



# Career Development of Nurses and Technicians in Hyperbaric Medicine\*

Maja Vizjak<sup>1</sup>   
Dražen Burazor<sup>2</sup>

Received: December 20, 2024

Revised: May 10, 2025

Accepted: May 13, 2025

Published: June 2, 2025

## Keywords:

Human resources in healthcare;  
Career development of nurses and technicians;  
Hyperbaric medicine



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 License (<https://creativecommons.org/licenses/by-nc/4.0/>) which permits non-commercial use, reproduction and distribution of the work without further permission.

**Abstract:** *The management of human resources in healthcare is defined through documents of national guidelines of set strategic goals and places emphasis on stronger professions through continuous education and general qualitative development. Special emphasis is placed on human resources management for nurses and technicians as the most numerous group of health workers. The goal of this research is to differentiate the development of individual branches in medicine with a focus on the career development of nurses and technicians as part of a strategic reflection that will inductively reflect on general positive trends. The trend in the EU is to direct nurses and technicians to further education in order to expand their scope of duties and responsibilities, so the focus is on lower career development, which is the next logical step in the development of the profession. This paper analyzes the career development of nurses and technicians in the field of hyperbaric medicine in Croatia through the perception of the attitudes of the nurses and technicians themselves and the head of the bracoroom. The scientific contribution of this research is the expansion of knowledge about the development of human resources at work in pressure chambers. The research methodology is a survey questionnaire and an in-depth interview with the heads of centers for hyperbaric medicine in the Republic of Croatia.*

## 1. INTRODUCTION

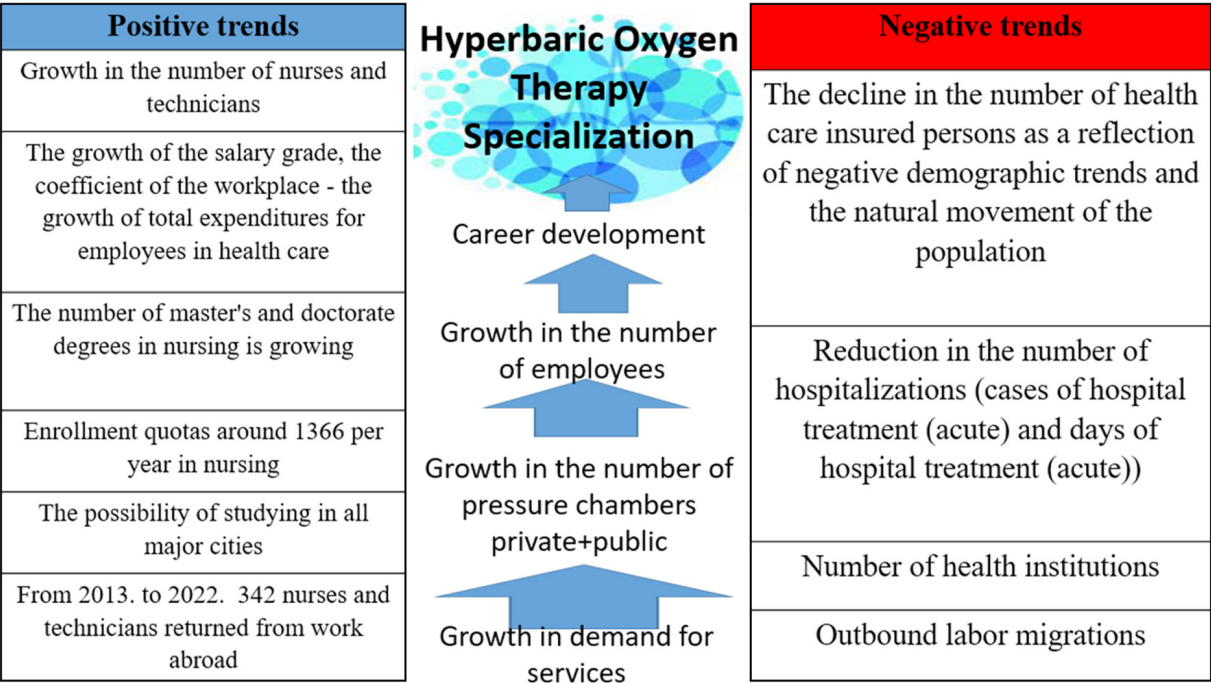
Human resources in healthcare have a continuous tendency to grow, while external factors affecting the healthcare sector tend to decrease. These factors are: the natural increase and migration balance of the population, which has been negative for decades, the resources of the number of hospital institutions in healthcare have been equal to the trend of the pair for years, while the number of beds, hospital days, which tends to decrease. Croatia has always been a country with a small number of medical staff, which has maintained and maintained that salary class among the highest paid, ie the workplace coefficient is high. The number of employees in healthcare is continuously growing, and the majority are employed in the hospital sector, where there were 50,592 employees in 2022, and 47,392 in 2018 (Fina, 2024). The National Health Development Plan for the period from 2021 to 2027 aims to establish a human resources management system, and the advantages of the health system are listed as professional and dedicated health workers and a developed network of high-quality medical faculties and health polytechnics and schools, while through medium-term development needs state models of development and expansion of the competences of health workers to compensate for the shortage of health professionals. In the EU, the trend is to develop the competencies, knowledge and skills of nurses and technicians in order to take on a larger volume of work and more demanding tasks. Educational policy strategically strengthened. Statistics support the fact that there are more

