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The impact of study on the professional development of nurses through the perception of nursing students

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Abstract

Aim: The aim of the paper was to determine students' perceptions on whether they improve their knowledge and skills through their studies, to determine their attitude towards their chosen profession, and to investigate whether they are considering leaving Croatia. **Design:** A descriptive cross-sectional study. **Methods:** The instruments used in this study were a structured questionnaire of demographic data and a questionnaire constructed for the purposes of this research. In total 106 students from two study levels participated in the study. Statistical analysis showed frequencies and percentages, the arithmetic mean, and the standard deviation. **Results:** The results of the study showed that the majority of respondents (48.1%) believed that education contributed to the development of their profession, which is consistent with other studies. A slightly lower number of students (47.2%) believed that their education provided them with the necessary knowledge, while only a small number of students (7.5%) seriously considered leaving Croatia. **Conclusion:** Education is key to improving nursing care as it enables the delivery of quality healthcare, ensures a more effective response to patients' needs, and contributes to the health of the community.

Keywords: nurse, nursing students, perception, professional development, study.

Introduction

The continuous development of the healthcare system highlights the growing need for well-trained nurses. The rapid advancement of science and technology makes ongoing education essential for the nursing profession. Nursing education, aligned with international standards, helps to modernize the image of the profession and promotes greater autonomy and recognition within society. Moreover, daily progress in medicine is inevitably accompanied by progress in nursing (Belačić, 2021).

The Bologna Process gave nursing education the opportunity to reach a higher academic level. The introduction of the binary system and the opening of a specialized graduate degree program at Zagreb Polytechnic in 2005 was a historic moment for nursing in Croatia, and five years later (2010) a university degree program in nursing was opened in Osijek. Since 2014, nurses have been able to pursue higher academic education (Busančić, 2017).

Nursing has followed its own path of development to reach the point where it is now recognized as a distinct profession. The demanding nature of nursing work and the increasing complexity of clinical procedures have made education and lifelong learning an imperative (Matulić, 2007). Today, nursing has established itself as a profession with its own identity. The key priority for the advancement of modern nursing is education and continuous professional development. Nurses cannot rely solely on their humanistic approach; they must also keep pace with advances in science and technology (Kosier et al., 2018).

A historic day in modern nursing in Croatia was 17 July 2003, when the Croatian Parliament decided to promulgate the Nursing Act. The law stipulates that nurses must be professional in their work and apply their knowledge and professional principles. They are also obliged to respect the rights of patients and to observe ethical principles in their work (NN 121/03). The law regulates the Croatian Chamber of Nurses as an independent organization that represents and regulates the interests and also exercises professional supervision over the work of nurses (NN 121/03) (Croatian Parliament, 2003).

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In today's healthcare system, nursing can be regarded as one of the most prominent and well-recognized professions. It also represents the largest occupational group, accounting for approximately 50% of all healthcare workers. Nurses are the only professionals within both the health and social care systems who provide continuous, 24-hour care to patients. However, despite their central role and strong presence, the autonomous status of nurses has not yet been fully defined (Mijoč & Čargo, 2022). Through education, nurses also ensure a quality approach to procedures and patients, which ultimately creates a positive relationship and an atmosphere of trust in the nurse – patient relationship.

Education, along with other factors, plays a key role in shaping the professional reputation of nurses (Šutej, 2022). Unfortunately, public perception of the nursing profession still does not reflect the level of recognition it deserves, particularly given the significant horizontal and vertical advancements in nursing education (Glerean et al., 2017).

Research among the general population indicates that both the public and young people need to be better informed about the modern, highly educated nature of today's nursing profession (Glerean et al., 2017).

In Croatia, nursing education follows standards based on European and global guidelines and is designed to ensure the professional delivery of healthcare (Busančić, 2017).

The Nursing study program in Dubrovnik has been operating for 16 years and has continuously enrolled students at undergraduate and graduate level. Since the 2008/2009 academic year, more than 300 students have been enrolled in the Bachelor "degree program in nursing". In the 2014/2015 academic year, the first cohort of students enrolled in the professional study program Clinical Nursing.

During their studies, students are involved in clinical practice during which, under the supervision of a mentor, they apply nursing interventions and procedures throughout the health care process, from assessing the patient's condition and setting goals to implementing interventions and evaluations (University of Dubrovnik, 2024a).

