

## Original Scientific Paper



# HEALTHY WORK ENVIRONMENT AND NURSE RETENTION: CROSS-SECTIONAL EVIDENCE FROM CROATIA

Helena Mayerhoffer<sup>1</sup>, Adriano Friganovic<sup>1,2</sup>

<sup>1</sup>University of Applied Health Sciences in Zagreb, Mlinarska cesta 38, 10000 Zagreb, Croatia

<sup>2</sup>Faculty of Health Studies University of Rijeka, Viktora Cara Emina 5, 51000 Rijeka Croatia

Author for correspondence: Helena Mayerhoffer  mayerhoffer.helena@gmail.com

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## ABSTRACT

### BACKGROUND:

The quality of the work environment plays a crucial role in nurses' job satisfaction and performance. Supportive leadership, healthy interpersonal relationships and professional development opportunities are key factors contributing to motivation and satisfaction. Neglecting these aspects may lead to burnout, decreased job engagement and staff turnover. This research aims to examine how working conditions, interpersonal relationships and support affect nurses' satisfaction and how that satisfaction influences their intention to stay or leave the workplace. The study is based on two hypotheses. The first hypothesis suggests that there is a significant correlation between work environment quality and job satisfaction. The second hypothesis suggests that lower job satisfaction is associated with a higher intention to leave the workplace. The findings aim to support improvements in work conditions and the overall quality of healthcare services.

### METHODS:

A cross-sectional quantitative study was conducted with 223 nurses from various healthcare institutions across Croatia. The study took place from January to March 2025. Data were collected using a structured online questionnaire comprising four parts: demographic data, the Practice Environment Scale of the Nursing Work Index (PES-NWI), a general job satisfaction scale and a binary question on intention to leave the job within a year. The study received ethical approval from the Ethics Committee of the University of Applied Health Sciences

in Zagreb. Data were analysed using SPSS software. Descriptive statistics were used, normality was tested with the Shapiro-Wilk test, and the Mann-Whitney U test was applied to compare groups. Reliability was assessed with Cronbach's alpha and correlations were calculated using Spearman's rank correlation.

### RESULTS:

The study found a statistically significant moderate positive correlation between the quality of the work environment and job satisfaction among nurses (Spearman's rho = 0.62,  $p < 0.001$ ). This indicates that better work environments are associated with higher levels of job satisfaction. Participants who expressed an intention to leave their current workplace within the next year reported significantly lower job satisfaction compared to those who planned to remain ( $p < 0.001$ ). These findings suggest that dissatisfaction with the work environment strongly influences turnover intentions. Improving work conditions and support may therefore be critical in retaining healthcare staff.

### CONCLUSIONS:

Work environment quality directly impacts nurse satisfaction and retention. Improving support, workload, and career opportunities, along with mental health programs is essential to reduce turnover and improve healthcare.

**KEYWORDS:** Nursing, job satisfaction, quality of care, healthy work environment, retention.

## BACKGROUND

Nursing shortages have long been a challenge in healthcare, and this issue is only expected to worsen. As people live longer and more individuals develop chronic illnesses, the demand for nursing care continues to rise (1). This escalating demand, coupled with the critical concern of nurse job dissatisfaction, creates a significant problem. Nurse job dissatisfaction is a widespread issue because it directly compromises patient care quality and safety (2). It is also a major factor contributing to nurses leaving their current positions and even abandoning the profession entirely (3). Job satisfaction itself is a complex set of attitudes that involves various aspects of work, including the organizational structure, interpersonal relationships and personal factors. Nursing, being a physically and emotionally demanding profession, shows a strong link between job satisfaction and working conditions (4). Factors affecting job satisfaction are categorized as extrinsic and intrinsic. Extrinsic factors include salary, opportunities for advancement, peer relationships and the quality of supervision. Research indicates that non-verbal communication, such as gestures of closeness and support, can improve interpersonal relationships and boost job satisfaction (5). It is shown that emotions shape work experience significantly. Suppressing negative feelings reduces satisfaction, while emphasizing positive ones enhances it. Intrinsic factors encompass an individual's personality, education, intellectual abilities, age, marital status, and professional orientation (6). Poor working conditions can lead to dissatisfaction, stress and reduced work quality. Beyond work conditions, personal characteristics like stress tolerance, self-confidence, work experience and age also play a role in overall satisfaction (7). If the nurses' needs are not met, it can lead to burnout. Burnout symptoms include depersonalization, decreased job satisfaction and loss of motivation. The main contributing factors to the development of this syndrome are a mismatch between job demands and preparation, lack of control, lack of recognition, and prolonged stress (8). In severe cases, burnout can result in staff leaving their positions, creating further challenges in recruitment and training. Therefore, investing in factors that improve employee satisfaction is essential to retain skilled professionals and to ensure high-quality patient care (9).