<sup>1</sup> Institute for Research Migration, 10000 Zagreb, Croatia

<sup>2</sup> Master's degree in Nursing, University in Pula, Faculty of Medicine Juraj Dobrila Croatia

\* The work is a continuation of research valuable for the purposes of writing Dražen Burazor's final thesis on the topic of Career Development of Nurses and Technicians, in the course Human Resource Management, graduate study of Nursing at the Faculty of Medicine of Juraj Dobrila University in Pula.

and more employees in this sector and that they are more and more educated (Vizjak & Perić Kaselj, 2023). Human resources in healthcare tend to grow, while spatial resources have a slight tendency to decrease in the last decade, and the number of days, as well as cases of hospital treatment and the total number of beds, is in a significant decrease. From this, it follows that the volume of work and work capacities is decreasing, while human ones in terms of employees are growing, which will be reflected in the price of work, as a reflection of the legality of supply and demand. A resource that has many prices falls to it, while one that lacks price can be manipulated. When comparing the statistics of the total number of high, higher, middle and lower levels of education in the health system and the capacities of jobs and enrollment quotas, it is clear that human resources greatly exceed the needs of the labor market. Enrollment quotas will result in an even greater disparity between the supply of jobs and the demand for human resources in the health system.



**Figure 1.** Presentation of trends in healthcare through the aspect of the development of the nursing profession

**Source:** Own research

**2. METHODOLOGY**

The methodology of empirical part of the research was done using a survey method using a Google form questionnaire on a sample of nurses and technicians employed in a barochamber, as well as survey research and semi-structured interviews with managers of private and public barochambers in Croatia. In the first sample, the answers of 22 nurses and technicians employed in jobs related to working with patients who are provided with health care in Barokmora are analyzed. In the second sample, the answers of 8 barochamber leaders are analyzed. Hyperbaric centers where research was conducted: Polyclinic Oxy, Zagreb, Crikvenica and Pula branches, Polyclinic Marija in Zagreb, Polyclinic Slavonija in Osijek, Department of Hyperbaric and Underwater Medicine at KBC Rijeka and Department of Maritime Medicine in Split. The research was conducted from March to July 2024.

### 3. RESEARCH RESULTS

The largest number of respondents in the part of the research carried out with nurses and technicians in the barochamber fully agree with the statement that specialized training would improve the knowledge and skills of the scope of work and the need to introduce a mandatory course on working in hyperbaric medicine. The self-assessment of the level of education for the provision of quality health care to patients in a pressure chamber is satisfactory, and they fully agree with the statement about the need to meet regularly once a year with other employees employed in pressure chambers in Croatia in order to share knowledge and experience (in the form of a congress).