Directive 2005/36 EC and Directive 2013/55 EU stipulate the minimum requirements for the education of nurses in detail (Directive 2005/36/EC, 2005; Directive 2013/55/EU, 2013). Accordingly, education must comprise at least three years or 4,600 hours of theoretical and clinical training, with theoretical teaching accounting for 1/3 of the total duration of the programme and clinical practice for 1/2 of the total duration of the program. The directive also stipulates the mandatory content

that a nursing study program should include. At the national level, a decision was made to harmonize nursing programs by developing a common core curriculum aligned with European legislation on the minimum requirements for education in regulated professions (Directive 2005/36/EC; Directive 2013/55/EU; The Act on Quality Assurance in Science and Higher Education, Official Gazette of the Republic of Croatia 45/09, Croatian Parliament, 2009; The Act on Scientific Activity and Higher Education. Official Gazette of the Republic of Croatia No. 123/03, No. 198/03, No. 105/04, No. 174/04, No. 46/07, No. 63/11, No. 2/07-OURH, No. 94/13, No. 139/13, Croatian Parliament, 2013) and the Croatian Qualifications Framework.

The common core of the study program comprises 158 ECTS credits out of a total student workload of 180 ECTS credits planned over three academic years (Matulić, 2007), representing 87.7% of the program. The remaining portion the electives is determined by the expertise of the respective higher education institutions.

In addition to the theoretical component, the graduate program in Clinical Nursing includes a practical component conducted in hospitals, clinical departments, and other collaborating institutions. Students receive training in the implementation of evidence-based healthcare, as well as in the management of healthcare quality and nursing documentation (University of Dubrovnik, 2024b).

Aim

The primary aim of this research was to examine the attitudes and perspectives of undergraduate and graduate nursing students at the University of Dubrovnik concerning their chosen profession and the knowledge acquired during their studies. Additionally, the analysis sought to determine the extent to which education influences the professional development of nurses and technicians, whether the nursing program provides the necessary knowledge and skills for practice, and, finally, to explore students' intentions and preferences regarding emigration from Croatia after graduation.

Methods

Design

A descriptive cross-sectional study.

Sample

The sample included 106 nursing students from two study levels who were enrolled at the time of the survey, as well as a number of students who had completed their studies at the University of Dubrovnik. The inclusion criterion was that they were active students at or had graduated from the University of Dubrovnik. All nurses who were studying at or had graduated from other universities were excluded from the research.

With regard to gender, 10.4% of respondents were male, while 89.6% were female. In terms of age distribution, 44.3% were between 18 and 30 years old, 36.8% between 31 and 40, and 18.9% were over 40. In terms of educational attainment, 27.4% held a graduate degree, while 72.6% held a bachelor's degree. Overall, 84.0% had graduated from secondary medical school, and the same proportion (84.0%) were employed.

Data collection

The research was based on quantitative methodology. The instruments used in this research were a structured questionnaire of demographic data and a questionnaire constructed for the purposes of this study, with a total of 15 questions. The questions in the second part addressed the students' views on nursing as a profession, the knowledge gained during their studies, and their thoughts on leaving Croatia, all measured using a Likert scale. The survey questions were closed-ended, using a five-point scale whereby the numerical values indicated: 1 – very little, 2 – to a lesser extent, 3 – moderately, 4 – to a large extent, and 5 – to a very large extent.

The questionnaire was designed in January 2024 and conducted in the period from 1 March to 30 April 2024. Before the survey began, a pilot study was conducted on a sample of ten respondents. The study protocol was approved by the Ethics Committee of the University of Dubrovnik. All participants gave their consent before the start of the survey. All methods were conducted in accordance with the relevant guidelines and regulations. The study was conducted in line with the Declaration of Helsinki.

All respondents completed the questionnaires in paper form. The approximate time required for the survey was ten minutes per respondent.

Data analysis

Categorical data are presented as absolute and relative frequencies, while numerical data are reported as means and standard deviations. Differences in categorical variables were assessed using Fisher's exact test. All p-values are two-sided, and the significance level was set at $\alpha = 0.05$. Statistical analyses were performed using IBM SPSS Statistics for Windows, Version 26.0.

Results

The following sections present descriptive statistics for the observed questions. For each group of questions, frequencies and percentages, as well as means and standard deviations, are reported. Questions with the lowest and highest mean values of respondents' answers are highlighted and discussed (Table 1).