The aim of this research paper is to explore the factors that influence nurses' satisfaction with their work environment. We analysed how the quality of working conditions, interpersonal relationships and professional support can affect nurses' sense of satisfaction. We also want to see how this satisfaction can shape their decision to stay in or leave their workplace. The goal is to encourage improvements in working conditions, thereby enhancing nurses' effectiveness and improving the overall quality of

healthcare services provided. In line with the defined objectives, the following research hypotheses have been formulated:

**Hypothesis 1:** There is a significant correlation between the quality of the work environment and the level of job satisfaction among healthcare professionals. A high-quality work environment results in a higher level of job satisfaction.

**Hypothesis 2:** Healthcare professionals with lower levels of job satisfaction are more likely to intend to leave their workplace.

## METHODS

### STUDY DESIGN AND PARTICIPANTS

This quantitative cross-sectional study was conducted to examine the relationship between nurses' perception of their work environment, job satisfaction and intention to leave their workplace. The study was conducted between January and March 2025. The questionnaire was distributed via social media platforms (Facebook and LinkedIn). A total of 223 nurses employed in various healthcare institutions across Croatia participated in the study. The sample included respondents of different ages, genders, education levels and work experience, ensuring representativeness across various segments of the healthcare system. Participants were recruited from clinical hospital centres, general and specialized hospitals, health centres and other healthcare institutions.

### DATA COLLECTION INSTRUMENTS

Data were collected using an online structured questionnaire created via Google Forms. The questionnaire consisted of four parts. The first section gathered demographic information such as age, gender, education level, marital and parental status, type of institution, total work experience and current job position. The second section included the Practice Environment Scale of the Nursing Work Index (PES-NWI), a validated instrument with 31 items rated on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree), measuring various dimensions of the work environment. The third section assessed general job satisfaction using a scale of five items rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). The fourth section measured the intention to leave the current job within the next year using a binary (Yes/No) question. The internal consistency and reliability of the scales used in this questionnaire were evaluated using Cronbach's Alpha.

### ETHICAL CONSIDERATIONS

Participants were informed about the purpose and

voluntary nature of the study. Informed consent was obtained digitally before beginning the survey. Anonymity and data confidentiality were ensured, and no personal identifiers were collected. Ethical approval for the study was granted by the Ethics Committee of the University of Applied Health Sciences in Zagreb (Ref. No. 251-379-10-24-02). All procedures followed the principles outlined in the Declaration of Helsinki (10).

### STATISTICAL ANALYSIS

Data were analysed using the SPSS software package (IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY: IBM Corp.). Descriptive indicators were used to describe the characteristics of the sample and all examined variables. For continuous variables, the arithmetic mean and standard deviation were presented. For variables that significantly deviate from normal distribution, the median and interquartile range were also shown. For categorical variables, frequencies and percentages of respondents were presented. Differences in job satisfaction across different institutions were analysed using a one-way Analysis of Variance (ANOVA). Normality of distribution was tested using the Shapiro-Wilk test. The Mann-Whitney U test was used to compare independent samples. The correlation between variables was expressed using Spearman's rank correlation coefficient.