**Table 1.** Results of the Likert scale of the survey part of the research conducted with nurses and technicians in the pressure chamber

	1 (Completely disagree)	2	3	4	5 (Completely agree)
I consider my level of education sufficient to provide quality health care to a patient (in a pressure chamber).	1		1	3	17
I consider that specialist training would improve the knowledge and skills of my work scope (in the barochamber).		1	4	3	14
I consider that a mandatory course on working in hyperbaric medicine should be introduced during the nursing undergraduate/graduate studies.	1	4	5	2	10
I consider that there should be a regular one-year meeting with other employees employed in barometric chambers in Croatia in order to share knowledge and experience (in the form of a congress).			2	3	17

Source: Own research

The statements with which the largest number of respondents fully agree are about the assessment of competence and the level of education of nurses and technicians who work in the pressure chamber, and that further specialist training of nurses/technicians would contribute to the development of the quality of health care provision.

**Table 2.** Results of the Likert scale of the survey part of the research conducted with the heads of barochambers

	1 (Completely disagree)	2	3	4	5 (Completely agree)
I consider that the current competences and level of education of the nurses and technicians working in the pressure chamber are adequate for providing quality healthcare.		1	1	3	3
I consider that further specialist training of nurses and technicians who work in the barochamber would contribute to the development of the quality of health care provision.			2	2	4

Source: Own research

The views of 8 barochamber managers expressed in a semi-structured interview emphasize the importance of including the topics of hyperbaric medicine in the regular curriculum of health-oriented studies and the need for further specialist training of nurses and technicians working in the barochamber. He also states the need to strengthen the cooperation of all health institutions that provide the service of hyperbaric oxygen therapy, as well as Clinics and Institutes as well as University scientific and research centers. Through a good organization of congresses and education for nurses and technicians, knowledge and experience would be actively exchanged with meticulous documentation of all observations, analysis and presentation of treatment outcomes.

**Table 3.** Summary analysis of the attitudes of nurses and technicians and head of the pressure chamber

	Attitudes of nurses and technicians working in the barochamber	Attitudes of the leader of the barochamber
Arguments about the competences and level of education of the nurses/ technicians who work in the pressure chamber are adequate for the provision of quality health care.	Through the survey, they highlighted their satisfaction with the level of competence	Through the survey, they highlighted the adequacy of competences and the level of education of nurses/technicians in the pressure chamber
The argument about further specialist training of nurses/technicians who work in the barochamber to develop the quality of health care provision.	Through the survey, they emphasized the importance of further specialist training	Through the survey, they emphasized the importance of further specialist training
Argument about the importance of introducing a mandatory course on hyperbaric medicine during undergraduate/graduate studies in nursing	Through the survey, they pointed out extremely important	Through a semi-structured interview, they expressed their views on exceptional importance

Source: Own research

The largest number of respondents of the part of the research carried out with nurses and technicians in the barochamber fully agree with the statement that specialist training would improve the knowledge and skills of the scope of work and the need to introduce a mandatory course on working in hyperbaric medicine. The self-assessment of the level of education for the provision of quality health care to patients in a pressure chamber is satisfactory, and they fully agree with the statement about the need to meet regularly once a year with other employees employed in pressure chambers in Croatia in order to share knowledge and experience (in the form of a congress).

The statistical package SPSS 23 was used in the further analysis. Spearman's correlation coefficients were calculated between the selected statements and the variables of age, gender, seniority, years of experience and workplace (private or public institution). The results are shown in the following table.

**Table 4.** Presentation of the correlation between selected statements and the variables of age, gender, length of service, years of experience and workplace of the survey of nurses and technicians

Variable	1	2	3	4	5	6	7	8
1 Sex	-							
2 Age	-.37	-						
3 Seniority	.08	.30	-					
4 Level of education	.20	.06	.48*	-				
5 Workplace	-.23	-0.06	-.07	-.51*	-			
6 The role of specialist training	-.07	-.06	-.43*	-.23	.00	-		
7 The role of subsequent specialist training	.26	-.08	-.14	-.07	-.11	.72**	-	
8 Mandatory course on hyperbaric chamber	.52*	-.45*	.08	.50*	-.44*	.08	.34	-

\*p<.05. \*\*p<.01.