Table 1 Student attitudes

	M	SD
I am satisfied with the knowledge I acquired in secondary school.	3.20	0.72
I believe that the Nursing study program provides / has provided me with the necessary knowledge.	3.58	0.93
I am satisfied with the transfer of knowledge by the mentor during the practical part of the study program.	3.56	1.01
By means of education, I contribute to the recognition of my profession.	3.72	0.92
Education burdened us with unnecessary content.	4.14	0.82
I believe that nursing training improves the quality of health care.	3.96	1.04
I believe that the development of the profession requires an educated and trained nurse.	4.31	0.97
Do you believe that completing your studies will broaden the scope of your competences?	3.93	0.90
Do you think that your studies will / have already helped you to progress in your career?	4.07	0.96
Are you thinking about leaving Croatia after completing your studies?	2.02	1.21

M – mean; SD – standard deviation

The highest mean values of respondents' answers were observed for the following questions: I believe that the development of the profession requires an educated and trained nurse, with an arithmetic mean of 4.31 and a standard deviation of 0.97,

and Education burdens us with unnecessary content, with an arithmetic mean of 4.14 and a standard deviation of 0.82. The lowest arithmetic mean value of the respondents' answers was recorded for the question: Are you thinking about leaving

Croatia after completing your studies? The arithmetic mean of the respondents' answers was 2.02, with a standard deviation of 1.21.

Testing differences in observed questions with respect to selected indicators

The following sections present analyses

of the observed indicators. Differences were tested using Fisher's exact test, and respondents' answers are reported as absolute frequencies and percentages.

Tables 2–5 show that $p > 0.05$ in all cases, indicating that no statistically significant differences were observed for any of the parameters.

Table 2 Comparison according to gender of respondents

		Gender		p	
		Male (n = 11)	Female (n = 95)		
		N (%)	N (%)		
I am satisfied with the knowledge I acquired in secondary school.	very little	0 (0.0%)	2 (2.1%)	0.898	
	to a lesser extent	0 (0.0%)	7 (7.4%)		
	moderately	8 (72.7%)	63 (66.3%)		
	to a large extent	3 (27.3%)	17 (17.9%)		
I believe that the Nursing study program provides / has provided me with the necessary knowledge.	to a very large extent	0 (0.0%)	6 (6.3%)	0.163	
	very little	0 (0.0%)	0 (0.0%)		
	to a lesser extent	2 (18.2%)	7 (7.4%)		
	moderately	6 (54.5%)	44 (46.3%)		
I am satisfied with the transfer of knowledge by the mentor during the practical part of the study program.	to a large extent	3 (27.3%)	21 (22.1%)	0.663	
	to a very large extent	0 (0.0%)	23 (24.2%)		
	very little	0 (0.0%)	3 (3.2%)		
	to a lesser extent	1 (9.1%)	6 (6.3%)		
By means of education, I contribute to the recognition of my profession.	moderately	7 (63.6%)	41 (43.2%)	0.281	
	to a large extent	1 (9.1%)	23 (24.2%)		
	to a very large extent	2 (18.2%)	22 (23.2%)		
	very little	0 (0.0%)	2 (2.1%)		
Education burdens us with unnecessary content.	to a lesser extent	1 (9.1%)	8 (8.4%)	0.137	
	moderately	5 (45.5%)	20 (21.1%)		
	to a large extent	5 (45.5%)	46 (48.4%)		
	to a very large extent	0 (0.0%)	19 (20.0%)		
I believe that nursing training improves the quality of health care.	very little	0 (0.0%)	0 (0.0%)	0.508	
	to a lesser extent	0 (0.0%)	0 (0.0%)		
	moderately	3 (27.3%)	26 (27.4%)		
	to a large extent	6 (54.5%)	27 (28.4%)		
I believe that the development of the profession requires an educated and trained nurse.	to a very large extent	2 (18.2%)	42 (44.2%)	0.789	
	very little	0 (0.0%)	3 (3.2%)		
	to a lesser extent	2 (18.2%)	5 (5.3%)		
	moderately	1 (9.1%)	19 (20.0%)		
Do you believe that completing your studies will broaden the scope of your competences?	to a large extent	4 (36.4%)	33 (34.7%)	0.324	
	to a very large extent	4 (36.4%)	35 (36.8%)		
	very little	0 (0.0%)	0 (0.0%)		
	to a lesser extent	0 (0.0%)	6 (6.3%)		
Do you think that your studies will / have already helped you to progress in your career?	moderately	3 (27.3%)	25 (26.3%)	0.067	
	to a large extent	2 (18.2%)	37 (38.9%)		
	to a very large extent	6 (54.5%)	27 (28.4%)		
	very little	2 (18.2%)	2 (2.1%)		
Are you thinking about leaving Croatia after completing your studies?	to a lesser extent	0 (0.0%)	0 (0.0%)	0.821	
	moderately	2 (18.2%)	19 (20.0%)		
	to a large extent	2 (18.2%)	39 (41.1%)		
	to a very large extent	5 (45.5%)	35 (36.8%)		
	very little	5 (45.5%)	42 (44.2%)		
	to a lesser extent	5 (45.5%)	26 (27.4%)		
	moderately	1 (9.1%)	14 (14.7%)		
	to a large extent	0 (0.0%)	5 (5.3%)		
		to a very large extent	0 (0.0%)	8 (8.4%)	