### RESULTS

As seen in Table 1, the study included 223 participants employed in various healthcare institutions across Croatia. The largest proportion worked in Clinical Hospital Centres or Clinical Hospitals (38.6%), while the fewest worked in Special Hospitals (4.9%). Participants represented a wide range of age groups, with the largest number aged 30–39 years (30.5%) and the fewest aged 50–64 years (18.4%). The sample was predominantly female (94.2%), with a small minority of male participants (5.8%).

In terms of education, most participants held a master's degree (35.0%), followed closely by those with a bachelor's degree (33.2%) and secondary school education (31.4%). Only one participant held a doctorate (0.4%). Regarding marital status, the majority of respondents were married (63.2%), while the fewest were widowed (0.4%). As for parental status, most participants had one to two children (55.2%), whereas very few had more than six children (0.4%).

Work experience varied, with the highest proportion having more than 20 years of experience (38.7%) and the lowest having up to 5 years (7.2%). In terms of job position, the largest group were Bachelors of Nursing (47.5%), and the smallest group were those with a master's degree in nursing (16.6%).

Table 1. Participant demographic data

		n	%
Employing institution	Clinical Hospital Centre (CHC) or Clinical Hospital (CH)	86	(38.6%)
	General Hospital	51	(22.9%)
	Special Hospital	11	(4.9%)
	Health Centre	28	(12.6%)
	Other	47	(21.1%)
<b>Total</b>		<b>223</b>	<b>(100.0%)</b>
Age	20-29	47	(21.1%)
	30-39	68	(30.5%)
	40-49	67	(30.0%)
	50-64	41	(18.4%)
<b>Total</b>		<b>223</b>	<b>(100.0%)</b>
Sex	Male	13	(5.8%)
	Female	210	(94.2%)
<b>Total</b>		<b>223</b>	<b>(100.0%)</b>
Education	Secondary School	70	(31.4%)
	Bachelor's Degree	74	(33.2%)
	Master's Degree	78	(35.0%)
	Doctorate	1	(.4%)
<b>Total</b>		<b>223</b>	<b>(100.0%)</b>
Marital status	Married	141	(63.2%)
	Divorced	11	(4.9%)
	Common-law partnership	32	(14.3%)
	Single	38	(17.0%)
	Widowed	1	(.4%)
<b>Total</b>		<b>223</b>	<b>(100.0%)</b>
Children	None	64	(28.7%)
	1-2 children	123	(55.2%)
	3-4 children	35	(15.7%)
	More than 6	1	(.4%)
<b>Total</b>		<b>223</b>	<b>(100.0%)</b>
Work experience	Up to 5 years	16	(7.2%)
	6-10 years	58	(26.1%)
	11-20 years	62	(27.9%)
	More than 20 years	86	(38.7%)
<b>Total</b>		<b>223</b>	<b>(100.0%)</b>
Job position	Nurse	80	(35.9%)
	Master of Nursing	37	(16.6%)
	Bachelors of Nursing	106	(47.5%)
<b>Total</b>		<b>223</b>	<b>(100.0%)</b>

Job Satisfaction and Work Environment Quality scales were formed based on all items from the corresponding questionnaire. Table 2 presents the descriptive statistics. The Work Environment scale had a mean score of 95.27 (SD=32.51), while the Job Satisfaction scale had a mean score of 15.98 (SD=4.91). The Shapiro-Wilk test indicated that both variables significantly deviate from normal distribution ( $p<0.001$ ). However, the scales are homogeneous and demonstrate a high degree of internal consistency, with Cronbach's alpha values of 0.94 for the Work Environment scale and 0.87 for the Job Satisfaction scale.