Source: Own research

According to the results, there is a statistically significant correlation between the opinion that specialist training would improve the knowledge and skills of the scope of work on the length of service variable ( $r=-.43$ ,  $p<.05$ ). There is also a statistically significant relationship between the opinion that subsequent specialist training is important and the opinion variable that specialized training would improve the knowledge and skills of the scope of work ( $r=.72$ ,  $p<.01$ ). The opinion

that a compulsory course on working in a hyperbaric chamber is required during studies is statistically significantly positively correlated with the variables of gender ( $r=.52$ ,  $p<.05$ ) and level of education ( $r=.50$ ,  $p<.05$ ) and statistically significantly negatively correlated with the variables of age ( $r=-.45$ ,  $p<.05$ ) and type of workplace ( $r=-.44$ ,  $p<.05$ ).

**Table 5.** Presentation of correlations between variables in the head of the barochamber

Variable	1	2	3	4	5	6	7
1 Sex	-						
2 Age	-,49	-					
3 Seniority	,47	,29	-				
4 Level of education	-,47	,49	,07	-			
5 Workplace	-,15	,11	-,08	-,53	-		
6 The role of specialist training	-,15	,11	-,08	-,53	,43	-	
7 The need for a center of excellence and bases for specialist training	-,29	,14	-,29	,29	,43	,43	-

\* $p<.05$ . \*\* $p<.01$ .

Source: Own research

No statistically significant correlations between the variables were observed in the head of the barochamber.

#### 4. NUMBER AND DISPERSION OF NURSES AND TECHNICIANS IN CROATIA

Nurses and technicians are the most numerous group of health workers, numbering 32,464, which is 43.0% (table 6) of the total number of employed health workers, and they play a central role in the provision of health care and are a key element of any patient-oriented health system. In the structure of the total number of employed health care workers, the largest share is those with an intermediate level of professional education, 43.6%, the share of those with a high level of professional education is 34.6%, higher education 20.8% and lower level professional education 1.0%. In Croatia, there is an increase from about 4.5 to 6.8 nurses per 1,000 inhabitants, while a negative natural increase and external migration balance are recorded in the same observed period. Table 9 shows the number of health workers with professional education in the system in the period from 1995. to 2023. and the total number by county in 2023. in Table 8, which shows that the number of employees with secondary vocational education stagnates, since a large part decides to continue their education, while the number of those with a university degree has equaled the number of doctors, which was 15,863 in 2022, and 16,374 in 2023 (Croatian health - statistical yearbook).

**Table 6.** Total number of healthcare professionals employed in state and private healthcare institutions

Year	2023.	2020.	2010.	2000.	1995.
High vocational education	2 760	2 127	1079	760	725
Higher vocational education	16 769	14 169	9051	6 681	6 159
Secondary vocational education	32 620	33 150	32925	28 164	25 030
Lower vocational education	830	699	460	648	717
TOTAL healthcare workers	76 872	72 929	63 143	51 682	47 735
Number of inhabitants per 1 healthcare worker	50	55	70	38	101
Number of inhabitants per 1 employee with secondary education	118	122	135	152	192

\*Fixed and indefinite contracts.

Source: Author's analysis based on [Croatian Institute for Public Health \(1995, 2000, 2010, 2020, 2023\)](#)



**Table 7.** Number of nurses and technicians employed in healthcare institutions

Degree of professional education	1995	2000.	2010.	2015.	2020.	2021.	2022.	2023.
<b>High</b>				256	373	436	565	718
<b>Higher</b>	3 258	3 139	3 789	6 161	8 554	9 230	9 501	10 016
<b>Medium</b>	15 707	15 529	17 702	25 060	24 774	24 472	24 084	23 672
<b>TOTAL</b>	18 959	18 668	21 491	31 701	33 701	34 138	34 150	34 406

**Source:** Author's analysis based on [Croatian Institute for Public Health \(1995, 2000, 2010, 2015, 2020, 2021, 2022, 2023\)](#)

Spatial distribution, i.e. the shares of graduates and masters of nurses and technicians by county, is expected according to the number of health institutions in the observed locations. The largest number is in the city of Zagreb, which has 13 hospital institutions and a total of 546 healthcare institutions, the Osijek-Baranja County has 2 hospitals and a total of 160, the Primorje-Gorski Kotar County has 7 hospitals and a total of 171, the Split-Dalmatia County has 2 hospitals and 297. the county is distinguished by a high number of graduates and masters of nurses and technicians since it has 2 hospitals and a total of 94 healthcare institutions.