p – Fisher's exact test; N – number of respondents; % – percentage

Table 3 Comparison according to the age of the respondents

		Age			P
		18–30 (n = 47)	30–40 (n = 39)	40+ (n = 20)	
		N (%)	N (%)	N (%)	
I am satisfied with the knowledge I acquired in secondary school.	very little	2 (4.3%)	0 (0.0%)	0 (0.0%)	0.502
	to a lesser extent	3 (6.4%)	2 (5.1%)	2 (10.0%)	
	moderately	35 (74.5%)	24 (61.5%)	12 (60.0%)	
	to a large extent	5 (10.6%)	10 (25.6%)	5 (25.0%)	
	to a very large extent	2 (4.3%)	3 (7.7%)	1 (5.0%)	
I believe that the Nursing study program provides / has provided me with the necessary knowledge.	very little	0 (0.0%)	0 (0.0%)	0 (0.0%)	0.540
	to a lesser extent	5 (10.6%)	3 (7.7%)	1 (5.0%)	
	moderately	23 (48.9%)	19 (48.7%)	8 (40.0%)	
	to a large extent	7 (14.9%)	9 (23.1%)	8 (40.0%)	
	to a very large extent	12 (25.5%)	8 (20.5%)	3 (15.0%)	
I am satisfied with the transfer of knowledge by the mentor during the practical part of the study program.	very little	2 (4.3%)	0 (0.0%)	1 (5.0%)	0.782
	to a lesser extent	3 (6.4%)	3 (7.7%)	1 (5.0%)	
	moderately	21 (44.7%)	19 (48.7%)	8 (40.0%)	
	to a large extent	9 (19.1%)	11 (28.2%)	4 (20.0%)	
	to a very large extent	12 (25.5%)	6 (15.4%)	6 (30.0%)	
By means of education, I contribute to the recognition of my profession.	very little	1 (2.1%)	0 (0.0%)	1 (5.0%)	0.414
	to a lesser extent	5 (10.6%)	3 (7.7%)	1 (5.0%)	
	moderately	7 (14.9%)	12 (30.8%)	6 (30.0%)	
	to a large extent	23 (48.9%)	20 (51.3%)	8 (40.0%)	
	to a very large extent	11 (23.4%)	4 (10.3%)	4 (20.0%)	
Education burdens us with unnecessary content.	very little	0 (0.0%)	0 (0.0%)	0 (0.0%)	0.279
	to a lesser extent	0 (0.0%)	0 (0.0%)	0 (0.0%)	
	moderately	9 (19.1%)	13 (33.3%)	7 (35.0%)	
	to a large extent	15 (31.9%)	14 (35.9%)	4 (20.0%)	
	to a very large extent	23 (48.9%)	12 (30.8%)	9 (45.0%)	
I believe that nursing training improves the quality of health care	very little	2 (4.3%)	0 (0.0%)	1 (5.0%)	0.091
	to a lesser extent	0 (0.0%)	5 (12.8%)	2 (10.0%)	
	moderately	7 (14.9%)	7 (17.9%)	6 (30.0%)	
	to a large extent	20 (42.6%)	11 (28.2%)	6 (30.0%)	
	to a very large extent	18 (38.3%)	16 (41.0%)	5 (25.0%)	
I believe that the development of the profession requires an educated and trained nurse.	very little	0 (0.0%)	0 (0.0%)	0 (0.0%)	0.682
	to a lesser extent	3 (6.4%)	5 (12.8%)	2 (10.0%)	
	moderately	3 (6.4%)	2 (5.1%)	3 (15.0%)	
	to a large extent	11 (23.4%)	10 (25.6%)	6 (30.0%)	
	to a very large extent	30 (63.8%)	22 (56.4%)	9 (45.0%)	
Do you believe that completing your studies will broaden the scope of your competences?	very little	0 (0.0%)	0 (0.0%)	0 (0.0%)	0.707
	to a lesser extent	3 (6.4%)	3 (7.7%)	0 (0.0%)	
	moderately	9 (19.1%)	12 (30.8%)	7 (35.0%)	
	to a large extent	18 (38.3%)	14 (35.9%)	7 (35.0%)	
	to a very large extent	17 (36.2%)	10 (25.6%)	6 (30.0%)	
Do you think that your studies will / have already helped you to progress in your career?	very little	0 (0.0%)	1 (2.6%)	3 (15.0%)	0.237
	to a lesser extent	0 (0.0%)	0 (0.0%)	0 (0.0%)	
	moderately	10 (21.3%)	8 (20.5%)	3 (15.0%)	
	to a large extent	20 (42.6%)	13 (33.3%)	8 (40.0%)	
	to a very large extent	17 (36.2%)	17 (43.6%)	6 (30.0%)	
Are you thinking about leaving Croatia after completing your studies?	very little	23 (48.9%)	16 (41.0%)	8 (40.0%)	0.066
	to a lesser extent	18 (38.3%)	8 (20.5%)	5 (25.0%)	
	moderately	4 (8.5%)	6 (15.4%)	5 (25.0%)	
	to a large extent	0 (0.0%)	5 (12.8%)	0 (0.0%)	
	to a very large extent	2 (4.3%)	4 (10.3%)	2 (10.0%)	

