work at all, 14,90% a little, 53,70% moderately, 13,70% significantly and 11,40% very significantly.

Chi-squared test shows that there is no significant difference between respondents' feelings of tension, stress and pressure at work and their gender (p=0,194), job role (p=0,382), education (p=0,602) and work experience (p=0,053). However, the results of the cross-tabulation analysis show that the proportion of people who do not feel stressed or stressed at work is lowest in the group with an university degree (3,9%) and highest in the group with a secondary school degree (8,6%). In addition, the overall proportion of those who feel very significantly and significantly stressed is lowest in the group of other employees (12%), while it is higher and almost equal in the groups of doctors (25,6%) and nurses (25,5%).

5.4.7. Examination of the work plans for the next five years

The general hospital public health workers in Serbia who took part in the survey were also asked about their plans for their work over the next five years. 32,70% of the respondents are not thinking about changing jobs at all, 49,90% said they would stay in the public sector, 6,60% would work in the private health sector, 5,10% were planning to work outside the health sector or leave the profession and 5,80% were planning to emigrate abroad. This basically shows that a total of 17,50% of the responding health workers plan to leave the public health sector in the next 5 years, while 82,60% do not, with 32,70% of them not thinking about changing jobs at all.

When examining the association between job role and employee plans for the next five years, the Chi-square test (p=0,135) shows that there is no significant association. The correlation between respondents' gender and their work plans for the next five years was also examined using a Chi-square test. The p values obtained (p<0,001) indicate a statistically significant relationship and the Cramér coefficient V indicates a moderate relationship. Thus, in the population under study, the gender of the respondents influences their job plans and aspirations for the next five years, while job assignment does not.

5.5. The willingness to emigrate of health workers in the surveyed Serbian general hospitals

A total of 395 health workers responded to questions on their intention to emigrate. When asked whether they had ever considered moving to another country to work in the health profession, 4,80% of respondents answered "absolutely", 31,40% "yes", 14,40% "partly", 41,30% "no" and

8,10% "don't know" (Figure 10). This shows that the yes and absolute answers accounted for 36,20% of all responses.

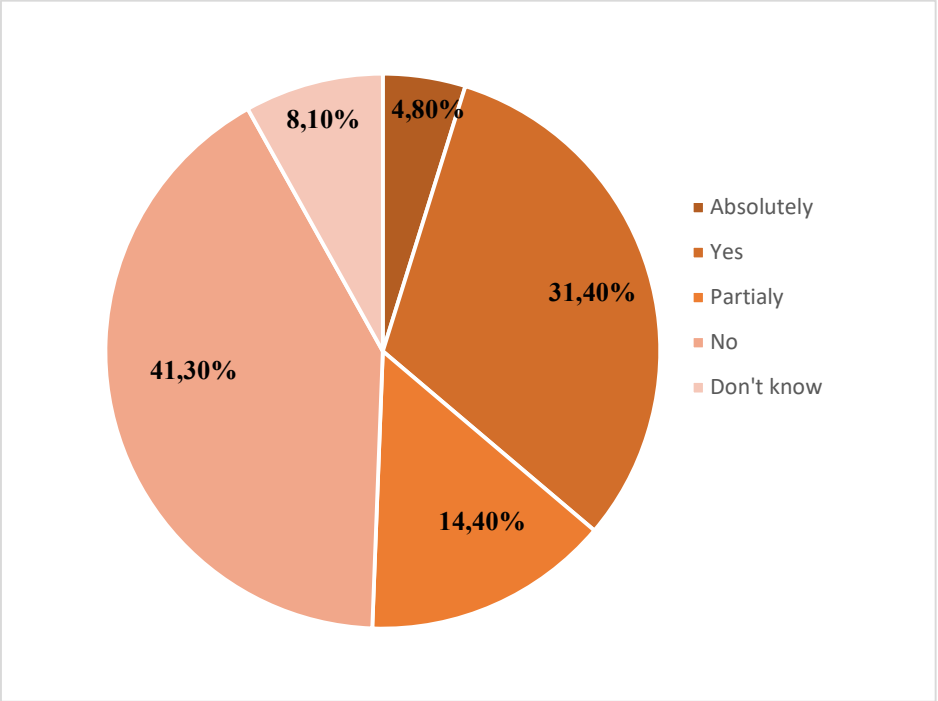

Figure 10: Willingness of Serbian general hospital employees to emigrate abroad (%) (N=395)

