



# Assessing Quality of Life Among Emergency Department Nurses

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## Abstract

**Aim.** The aim of this research was to assess the quality of life (QoL) of nurses working in emergency departments in Rijeka and Zagreb. In addition, the study examined how demographic and work-related factors such as gender, age, education level, and place of employment are associated with variations in quality of life.

**Methods.** A cross-sectional study was conducted in July and August 2024 using a non-probabilistic random sampling method. A total of 99 nurses (54.5% female, 45.5% male; mean age = 34.1 years, SD = 8.9) participated by completing an anonymous online survey. The World Health Organization Quality of Life Questionnaire (WHOQOL-BREF) was used to evaluate four domains of QoL: physical health, psychological health, social relationships and environmental. Statistical analysis included descriptive statistics, the Kolmogorov-Smirnov test, Mann-Whitney U test, Kruskal-Wallis test, and, where appropriate, post hoc analyses. Statistical significance was set at  $p < 0.05$ .

**Results.** The overall mean quality of life score was 57.0, indicating a moderate level of well-being. The highest scores were observed in the domain of social relationships ( $M = 65.4$ ), and the lowest in physical health ( $M = 50.8$ ). Statistically significant differences were found between age groups, particularly in psychological health and social relationships, with younger participants ( $< 25$  years) reporting higher scores. Nurses with secondary education reported higher QoL in psychological and social domains than those with higher degrees. The respondents from Rijeka scored higher in the environmental domain than those from Zagreb.

**Conclusion.** This study highlights moderate QoL among emergency nurses and identifies demographic and contextual differences across key domains. The findings suggest a need for targeted interventions to improve physical health, support work-life balance, and promote equity based on age, gender, and work environment. Enhancing the well-being of emergency department nurses is essential for sustainable healthcare systems and quality patient care.

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## Introduction

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Nurses constitute the largest group of healthcare professionals and play a vital role in maintaining the efficiency and quality of healthcare services. Their ability to deliver high-quality care is strongly influenced by factors such as working conditions, quality of life, and job satisfaction (1, 2). Among all healthcare environments, the emergency department presents particularly challenging conditions due to its unpredictable, high-pressure, and dynamic nature. Nurses working in these settings are frequently exposed to time-sensitive procedures, trauma cases, and emotionally charged situations, all of which contribute to increased physical and psychological strain (3, 4).

Emergency nursing is commonly associated with irregular shift work, including night shifts, weekends, and holidays, which disrupt circadian rhythms and make it difficult for nurses to maintain a consistent personal life. These schedules often restrict participation in family and social activities, leading to negative consequences for nurses' physical, psychological, and social well-being (5,6). In addition, work-related stress, heavy workloads, insufficient staffing, and lack of institutional support are consistently cited as major contributors to emotional exhaustion, burnout, and workforce attrition (2, 7).

Quality of life among nurses is influenced by an interplay of physical health, mental well-being, material conditions, social relationships, and personal perceptions of life satisfaction (8). While subjective and objective indicators are interrelated, individual perception is essential for understanding how nurses experience their professional and personal lives.

Previous research shows conflicting results: some studies indicate that younger nurses and those with higher education report better physical health and stronger social support networks, while others suggest that older, more experienced staff demonstrate greater psychological resilience and work-life balance (6, 9).

However, current research on nurses' QoL in emergency settings remains limited and inconsistent. Many studies focus on general hospital staff, use small or non-representative samples, or do not account for intersecting variables such as age, gender, and educational background. These methodological limitations, combined with varying institutional and cultural contexts, may partly explain the contradictions in the findings. Importantly, there is a lack of studies specifically examining these issues within the Croatian healthcare system, especially in high-intensity units such as emergency departments. This gap underscores the need for localized, context-sensitive research to explore how demographic and workplace factors influence nurses' quality of life in Croatia.

Despite financial compensation for night and overtime work, numerous studies show that the negative impact of shift work on nurses' quality of life, particularly physical exhaustion and social disruption, persists (10). Healthcare institutions therefore play a crucial role in enhancing nurses' QoL by ensuring safe working conditions, providing adequate staffing, and fostering work-life balance, which in turn improves the quality of patient care (11).

This study is grounded in the theoretical framework of the World Health Organization's multidimensional definition of quality of life. The WHO defines QoL as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" (12). The WHOQOL-BREF instrument, based on this definition, is especially suited for evaluating well-being in complex environments like emergency departments, as it captures four key domains: physical health, psychological health, social relationships, and environment. Its comprehensive nature allows for a holistic assessment aligned with both global standards and local occupational realities.