p – Fisher's exact test; N – number of respondents; % – percentage

Table 4 Comparison regarding the question “which study did you attend or are you attending”

		Graduate (n = 29)	Undergraduate (n = 77)	p
		N (%)	N (%)	
I am satisfied with the knowledge I acquired in secondary school.	very little	0 (0.0%)	2 (2.6%)	0.556
	to a lesser extent	2 (6.9%)	5 (6.5%)	
	moderately	20 (69.0%)	51 (66.2%)	
	to a large extent	7 (24.1%)	13 (16.9%)	
I believe that the Nursing study program provides / has provided me with the necessary knowledge.	to a very large extent	0 (0.0%)	6 (7.8%)	0.668
	very little	0 (0.0%)	0 (0.0%)	
	to a lesser extent	2 (6.9%)	7 (9.1%)	
	moderately	13 (44.8%)	37 (48.1%)	
I am satisfied with the transfer of knowledge by the mentor during the practical part of the study program.	to a large extent	9 (31.0%)	15 (19.5%)	0.807
	to a very large extent	5 (17.2%)	18 (23.4%)	
	very little	0 (0.0%)	3 (3.9%)	
	to a lesser extent	1 (3.4%)	6 (7.8%)	
By means education, I contribute to the recognition of my profession.	moderately	14 (48.3%)	34 (44.2%)	0.373
	to a large extent	6 (20.7%)	18 (23.4%)	
	to a very large extent	8 (27.6%)	16 (20.8%)	
	very little	0 (0.0%)	2 (2.6%)	
Education burdens us with unnecessary content.	to a lesser extent	3 (10.3%)	6 (7.8%)	0.404
	moderately	9 (31.0%)	16 (20.8%)	
	to a large extent	10 (34.5%)	41 (53.2%)	
	to a very large extent	7 (24.1%)	12 (15.6%)	
I believe that nursing training improves the quality of health care.	very little	0 (0.0%)	0 (0.0%)	0.310
	to a lesser extent	0 (0.0%)	0 (0.0%)	
	moderately	10 (34.5%)	19 (24.7%)	
	to a large extent	10 (34.5%)	23 (29.9%)	
I believe that the development of the profession requires an educated and trained nurse.	to a very large extent	9 (31.0%)	35 (45.5%)	0.467
	very little	1 (3.4%)	2 (2.6%)	
	to a lesser extent	4 (13.8%)	3 (3.9%)	
	moderately	4 (13.8%)	16 (20.8%)	
Do you believe that completing your studies will broaden the scope of your competences?	to a large extent	8 (27.6%)	29 (37.7%)	0.578
	to a very large extent	12 (41.4%)	27 (35.1%)	
	very little	0 (0.0%)	0 (0.0%)	
	to a lesser extent	3 (10.3%)	7 (9.1%)	
Do you think that your studies will / have already helped you to progress in your career?	moderately	4 (13.8%)	4 (5.2%)	0.277
	to a large extent	6 (20.7%)	21 (27.3%)	
	to a very large extent	16 (55.2%)	45 (58.4%)	
	very little	0 (0.0%)	0 (0.0%)	
Are you thinking about leaving Croatia after completing your studies?	to a lesser extent	2 (6.9%)	4 (5.2%)	0.484
	moderately	5 (17.2%)	23 (29.9%)	
	to a large extent	11 (37.9%)	28 (36.4%)	
	to a very large extent	11 (37.9%)	22 (28.6%)	
Do you think that your studies will / have already helped you to progress in your career?	very little	0 (0.0%)	4 (5.2%)	0.277
	to a lesser extent	0 (0.0%)	0 (0.0%)	
	moderately	8 (27.6%)	13 (16.9%)	
	to a large extent	13 (44.8%)	28 (36.4%)	
Are you thinking about leaving Croatia after completing your studies?	to a very large extent	8 (27.6%)	32 (41.6%)	0.484
	very little	12 (41.4%)	35 (45.5%)	
	to a lesser extent	6 (20.7%)	25 (32.5%)	
	moderately	6 (20.7%)	9 (11.7%)	
	to a large extent	2 (6.9%)	3 (3.9%)	
	to a very large extent	3 (10.3%)	5 (6.5%)	