*Table 2. Descriptive data for the Job satisfaction and Work environment scales*

	Work environment	Job satisfaction
Arithmetic mean	95,27	15,98
Standard deviation	32,51	4,91
Median	94,00	16,00
1 <sup>st</sup> Quartile	70,00	13,00
3 <sup>rd</sup> Quartile	114,00	20,00
Min	38,00	5,00
Max	202,00	25,00
N	223	223
Shapiro-Wilk P	<0.001	<0.001
Cronbach's alpa	0.94	0.87

## DIFFERENCES OF JOB SATISFACTION ACROSS INSTITUTIONS

Table 3 presents descriptive statistics on job satisfaction scores for different types of healthcare institutions. The highest average job satisfaction was reported by employees in Health Centres (M=2.91, SD=0.52, Median=2.9), followed by those in Special Hospitals (M=2.62, SD=0.84, Median=2.8) and "Other" healthcare institutions (M=2.64, SD=0.66, Median=2.8). Employees in Clinical Hospital Centres or Clinical Hospitals (M=2.49, SD=0.60, Median=2.6) and General Hospitals (M=2.39, SD=0.64, Median=2.6) reported lower average satisfaction scores.

*Table 3. Descriptive data for Job satisfaction across institutions*

Type of institution	n	Arithmetic mean	Standard deviation	Median
Clinical Hospital Centre (CHC) or Clinical Hospital (CH)	86	2.49	0.60	2.6
General Hospital	51	2.39	0.64	2.6
Special Hospital	11	2.62	0.84	2.8
Health Centre	28	2.91	0.52	2.9
Other	47	2.64	0.66	2.8

A one-way Analysis of Variance (ANOVA) was conducted to compare job satisfaction across five types of institutions. The null hypothesis for this analysis was that there would be no difference in mean job satisfaction across the five groups. The ANOVA results, displayed in Table 4, showed a statistically significant main effect of institution type on job satisfaction,  $F(4,218)=3.31, p=0.012$ . As the p-value of 0.012 is less than the conventional significance level of 0.05, the null hypothesis was rejected. This suggests that the observed differences in mean satisfaction scores across the groups are unlikely to be due to random chance.

*Table 4. One-Way ANOVA results for differences in Job satisfaction across institutions*

Source of Variation	Sum of Squares	Degrees of Freedom	F-statistic	p-value
Between Groups	5.48	4	3.31	0.012
Within Groups	90.22	218		
<b>Total</b>	<b>95.70</b>	<b>222</b>		

## CORRELATION BETWEEN WORK ENVIRONMENT AND JOB SATISFACTION ACROSS INSTITUTIONS

Across institutions, the correlation between work environment quality and job satisfaction showed notable variation. In the Health Centre, a moderate positive correlation was observed ( $r=0.343, p=0.074$ ). Although not meeting the conventional threshold for statistical significance ( $p<0.05$ ), the p-value suggests a 92.6% probability that the association is not due to chance,



indicating a relationship that is present but not strongly supported statistically. In the Clinical Hospital Center (CHC), a strong correlation was recorded ( $r=0.582$ ), yet the high p-value ( $p=4.107$ ) indicates a lack of statistical reliability. Similar results were found in the General Hospital ( $r=0.570$ ,  $p=1.263$ ). Among other healthcare institutions, the correlation was very strong ( $r=0.693$ ) but again accompanied by a high p-value ( $p=6.874$ ), suggesting no statistically significant association. Only in Specialized Hospitals there was a very strong correlation ( $r=0.766$ ) accompanied by a statistically significant p-value ( $p=0.006$ ), confirming a robust relationship between perceived work environment quality and job satisfaction.

## HYPOTHESES

**Hypothesis 1:** There is a significant correlation between the quality of the work environment and the level of job satisfaction among healthcare professionals. A high-quality work environment results in a higher level of job satisfaction. Spearman's rank correlation coefficient indicates a statistically significant, moderately strong positive correlation (Spearman's  $\rho=0.62$ ,  $p<0.001$ ) between the quality of the work environment and job satisfaction – higher quality is associated with higher satisfaction. This is also illustrated in the scatter plot.