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## Aim

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Based on this framework, the aim of the study is to evaluate the quality of life of nurses employed in emergency departments in Rijeka and Zagreb, and to examine whether variables such as gender, age, education level, and workplace setting are associated with variations in their perceived quality of life.

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## Methods

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### Respondents

Nurses working in emergency departments in Rijeka and Zagreb participated in this cross-sectional study, which was conducted during July and August 2024. The participants were selected using a non-probabilistic convenience sampling method based on voluntary participation. Inclusion criteria required at least one year of continuous professional experience in their current position, regardless of age, gender, or educational background. Interns and nurses with less than one year of experience were excluded to ensure that the sample consisted of experienced healthcare professionals working in the high-stress environment of emergency departments.

This study aimed to include all eligible nurses working in the emergency departments of Rijeka and Zagreb during the study period. Out of a total population of 125 nurses, 99 met the inclusion criteria and voluntarily participated, resulting in a high response rate of 79.2%. Since the study covered the majority of the available population, a separate sample size calculation was not necessary.

### Data collection

Data were collected through an anonymous online questionnaire distributed via digital communication platforms (e.g., Viber, WhatsApp, and Messenger). Participation was voluntary, and informed consent was obtained electronically prior to completing the survey. Respondents were informed about the pur-

pose of the study, the anonymity of their responses, and their right to withdraw at any point without providing a reason.

### Instrument

The survey was composed of two sections:

- **Sociodemographic and professional information**, including gender, age, education level, years of work experience, and workplace (Rijeka or Zagreb). In the Croatian context, "secondary education" refers to a four-year vocational high school degree in nursing, which qualifies individuals to work as practical nurses or nursing technicians.
- **Quality of Life assessment**, based on the World Health Organization Quality of Life Questionnaire - WHOQOL-BREF. This validated 26-item instrument includes two general questions and four domain-specific sections: physical health, psychological health, social relationships, and environment. Responses were rated on a five-point Likert scale and converted to a 0-100 scale, with higher scores indicating better quality of life, in accordance with WHO guidelines (12). Domain scores above 60 were interpreted as indicative of good QoL (13).

### Ethics

Ethical approval for this study was granted by the Ethics Committee of the Faculty of Health Studies, University of Rijeka (approval code: 600-05/24-01/243). All participants were informed about the purpose of the study, assured of the confidentiality of their responses, and notified of their right to withdraw at any time without consequences. Informed consent was obtained electronically before participation. The study involved minimal risk and did not collect any sensitive personal data. All results are presented in aggregate form to protect participant anonymity.

### Statistics

Data were analyzed using Statistica 14.0.0.15 (TIBCO Software Inc., Palo Alto, CA, USA) and Microsoft Excel 2013 (Microsoft Corporation, Redmond, WA, USA). Descriptive statistics (mean, standard deviation, median, interquartile range) were used to summarize demographic variables and QoL scores.

The normality of data distribution was tested using the Kolmogorov-Smirnov test. Since the assumptions for parametric tests were not met, non-parametric methods were applied. Differences between two independent groups (e.g., gender, location) were analyzed using the Mann-Whitney U test. The Kruskal-Wallis test was used for comparisons among three or more categories (e.g., age groups, education level, work experience), followed by post hoc Dunn's tests with Bonferroni correction where significant differences were detected. Statistical significance was set at  $p < 0.05$ .

Given the small number of participants aged 56 and older ( $n = 3$ ), this age category was merged with the preceding group (46-55 years) to ensure statistical validity of comparisons.

## Results

A total of 99 nurses participated in the study, of whom 54 were female (54.5%) and 45 were male (45.5%). The largest proportion of participants was in the 26-35 age group (38.4%), while only 3% were 56 years or older. Due to the small size of this group, it was merged with the 46-55 category for statistical analysis (Table 1).

**Table 1. Demographic characteristics of participants**

Characteristic	Category	n (%)
Gender	Male	45 (45.5)
	Female	54 (54.5)
Age	≤ 25 years	22 (22.2)
	26-35 years	38 (38.4)
	36-45 years	16 (16.2)
	46-65 years (merged)	23 (23.3)
Education	Secondary education	32 (32.3)
	Bachelor's degree	51 (51.5)
	Master's degree	16 (16.2)
Workplace	ED Zagreb	53 (53.5)
	ED Rijeka	46 (46.5)

## General results of the quality of life assessment

The overall mean quality of life score was  $M = 57.0$ ,  $SD = 27.5$ , suggesting a moderate level of perceived well-being. Among the WHOQOL-BREF domains, the highest scores were recorded in social relationships, followed by environment, psychological health, and physical health, which had the lowest mean score (Table 2).