p – Fisher’s exact test; N – number of respondents; % – percentage

Table 5 Comparison for the question “have you attended secondary medical school“

		Yes (n = 89)	No (n = 17)	p
		N (%)	N (%)	
I am satisfied with the knowledge I acquired in secondary school.	very little	1 (1.1%)	1 (5.9%)	0.183
	to a lesser extent	5 (5.6%)	2 (11.8%)	
	moderately	62 (69.7%)	9 (52.9%)	
	to a large extent	17 (19.1%)	3 (17.6%)	
	to a very large extent	4 (4.5%)	2 (11.8%)	
I believe that the Nursing study program provides / has provided me with the necessary knowledge.	very little	0 (0.0%)	0 (0.0%)	0.811
	to a lesser extent	7 (7.9%)	2 (11.8%)	
	moderately	41 (46.1%)	9 (52.9%)	
	to a large extent	21 (23.6%)	3 (17.6%)	
	to a very large extent	20 (22.5%)	3 (17.6%)	
I am satisfied with the transfer of knowledge by the mentor during the practical part of the study program.	very little	3 (3.4%)	0 (0.0%)	0.118
	to a lesser extent	7 (7.9%)	0 (0.0%)	
	moderately	39 (43.8%)	9 (52.9%)	
	to a large extent	23 (25.8%)	1 (5.9%)	
	to a very large extent	17 (19.1%)	7 (41.2%)	
By means of education, I contribute to the recognition of my profession.	very little	2 (2.2%)	0 (0.0%)	0.841
	to a lesser extent	7 (7.9%)	2 (11.8%)	
	moderately	20 (22.5%)	5 (29.4%)	
	to a large extent	43 (48.3%)	8 (47.1%)	
	to a very large extent	17 (19.1%)	2 (11.8%)	
Education burdened us with unnecessary content.	very little	0 (0.0%)	0 (0.0%)	0.794
	to a lesser extent	0 (0.0%)	0 (0.0%)	
	moderately	24 (27.0%)	5 (29.4%)	
	to a large extent	29 (32.6%)	4 (23.5%)	
	to a very large extent	36 (40.4%)	8 (47.1%)	
I believe that nursing training improves the quality of health care.	very little	3 (3.4%)	0 (0.0%)	0.629
	to a lesser extent	7 (7.9%)	0 (0.0%)	
	moderately	15 (16.9%)	5 (29.4%)	
	to a large extent	32 (36.0%)	5 (29.4%)	
	to a very large extent	32 (36.0%)	7 (41.2%)	
I believe that the development of the profession requires an educated and trained nurse.	very little	0 (0.0%)	0 (0.0%)	0.940
	to a lesser extent	8 (9.0%)	2 (11.8%)	
	moderately	7 (7.9%)	1 (5.9%)	
	to a large extent	23 (25.8%)	4 (23.5%)	
	to a very large extent	51 (57.3%)	10 (58.8%)	
Do you believe that completing your studies will broaden the scope of your competences?	very little	0 (0.0%)	0 (0.0%)	0.549
	to a lesser extent	4 (4.5%)	2 (11.8%)	
	moderately	24 (27.0%)	4 (23.5%)	
	to a large extent	34 (38.2%)	5 (29.4%)	
	to a very large extent	27 (30.3%)	6 (35.3%)	
Do you think that your studies will / have already helped you to progress in your career?	very little	4 (4.5%)	0 (0.0%)	0.314
	to a lesser extent	0 (0.0%)	0 (0.0%)	
	moderately	18 (20.2%)	3 (17.6%)	
	to a large extent	31 (34.8%)	10 (58.8%)	
	to a very large extent	36 (40.4%)	4 (23.5%)	
Are you thinking about leaving Croatia after completing your studies?	very little	38 (42.7%)	9 (52.9%)	0.830
	to a lesser extent	27 (30.3%)	4 (23.5%)	
	moderately	13 (14.6%)	2 (11.8%)	
	to a large extent	5 (5.6%)	0 (0.0%)	
	to a very large extent	6 (6.7%)	2 (11.8%)	