**Table 8.** Presentation of the number of graduates, masters and university masters in nursing by county June, 2023

	Graduation nurses and technicians	Master of Nursing	University Master of Nursing	In total
Bjelovar-Bilogora County	6	43	5	54
Brod-Posavina County	6	121	14	142
Dubrovnik-Neretva County	19	44	3	68
City of Zagreb	178	880	160	1218
County of Istria	13	56	20	89
Karlovac County	6	68	15	89
Koprivnica-Križevac County	2	50	7	59
Koprivnica-Križevac County	25	61	11	97
Lika-Senj County	2	14		16
Međimurje County		78	14	92
Osijek-Baranja County	5	278	22	305
Požega-Slavonia County	4	77	4	85
Primorje-Gorski Kotar County	9	207	24	240
Sisak-Moslavina County	15	72	12	99
Split-Dalmatia County	10	129	20	159
Sibenik-Knin County	4	41	9	54
Varaždin County	18	121	19	158
Virovitica-Podravka County	5	29	10	44
Vukovar-Srijem County	5	72	11	88
Zadar County	9	52	23	84
<b>Zagreb County</b>	8	45	6	59

**Source:** Author's analysis based on data obtained from the [Chamber of Nurses \(2023\)](#)

## 5. EDUCATION OF NURSES AND TECHNICIANS

Career development opportunities for nurses and technicians can be through professional education organized by the employees' home institutions, by professional associations or nursing chambers, and at academic institutions such as faculties of health studies, university departments and health polytechnics in all major cities in Croatia (table 10). There are 25 high schools in Croatia (table 9), nursing studies used to be part of medical faculties, and the first faculty for the education of non-medical health personnel is the Faculty of Health Studies in Rijeka, founded

in 2014. There is an online course in nursing at the University of Health in Zagreb. University studies include the Faculty of Health Studies in Rijeka, the Faculty of Dental Medicine and Healthcare in Osijek, the Department of Health Studies in Zadar, the University Department of Health Studies in Split and the Croatian Catholic University in Zagreb. Private polytechnics are the Polytechnic in Bjelovar, Ivanić-Grad and the Croatian Catholic University in Zagreb. Enrollment quotas are 1366 places per year, of which 500 are regular, 866 are extraordinary, and the diaspora quota is 4. In 2024, 19 PhDs, 866 and 5 Masters of Science in Nursing were recorded in the register of the Chamber of Nurses.

**Table 9.** High schools for nurses in Croatia

High schools for nurses	City
School for nurses Vrapče	Zagreb
School for nurses Mlinarska	Zagreb
Vinogradska Nursing School	Zagreb
Bjelovar Medical School	Bjelovar
Dubrovnik Medical School	Dubrovnik
Medical school	Karlovac
Technical school Virovitica	Virovitica
Pula Medical School	Pula
Slavonski Brod Medical School	Slavonski Brod
Medical school	Šibenik
Varaždin Medical School	Varaždin
Ante Kuzmanić Medical School	Zadar
Health and veterinary school dr. Andrije Stampar	Vinkovci
Medical school Rijeka Rijeka	Rijeka
Split Health School	Split
Osijek Medical School	Osijek
Secondary school Čakovec	Čakovec
Secondary school Čakovec separate location county hospital Čakovec	Čakovec
Secondary school Bedekovčina	Bedekovčina
Secondary school in Maruševac with public rights	Maruševac
Secondary school Pregrada	Pregrada
Viktorovac High School	Sisak
Secondary school Koprivnica	Koprivnica
Vocational school Gospić	Gospić
Secondary school Pakrac	Pakrac
Ban Josip Jelačić Secondary Vocational School	Sinj