Source: own editing based on results of own research (SPSS software used to create the graph), 2024

The cross tabulation analysis shows that 3,9% of women and 6,2% of men answered "absolutely" and 27,5% of women and 37,0% of men answered "yes". Examining the relationship between willingness to emigrate and gender using a Chi-square test (Pearson Chi-square value 7,025; significance p=0,135), it can be concluded that there is no significant difference between the two variables. More specifically, this means that the gender of the respondents does not influence whether they have ever thought about moving to another country to work in the health profession.

When examining the association between the willingness to emigrate and the respondents' job role, the Chi-square test (Pearson Chi-square value 20,088; p=0,010) shows that there is a significant association between the two variables. Cramér's coefficient V indicates a weak association (V=0,159). This could be interpreted as the respondents' job role influencing whether they have considered moving to another country to work in the health profession.

5.5.1. Analysis of factors contributing to the willingness to emigrate

Table 10 shows the assessment of the contribution of the 16 different factors to the willingness to emigrate. Respondents identified the most contributing factor as ability to treat patients in a way that is considered optimal (K7; score 3,70). This was followed by social status (K11; 3,63), salary (K6; 3,53), opportunities for professional development (K5; 3,51) and intellectual stimulation at work (K12; also 3,51).

Table 10: Assessment of factors contributing to the consideration and willingness to emigrate (valid N=380)

	N	Minimum	Maximum	Átlag	Szórás
K1*	392	1	5	3,22	1,080
K2*	394	1	5	3,12	1,199
K3*	395	1	5	3,21	1,251
K4*	395	1	5	3,42	1,230
K5*	394	1	5	**3,51**	1,137
K6*	395	1	5	**3,53**	1,255
K7*	394	1	5	**3,70**	1,037
K8*	393	1	5	**2,96**	1,268
K9*	395	1	5	3,10	1,180
K10*	394	1	5	3,41	1,169
K11*	394	1	5	**3,63**	1,051
K12*	395	1	5	**3,51**	1,111
K13*	395	1	5	3,28	1,141
K14*	391	1	5	3,31	1,151
K15*	392	1	5	3,42	1,072
K16*	395	1	5	3,64	1,210
Valid N	380				

**K1: General work situation; K2: Amount of work and time for family, friends, leisure activities; K3: Relationship with supervisors; K4: Work ethics; K5: Opportunities for professional development; K6: Salary; K7: Ability to treat patients in a way that is considered optimal; K8: Level of stress at work; K9: Equality between women and men in the workplace; K10: Time to perform administrative tasks; K11: Social status; K12: Intellectual stimulation at work; K13: Job security; K14: Relationship with non-medical staff; K15: Quality of medical care; K16: Relationship with patients*

Source: own editing based on results of own research, 2024

The Cronbach's alpha for internal consistency of the Likert scale from 1 to 5 used to assess the factors contributing to the willingness to emigrate was 0,947 (for 16 questions, with a total sample of 395 participants and 380 valid responses).This suggests that the study showed reliable results.

5.5.2. Factor analysis of the factors contributing to the willingness to emigrate

The 16 factor assessments allowed the analysis to be performed, and the Kaiser-Meyer-Olkin criterion value was 0,918 (greater than 0,6), making the variables suitable for factor analysis.

The Kaiser criterion was used to select three factors, which together explain 77,089% of the variance. The factors determined from the rotated factor matrix were named as follows (the criteria associated with each factor are shown in brackets):

- Factor 1: Factors directly related to work (salary; opportunities for professional development; intellectual stimulation at work; time to perform administrative tasks; the ability to treat patients in a way that is considered oprimal; level of stress at work; relationship with patients; relationship with supervisors; amount of work and time for family, friends, leisure activities)
- Factor 2: The general safety, ethical and social factors (work ethics; relationship with non-medical staff; social status; job security; general work situation)
- Factor 3: Quality and workplace equality factors (quality of medical care; equality between women and men in the workplace)

Cluster analysis was used to classify respondents into homogeneous groups using the variables generated in the factor analysis (a total of 380 cases were included, 7 cluster solutions were analysed) (Table 11).