p – Fisher’s exact test; N – number of respondents; % – percentage

Discussion

We recognize that modern science and technology demand highly educated nurses. Currently, we are experiencing a period in which nursing education has become imperative, while simultaneously facing a global shortage of healthcare professionals. Based on World Health Organization data, there are approximately 4 million healthcare professionals worldwide (Svetić Čišić, 2021).

A significant deficit and migration of nurses at the national level became evident in 2013, when Croatia joined the EU. The Croatian Chamber of Nurses reported a notable outflow of nurses between January 1, 2016, and the end of 2019. The majority of nurses who emigrated were aged 25 to 45 (Šijan, 2023). Some authors describe this migration as an exodus, attributing it to low salaries and a shrinking labor market for nurses.

When comparing results by gender, 63.8% of male respondents and 56.4% of female respondents believe that education greatly influences professional development. Conversely, only 6.4% of male and 12.8% of female respondents believe that education has a lesser influence on professional development.

When this statement was examined in relation to respondents' level of study (undergraduate vs. graduate), similar results were observed: 55.2% of males and 58.4% of females believed that the development of the profession required highly educated and trained nurses. Comparable results were found when considering respondents' secondary education (secondary medical school vs. other secondary schools). Regarding age groups, 63.8% of respondents aged 18–30 believed that the profession strongly required well-educated and trained nurses. This view was shared by 56.4% of respondents aged 31–40 and 45% of those aged 40 and above.

The respondents' opinions indicate a clear consensus that the profession requires well-educated nurses. This finding suggests that institutional management should support educational initiatives to enhance nurse satisfaction. Liu et al. (2016) have demonstrated that education leads to greater job satisfaction and a more positive attitude towards work (Liu et al., 2016). Lee et al. (2018) conducted a study at the University of Hong Kong and the University of Edinburgh, revealing that the clinical environment has become increasingly complex, as has the education of nurses. They emphasize that nursing professionalism is fostered

through a combination of theoretical knowledge and clinical skills (Lee et al., 2018).

When asked about their satisfaction with the knowledge acquired in secondary medical school, the majority of respondents (69.7%) reported moderate satisfaction, while only 4.5% indicated a high level of satisfaction. This moderate satisfaction, coupled with the very small proportion of highly satisfied respondents, is likely attributable to the extended duration of secondary education.

With accession to the European Union, significant changes have been implemented in the secondary and higher education of nurses. A fifth year has been added to the secondary education program for nurses, as mandated by Directive 2005/36/EC. According to this Directive, the education program is structured into two years of general education and three years of vocational subjects and clinical practice (Sušilović, 2021).

Our findings indicate that 54.5% of male students believed the study program provided them with a moderate level of knowledge useful in their daily work, while 18.2% considered it provided less knowledge. Among female students, 46.3% regarded the knowledge they acquired as moderate, whereas 7.4% perceived it as limited.

Among the 95 female respondents, 58.4% reported feeling burdened by unnecessary content to a very large extent, and 27.3% to a large extent. The results for male respondents were similar, with 54.5% feeling burdened to a very large extent and 27.3% to a large extent.

We also analyzed the data by age group. Among respondents aged 18–30, 48.9% considered the knowledge they gained through education to be moderate. Similar results were observed in the 31–40 age group, with 48.7% sharing this view, and in the 40 and over group, in which 40.0% of respondents expressed the same opinion.

Most students were not considering leaving Croatia after completing their studies. Only 4.3% of male respondents and 10.3% of female respondents indicated a strong likelihood of leaving. The largest proportion of respondents – 48.9% of males and 41.0% of females – reported only a minimal intention to leave. Among respondents with a secondary medical education, 5.6% were strongly considering leaving, compared to 17.6% of those with other secondary education. When analyzed by age group, 4.3% of respondents aged 18–30, 10.3% aged 31–40, and 10.0% aged 40 and over reported a strong intention to leave.