**Source:** Author's analysis according to [Ministry of Science, Education and Youth \(2024\)](#)

Specialist training is regulated by the ordinance \*On specialist training of nurses and technicians\* of 2009 based on Article 139, paragraph 2 and Article 140, paragraph 6 of the Health Care Act (Official Gazette, No. 150/08). Specialization or narrower specialization is a form of professional training. Specializations in the field of health care in nursing are: nurse - medical technician, specialist in emergency medical care, specialist in internal medicine, specialist in intensive care, specialist in surgery, specialist in pediatrics, specialist in psychiatry. Narrower specializations in the field of health care in nursing are: nurse - medical technician specialist in dialysis, specialist in oncology-hematology, surgery specialist, specialist in anesthesia and specialist in pediatric surgery. Specialization and various trainings in the domain of hyperbaric medicine are usually not carried out as basic but as additional education or sub-specialization.

**Table 10.** Representation of nursing study programs at Universities in Croatia

	Enrollment quotas - regular	Enrollment quotas - extraordinary	Croats abroad
University of Health in Zagreb	95	320	
Croatian Catholic University	41	45	1
Faculty of Health Studies - Rijeka	30	45	
Faculty of Health Studies - Karlovac		30	
Polytechnic in Šibenik	20	40	
University of Split	60	50	
Faculty of Dental Medicine in Osijek - Josip Juraj Strossmayer University in Osijek	20		
Faculty of Dental Medicine in Nova Gradiška - Josip Juraj Strossmayer University in Osijek		60	
Faculty of Dental Medicine in Pregrada Josip Juraj Strossmayer University in Osijek		60	
University of the North	60	40	2
Jurja Dobril University in Pula - MedPu	53	30	
University of Dubrovnik – Department of Professional Studies		25	1
Department of Health Studies, University of Zadar	54		
Polytechnic in Bjelovar	42	90	
Polytechnic Ivanić - Grad	22	30	

**Source:** Author's analysis according to [Agency for Science and Higher Education \(n.d.\)](#)

## 6. SALARY OF NURSES AND TECHNICIANS

Cumulatively, healthcare employees are among the best-paid professions, along with the finance and IT sectors. Despite the continuous increase in the number of employees in the system, the price of labor is still not falling. In the increases at the beginning of 2024, the growth of coefficients in healthcare is recorded. Table 11 shows the total number of jobs of workers with high, higher, middle and lower levels of professional education in the health care system with the associated job coefficients and the calculation of salary in euros.

**Table 11.** Presentation of the total number of jobs with associated job coefficients and calculation of salaries of nurses and technicians, in euros (March 2024)

Professional preparation	Workplace	Number of employees	Workplace coefficient	Salary
<b>High vocational education</b>	Ch. med nurse/teh clinic, clinical institute of unified emergency hospital admission	95	2,80	2 651
	Ch. med sister/the institution	236	2,68	2 537
	Ch. nurse/tech in organizational unit in clinical institution 1	1 623	2,10	1 988
	Ch. nurse of the unified emergency hospital admission service	17	2,68	2 537
	Ch. nurse/tech in the organizational unit in the clinical institution 2	32	1,95	1 846
	Master of Nursing in prevention, control and control of hospital infections	39	2,40	2 272
	Master of Nursing in Quality Assurance and Improvement zd. protection	55	2,40	2 272
	Master's degree in nursing in the field of invasive and specific diagnostic and therapeutic procedures	196	2,40	2 272
	Master of Nursing in the duties of the team leader of the operating block	18	2,40	2 272
	Master's degree in nursing in coordination of palliative care	32	2,40	2 272
	TOTAL	2 343		