Table 11: Clusters based on factors contributing to the willingness to emigrate and their characteristics (N=380)

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7
N	78	64	29	44	71	33	61
Percentage	**20,5**	**16,8**	**7,6**	**11,6**	**18,7**	**8,7**	**16,0**
F1	0,52	-0,82	-1,59	-0,11	0,51	-1,52	1,24
F2	-0,48	0,95	-0,15	1,44	-0,94	-1,43	0,51
F3	-0,79	1,25	0,09	-1,08	0,78	-1,64	-0,50
Naming of clusters	**F1 contributes to the willingness to emigrate**	**F2 and F3 contribute to the willingness to emigrate**	**F3 contributes to the willingness to emigrate**	**F2 contributes to the willingness to emigrate**	**F1 and F3 contribute to the willingness to emigrate**	**The factors listed do not substantially contribute to the willingness to emigrate**	**F1 and F2 contribute to the willingness to emigrate**

Source: own editing based on results of own research, 2024

Table 11 shows that cluster 1 is the largest cluster in terms of the number (percentage) of respondents to the survey, which includes respondents who consider that only factors directly related to work contribute to the willingness to emigration.

Thesis 6: The majority of respondents (41,3%) have not at all considered moving to another country to work in the health sector, while 36,2% have been considering it and 14,4% have partly considered it. 8,1% of respondents could not give a definite answer.
The factors identified as most contributing to the willingness to emigrate were optimal treatment of patients, social status, salary, opportunities for professional development and job security. On average, the least contributing factor was the level of stress at work.

5.5.3. Analysis of emigration destination countries

Employees of Serbian general hospitals who took part in the survey were also asked which country they think would be the most optimal destination for emigration. The percentage of responses was as follows: 21,77% did not specify a specific destination, 18,99% specified Germany, 15,70% Switzerland, 9,62% Sweden/Norway/Denmark/Scandinavian countries, 7,85% Austria, 7,59% other country (not listed in the questionnaire), 6,08% Australia/New Zealand, 4,30% Spain, 3,80% Italy, 2,03% USA/Canada, 1,77% France, while 0,51% of respondents refrained from answering. The results clearly show that among the specific destinations identified, German-speaking countries dominate, which represent the most developed countries in Europe.

5.6. Comparison of the determinants of the health workforce at international level

I compared studies and research on the determinants of the situation of health workers in post-socialist countries in Central and South-Eastern Europe (Serbia, Romania, Hungary, Slovenia, Croatia, Montenegro). The results suggest that these countries face common challenges, such

as financial constraints and lack of structured management training. Reforms focus on improving leadership competencies, transparency and quality assurance (Dubas-Jakóbczyk, et al., 2020).

The focus on health ethics varied from country to country. For example, in Hungary (Novák, 2024), Romania (Poroch & Agheorghiesei, 2018), Slovenia (Grosek, et al., 2020) and Croatia, research tends to focus on patient rights and communication between staff and patients, and on addressing ethical dilemmas, while in Serbia (Vasiljevic-Prodanovic, 2015) and Montenegro (Radević, et al., 2022), particular attention is paid to unethical behaviour and corruption in the health system. The common conclusion of all the studies is that health workers need more training in how to approach and deal with ethical issues. Slovenia is the best performing country in terms of health quality among the countries listed. In Central and Eastern European countries in general, the main reasons for dissatisfaction are low wages and high workload (Spevan, et al., 2020). In addition, the emigration of health workers is also a serious and current problem in these countries (Vizjak, et al., 2023; Botezat & Moraru, 2020).