In similar studies, a significant proportion of students (40%) indicated a willingness to work abroad (Matas, 2016). The study also found that the primary reasons for considering emigration were the relative ease of finding a job with their qualifications abroad and higher income levels (Matas, 2016).

Stašević et al. (2020) found that younger respondents were significantly more likely to consider emigrating from Croatia, with the majority of these respondents being unmarried (Stašević et al., 2020). Kalateh Sadati et al. (2021) predict a future global demand for nurses resulting from a large number of retirements, which is expected to reduce the overall knowledge and skill capacity within the nursing profession (Kalateh Sadati et al., 2021).

A shortage of nurses has a negative impact on healthcare delivery, making it essential to understand and address the reasons for nurses leaving the profession, as noted by Bahlman-van Ooijen et al. (2023). These authors emphasize that nurse attrition is a critical global issue and that the demand for educated nurses has never been greater (Bahlman-van Ooijen et al., 2023).

Our research data indicated that students in Dubrovnik-Neretva County were highly motivated to remain in and work within their profession. This decision is likely influenced by factors such as their place of residence, local employment opportunities, and the recognition of their educational qualifications after graduation.

After completing their studies, a large number of respondents (40.4%) believed that their studies or the completion of their studies would enable them to advance in their career, which is in line with a study by Matas (2016).

When asked about the contribution of education to the recognition of the nursing profession, the majority of respondents (48.1%) suggested that it contributed to a very large extent, whereas 8.5% felt that education contributed to a small extent. The results of the study are consistent with a study by Kosier et al. (2018), who looked at the recognition of the profession through education and different forms of training. The authors note that the success of a nurse depends largely on continuous education and mastery of modern technologies (Kosier et al., 2018).

Respondents' perceptions of changes in their scope of work and competencies after graduation largely corresponded with their views on the importance of education. Specifically, 36.8% of respondents believed their job responsibilities and competencies would change to a large extent, and 31.1% expected

very large changes, while only 5.7% anticipated minimal changes. The findings also indicated that the majority of students (87.7%) recognized significant limitations in performing interventions and procedures in everyday practice and acknowledged the need for additional training to carry them out effectively.

According to Ivanišević et al. (2022), professional nursing competence is one of the standards for the quality of nursing care, and the identification of competencies is one of the most important predictors of the professional development of nurses (Ivanišević et al., 2022).

The same authors advocate the use of valid and reliable instruments, which can serve as a basis for implementing additional training, as well as informal and formal education (Ivanišević et al., 2022).

The competencies of nurses are clearly defined by the Nursing Act, NN 121/2023, No. 1710. These competencies are further expanded through undergraduate and graduate education (Domitrović et al., 2018).

Limitation of the study

Our study has the advantage of including all nursing students, which allows for generalization, an accurate assessment of perceptions, and the opportunity to target interventions when revising study programs.

However, the sample was limited to students from a single university, in this way restricting the generalizability of the results. Additionally, because the research focused on perceptions of the same population, there is a possibility that the questionnaire – the research instrument – may have introduced bias. Future studies should include nursing students from multiple universities to enhance the representativeness of the findings.

Conclusion

The study found no significant differences in respondents' perceptions of the nursing profession across the analyzed parameters. Opinions were generally consistent with respect to age, gender, level of education, and other factors. Most students emphasized the importance of education, which aligns with the findings of previous studies. Nursing is a profession that requires quality education and continuous training, and nursing programs must provide a solid foundation for acquiring the knowledge and skills necessary to deliver high-quality healthcare, as confirmed by the students' responses.

These results confirm students' satisfaction with the nursing study program, as well as with the training, knowledge, and competencies they acquire upon completing their undergraduate and graduate studies.

It is important to emphasize that our students envision their future within Croatia, with only a small proportion considering leaving the country.

A knowledge-based profession strengthens its identity every day, and education plays a key role in advancing nursing to a higher level.

Ethical aspects and conflict of interest

The study protocol was approved by the Ethics Committee of the University of Dubrovnik (Classification number: 800-1/24; issued on April 20, 2024.). All participants gave their consent before the start of the survey. All methods were conducted in accordance with the relevant guidelines and regulations. The study was conducted in line with all relevant regulations and the Declaration of Helsinki. The authors declare they have no competing interests.

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Author contributions

Conception and design (VI, SZ), data collection (VI, SZ), data analysis and interpretation (VI, SZ), manuscript draft (VI, SB, SZ), critical revision of the manuscript (VI, SB, SZ), final approval of the manuscript (VI, SB, SZ).

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