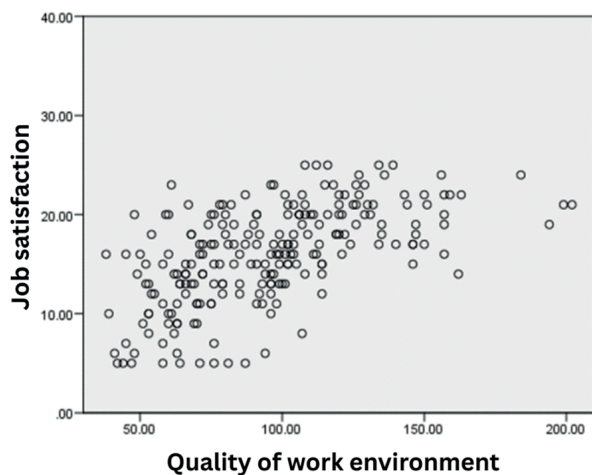


Figure 1. Scatter plot showing the relationship between Work Environment Quality and Job Satisfaction

**Hypothesis 2:** Healthcare professionals with lower levels of job satisfaction are more likely to leave their workplace. As shown in Figure 2, participants who do not intend to leave their workplace reported a noticeably higher average level of job satisfaction compared to those who expressed the intention to leave.

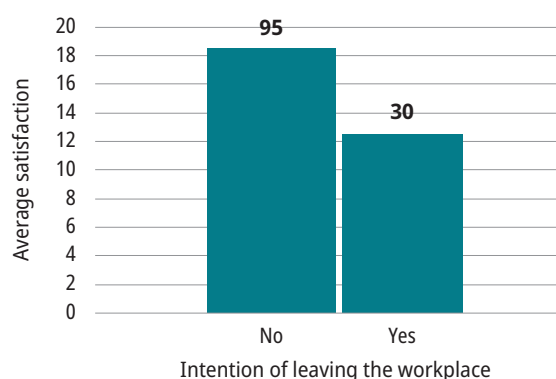


Figure 2. Average job satisfaction based on the intention of leaving the workplace

The Mann-Whitney test shows significantly lower job satisfaction among those who intend to leave their job ( $p<0.001$ ). These findings confirm Hypothesis 2 and suggest that dissatisfaction with the current job is strongly associated with the intention to leave. The results underline the importance of fostering job satisfaction as a means of retaining nurses. Interventions aimed at improving the quality of the work environment may therefore be essential for reducing turnover intentions.

## DISCUSSION

The aim of this study was to examine the factors that shape nurses' satisfaction with their work environment and to understand how these factors affect their choices about staying in or leaving their current positions. The findings show a strong connection between the quality of the work environment and overall job satisfaction. This means that the organizational climate and system-level support have an important role in how nurses experience their work. The results confirm that good relationships, open communication and involvement in decision-making improve the work experience. However, a high level of dissatisfaction is seen among many participants with higher education who do not work in positions that match their qualifications. This shows a serious problem in the system. Many nurses with advanced degrees are not promoted which creates frustration and reduces motivation to continue professional development. This problem also affects the overall quality of healthcare services.

The descriptive statistics provide deeper insight into this variability: the Work Environment scale had a mean score of 95.27 ( $SD=32.51$ ), with a wide range from 38 to 202, showing that while some nurses perceive a highly supportive environment, others face significant challenges. The Job Satisfaction scale mean was 15.98

(SD=4.91), ranging from 5 to 25, indicating moderate satisfaction overall but considerable differences among participants. This variability suggests that interventions should be tailored to address specific needs within subgroups facing greater dissatisfaction. The wide spread of scores highlights that a substantial number of healthcare professionals work in less supportive environments and experience lower job satisfaction which can negatively impact retention and quality of care.

The significant ANOVA result confirms that the level of job satisfaction is not uniform across all types of institutions included in the study. The findings suggest that certain working environments may be associated with higher or lower levels of satisfaction, as evidenced by the notably different mean scores.