5.7. Limitations of the research

By using simple random sampling, in theory all subjects have an equal chance of being included in the survey, but in reality their availability may be a biasing factor (e.g. access to employees by e-mail). In addition, the main methodological limitations should be listed. The structured questionnaire format limits the freedom of respondents to express their views. Also, the questionnaire was completed online, which may reduce response rates and increase drop-out rates and is conditional on internet access (Rencz, 2022). Limitations of generalizability include the fact that the sample was limited to four general hospitals in rural Serbia, so the results of the study cannot be applied universally to all health workers in Serbia or to all rural regions of Serbia. On the other hand, the aggregated, averaged data do not apply equally to all groups (doctors, nurses, other groups). The time constraint is also worth mentioning. Since the attitudes and satisfaction of employees can change over time, the results obtained are valid for the time when the research was carried out. Among the biasing factors, I would highlight subjective responses, the interpretation of questions, and the physical and emotional exhaustion of respondents when completing the questionnaire. Based on the factors listed above, it can be stated that I consider the results of my research to be reliable, novel and important for exploring the situation of general hospital employees in rural Serbia, however, certain limitations should be taken into account when interpreting the results.

6. Conclusions and recommendations for effective human resource management in rural general hospitals in Serbia

My research on the determinants of the situation of workers in rural general hospitals in Serbia, in addition to its theoretical contributions, allows for the formulation of concrete practical applications (recommendations).

The theoretical contribution of my research:

- *It can contribute data and conclusions to the literature on the health workforce in Serbia and Central and Eastern Europe, as well as to the context of post-socialist health systems;*
- *It provides a complex approach* to understanding the interrelationships between the factors that determine the situation of health workers;
- *It can contribute to the application of different organisational theory and organisational psychology models* (e.g. organisational culture models, motivational theories) in the Serbian healthcare system.

Practical proposals (recommendations):

- *Proposals to increase employee satisfaction* (e.g. 360-degree management appraisal, development of an appropriate motivation system, regular and mandatory surveys to determine the risk of stress and burnout at work);
- *Proposals to improve hospital management skills* (e.g. mandatory health management training, soft skills training, change management training);
- *Proposals to improve the quality of care* (e.g. introduction of a quality culture in healthcare, quality management involving all stakeholders, implementation of digital transformation);
- *Proposals to improve ethical behaviour* (e.g. regular updating of hospital codes of conduct, introduction of mandatory ethics training, education);
- *Proposals to reduce employee migration* (e.g. regular surveys, anonymously, on employees' five-year plans, professional development opportunities for all employees, internal career paths).

In addition, I briefly formulated some system-level policy proposals to support employees in rural general hospitals in Serbia:

- *Providing competitive salaries, benefits, bonus system;*
- *Developing programs to support rural health workers;*
- *Mandatory management training programmes and further training* for management members of rural hospitals.

In answer to the main question of my dissertation - to determine the characteristics of human resources of the four general hospitals in Serbia included in my research - based on the statistical analysis and literature review carried out, I can conclude that the employees are satisfied with their work in general, they rated quite highly most aspects of current hospital management activities, interpersonal relations at work, autonomy in their work, the opportunity to apply their professional knowledge, professional development and training, respect for their work and relations with patients, but were less satisfied with the financial rewards of their work. Most of them feel moderately stressed at work, regardless of their job role, gender, education and professional experience. A significant percentage (more than a third) have already expressed the intention to emigrate abroad, mainly because they feel that the salary, social status and the possibility of treating patients in an optimal way are more appropriate abroad.

I can envisage continuing my research in several directions in the future:

- to include more general hospitals in Serbia in the study (general hospitals in all Serbian districts) using the questionnaire applied in my current research;
- using qualitative research methods (semi-structured interviews or unstructured interviews) in addition to quantitative methods, which would provide more detailed data collection;
- to survey the needs for management education and training of employees with different job roles in general hospitals in Serbia and what form of training they would like to participate in (length, type, location);
- a more detailed analysis (involving all general hospitals in Serbia) of the satisfaction of different groups of staff with different job roles and professional experience with the current number and quantity of health (and non-health) qualified professionals;
- to investigate in more detail the factors that contribute to the choice of emigration destination for general hospital staff and the particular factors that can be used to reduce the willingness to emigrate?

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