<b>Higher vocational education</b>	Health care worker - bachelor's degree in hospital 1	10 126	1,90	1 799
	Health care worker - bachelor's degree in hospital 2	680	1,82	1 723
	Health worker - bachelor's degree in polyclinic	240	1,78	1 682
	Health worker - bachelor's degree in primary health care	2 069	1,78	1 443
	Health worker - bachelor's degree in public health	706	1,78	1 685
	<b>TOTAL</b>	<b>13 821</b>		
<b>Secondary education</b>	Nurse/tech specialist in emergency medicine	3	2,20	2 083
	Health associates 1	67	1,78	1 685
	Healthcare workers working with open sources of radiation	383	1,78	1 685
	Healthcare workers preparing antineoplastic drugs	403	1,78	1 685
	Health workers in the field of AIDS treatment	20	1,78	1 685
	Healthcare workers in the intensive care unit in surgery	6 497	1,78	1 685
	Health workers in the hospital 2	9 497	1,70	1 609
	Health workers in home care	248	1,63	1 543
	Healthcare workers in primary health care	3 409	1,53	1 448
	Health workers in polyclinics	347	1,53	1 448
	Health workers in public health	734	1,53	1 448
	<b>TOTAL</b>	<b>18 199</b>		
<b>Lower vocational education</b>	Caregiver	794	1,33	1 259
	Paramedic	439	1,33	1 259
	<b>TOTAL</b>	<b>1 233</b>		

**Source:** Author's analysis according to [Vlada Republike Hrvatske \(2024\)](#)

When comparing the job coefficient, it can be seen that a much higher level of education is needed in science than in healthcare for a better-paid job. For example, a position that requires a PhD, such as a senior assistant position, is similar to a position with a master's degree in nursing.

## 7. HUMAN RESOURCES IN HYPERBARIC MEDICINE

In Croatia, medicine is divided into basic medical sciences and clinical medical sciences. Hyperbaric medicine is not recognized as a special branch of medicine in Croatia, and the possible reasons are the regulatory framework or standards adopted by the Ministry of Health and the lack of specialists specializing in the branch, which is a direct consequence of the unavailability of education and insufficient popularization. Baro chambers in Croatia can be found in all regions, either privately in polyclinics or as part of KBC: Dubrava Clinical Hospital in Zagreb, KBC Rijeka has the most modern baro chamber in the region that operates as part of the Institute for Underwater and Hyperbaric Medicine, the Institute for Maritime Medicine in Split operates in cooperation with the Ministry of Defense and it was closed for a long time. Tables 12 and 13 show the number of human resources in hyperbaric medicine in public and private institutions. Some of the private polyclinics offer the possibility of using them with a referral from the HZZO, and almost all of them record an increase in the number of employees, so we conclude that it is a profitable activity with satisfactory demand.

**Table 12.** Presentation of human resources in public institutes for hyperbaric medicine

	Number of human resources
Dubrava Clinical Hospital	6
Institute for Underwater and Hyperbaric Medicine within KBC Rijeka	10-13
Institute of Maritime Medicine Split	10

**Source:** Own research

Specialization in hyperbaric medicine is globally carried out after completing formal higher education at medical faculties or through specialized programs in hospitals and medical centers within hospital

institutions and by professional associations and associations. The Croatian Society for Hyperbaric Medicine of the Croatian Medical Association was founded in Zagreb in 2016 and aims to develop and improve hyperbaric medicine in Croatia. The company provides guidelines for the work of all those in Croatia who deal with or want to deal with the application of Hyperbaric Oxygen Therapy in patient care based on the principles of good clinical practice and a high level of safety. On April 5, 2024, the Institute for Underwater and Hyperbaric Medicine of the Rijeka Clinical Hospital Center, in cooperation with the Croatian Society of Anesthesia, Reanimation, Intensive Care and Transfusion Nurses, which includes the Committee for Hyperbaric Medicine and the Faculty of Health Studies of the University of Rijeka, organized 1 Symposium of hyperbaric nurses and technicians.