The strong relationship between work environment quality and job satisfaction aligns with expectations and is supported by the high reliability of both measurement scales (Cronbach's alpha of 0.94 for Work Environment and 0.87 for Job Satisfaction). Despite this, the moderate average satisfaction score and the high number of participants planning to leave their jobs highlight systemic issues within the Croatian healthcare system. These findings suggest that challenges are coming less from the nature of the nursing work itself and more from inadequate organizational support, limited opportunities for advancement and excessive workloads.

Previous studies support these findings, showing that the quality of nursing work life is moderate. 50% of nurses working in intensive care stated that working in shifts has a negative impact on their life (11). 56% of nurses feel they are not fairly compensated for their work given current market conditions (12). 50% of respondents believed management respected them, and just 59% felt their nurse manager acknowledged their achievements (13). 80% of respondents aged 19-29 years were dissatisfied with the possibility of advancement (14).

Studies showed that strong relationships with physicians, supportive leadership and teamwork significantly improve job satisfaction. Emotional exhaustion and high workload are linked to lower satisfaction, while leadership that fosters professional development and employee involvement can reduce burnout and increase retention (15). A study among 1,183 nurses working in intensive care units in Croatia, Cyprus, Poland, Spain, and Romania, revealed that abuse in the workplace significantly impacts job satisfaction and retention. Over half experienced verbal, physical, or sexual abuse, mostly from patients, yet many incidents went unreported or unaddressed. Positive resolution of such incidents and awareness of institutional zero-tolerance policies were linked to better communication, cooperation, and a stronger sense of safety and respect (16). Another study conducted in Croatia, Slovenia and Serbia acknowledged that women reported significantly higher perceived

discrimination and lower job satisfaction than men. Croatian nurses were most satisfied with educational exposure but reported greater discrimination and lower overall job satisfaction compared to Slovenian and Serbian nurses. Slovenian nurses perceived the least discrimination and highest job satisfaction. Job insecurity was the main reason for considering leaving their workplace, while low salary was the primary concern for those aged 20-40 (17).

Patterns in the intention to leave the workplace were observed in a larger European study conducted among 1,033 nurses from five countries (Cyprus, Poland, Croatia, Romania, and Spain), where 21.4% of respondents planned to leave their job within three years, and 11.4% within one year. The main reasons for leaving were staff shortages, poor organizational support, low recognition for work, and stress. Respondents who did not intend to leave reported significantly higher job satisfaction and a more positive perception of the work environment according to all AACN standards. Among those considering leaving, the most important factors that could retain them were higher pay, better staffing, and greater recognition from supervisors (18). Regarding other countries, in Sweden, about 30% of nurses plan to leave their current job within five years. In South Korea, 46% of newly hired nurses left their first job within three years. In China, research showed that as many as 78.3% of nurses have a strong or very strong desire to leave their job, significantly higher compared to other countries (19). Research consistently shows a link between personality traits and job satisfaction. Individuals who are more extraverted, agreeable and conscientious tend to report higher job satisfaction, whereas those with higher levels of neuroticism typically report lower satisfaction (20,21).

These findings further emphasize the need for active management involvement in creating a positive work environment that promotes emotional safety and professional growth of nurses. Based on the results of this study, concrete measures are recommended to improve the working conditions of nurses. This includes increasing staffing levels, rationalizing workload, improving interpersonal relationships within teams and strengthening management support by involving nurses in decision-making and ensuring better conditions for professional development. Additionally, it is important to implement burnout prevention programs that include regular supervision, workplace stress education, and support for nurses' mental health.

## CONCLUSION

This study confirms that the quality of the work environment greatly influences job satisfaction

among nurses. Systemic issues, such as lack of career advancement and insufficient support, lead to high dissatisfaction and intentions to leave the workplace. Consistent with prior research, supportive leadership, good teamwork and safe work conditions are key to retaining staff. To improve retention and satisfaction, healthcare organizations must enhance staffing, manage workloads, foster better communication and involve nurses in decision-making. Implementing burnout prevention and mental health support is also crucial. These steps are vital to ensure a motivated workforce and improve healthcare quality.

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