**Table 13.** Presentation of human resources in private institutions for hyperbaric medicine

	2019	2020	2021	2022	2023	Possibility via HZZO referral
Polyclinic OXY	14	12	13	16	18	Yes
Polyclinic of Hollister	2	3	5	9	10	Not
Polyclinic Marin Med	35	43	45	60	49	Not
Polyclinic Slavonija Osijek	15	12	16	19	22	Yes
Polyclinic Rakovac	3	5	5	6	6	Not
Polyclinic Marija	13	10	9	11	10	Yes
EO2 Polyclinic	No employees					Not

Source: Author's analysis according to Fina (2024)

## 8. CONCLUSION

Personnel management in healthcare with an emphasis on the career development of nurses and technicians is based on strategic documents. The career development of nurses and technicians is a continuous lifelong education that should be developed with a focus on professional development in certain branches, i.e. areas in medicine, in order to strengthen efficiency. The products of the development strategies have made it possible for the offer of jobs in healthcare to be satisfactory and the number of employees to continuously grow, described by the high coefficients of jobs that are accompanied by income growth as well as many educational opportunities at all universities in Croatia. Development in a qualitative approach such as specialization in hyperbaric medicine imposes the next logical step in the advancement of the profession. Hyperbaric medicine offers wide possibilities of application in the treatment process that are not yet sufficiently developed in our country, which is an argument for shaping specialization to develop specific skills and knowledge. Specialist training of barochamber staff is important for ensuring high-quality patient care and efficient management of hyperbaric treatments. The specialist training of barochamber workers will contribute to the further development of the area for which all studies as well as the empirical research of this paper indicate a great potential for development and expansion of application possibilities in treatment approaches. Specialist training of nurses and technicians in hyperbaric medicine will have an impact on the effectiveness of the observed segment in healthcare.

## References

- Agency for Science and Higher Education. (n.d.). <https://www.azvo.hr/AZVO>
- Chamber of Nurses. (2023, June). *Presentation of the number of graduates, masters and university masters in nursing by county, June 2023*. Chamber of Nurses.
- Croatian Financial Agency (Fina). (2024). *Info.BIZ: Business information and analysis*. <https://www.fina.hr/eng/business-information-and-analysis/info.bizFina+1Fina+1>

- Croatian Institute for Public Health. (1995). *Croatian health and statistical yearbook by year*. Zagreb: Croatian Institute for Public Health.
- Croatian Institute for Public Health. (2000). *Croatian health and statistical yearbook by year*. Zagreb: Croatian Institute for Public Health.
- Croatian Institute for Public Health. (2010). *Croatian health and statistical yearbook by year*. Zagreb: Croatian Institute for Public Health.
- Croatian Institute for Public Health. (2015). *Croatian health and statistical yearbook by year*. Zagreb: Croatian Institute for Public Health.
- Croatian Institute for Public Health. (2020). *Croatian health and statistical yearbook by year*. Zagreb: Croatian Institute for Public Health.
- Croatian Institute for Public Health. (2021). *Croatian health and statistical yearbook by year*. Zagreb: Croatian Institute for Public Health.
- Croatian Institute for Public Health. (2022). *Croatian health and statistical yearbook by year*. Zagreb: Croatian Institute for Public Health.
- Croatian Institute for Public Health. (2023). *Croatian health and statistical yearbook by year*. Zagreb: Croatian Institute for Public Health.
- Ministry of Science, Education and Youth. (2024). *Statistical overview dashboard* [Data visualization]. <https://app.powerbi.com/view?r=eyJrIjojZWV3YTE4OWQtOWJmNC00OTJmLWE2Mjk-tYTQ5MWJINDNIZDQ0IiwidCI6IjJMTFjYmNjLWI3NjEtNDVkyIlhOWY1LTRhYzc3ZT-k0ZTFkNCIsImMiOjh9>
- Vizjak, M., & Perić Kaselj, M. (2023). MANAGEMENT OF MIGRATION OF PERSONNEL IN HEALTHCARE WITH AN EMPHASIS ON NURSES AND TECHNICIANS IN THE REPUBLIC OF CROATIA. *Balkans Journal of Emerging Trends in Social Sciences*, 6(2), 103-118. <https://doi.org/10.31410/balkans.jetss.2023.6.2.103-118>
- Vlada Republike Hrvatske. (2024, February 22). *Uredba o nazivima radnih mjesta, uvjetima za raspored i koeficijentima za obračun plaće u javnim službama*. *Narodne novine*, 22/2024. [https://narodne-novine.nn.hr/clanci/sluzbeni/full/2024\\_02\\_22\\_354.html](https://narodne-novine.nn.hr/clanci/sluzbeni/full/2024_02_22_354.html)