**Table 2. Mean quality of life domain scores**

Domain	Mean (M)	Standard Deviation (SD)
Physical Health	50.8	27.8
Psychological Health	58.2	26.2
Environment	59.7	27.0
Social Relationships	65.4	26.8
Overall QoL	57.0	27.5

## Differences by age group

The Kruskal-Wallis test revealed statistically significant differences in quality of life scores across age groups in the domains of psychological health ( $\chi^2 = 14.21$ ,  $p = 0.001$ ), social relationships ( $\chi^2 = 16.88$ ,  $p < 0.001$ ), and environment ( $\chi^2 = 12.32$ ,  $p = 0.002$ ).

Post hoc comparisons using Dunn's test with Bonferroni correction indicated that nurses aged ≤ 25 years reported significantly higher quality of life in these three domains compared to those aged 46-65 years (Table 3).

## Differences by gender

No statistically significant differences in quality of life scores were found between male and female participants across any domain (all  $p > 0.05$ ).

## Differences by workplace

Nurses employed in Rijeka reported higher scores in the environment domain ( $M = 63.4$ ,  $SD = 26.1$ ) than those in Zagreb ( $M = 56.3$ ,  $SD = 27.5$ ). This difference was statistically significant ( $U = 935$ ,  $p = 0.029$ ).

## Differences by education level

Kruskal-Wallis tests showed statistically significant differences in psychological health ( $\chi^2 = 7.31$ ,  $p = 0.027$ ) and social relationships ( $\chi^2 = 6.55$ ,  $p = 0.038$ ) across education levels. Post hoc analysis using Dunn's test with Bonferroni correction revealed that nurses with secondary education reported significantly higher scores than those with a master's degree in both domains (Table 4).

## Discussion

This study explores the quality of life of nurses working in emergency departments in Croatia, specifically in Rijeka and Zagreb. The findings reveal several significant patterns in the interaction between demographic and occupational factors and QoL, contributing to a broader understanding of the challenges faced by emergency healthcare workers.

The overall QoL score of 57.0, indicating a moderate level of life satisfaction, is lower than that reported in previous studies, such as Gabrić's research in Karlovac County, which showed a score of 72.2 (1). This discrepancy may reflect regional differences in workload, staffing levels, and the availability of resources. Additionally, participants in this study reported the highest satisfaction in the domain of social relationships,

and the lowest in physical health, which is in line with findings from Poland and other international research highlighting the physical demands of emergency care work (14). These findings underscore the importance of targeted interventions to improve physical well-being, such as implementing wellness programs, making ergonomic adjustments, and promoting physical activity among emergency department staff.

The results revealed a significant relationship between age and quality of life in the domains of psychological health, social relationships, and environment, with younger participants ( $\leq 25$  years) reporting higher scores than older ones ( $\geq 46$  years). Interestingly, no significant difference was found in the domain of physical health, which contrasts with previous studies that typically associate younger age with better physical functioning.

This unexpected result may be due to the uniformly high physical demands placed on all emergency nurses, regardless of age, which could diminish age-related differences in perceived physical health. However, studies from Saudi Arabia report the opposite trend, where older healthcare workers showed better QoL, potentially due to increased work experience, stronger professional relationships, and more stable work-life integration (15). These differences highlight the influence of cultural and institutional factors, suggesting the need for age-sensitive interventions, such as flexible work schedules and wellness programs tailored to older staff.

**Table 3. Statistically significant differences by age group identified using the Kruskal-Wallis test**

Domain	$\chi^2$ (K-W)	$p$ (K-W)	M ( $\leq 25$ yrs)	SD ( $\leq 25$ yrs)	M (46-65 yrs)	SD (46-65 yrs)	$p$ (post hoc)
Psychological health	14.21	0.001	63.5	24.1	52.1	27.0	0.008
Social relationships	16.88	<0.001	70.3	25.6	60.0	27.2	0.003
Environment	12.32	0.002	64.1	26.4	55.3	27.7	0.010

**Table 4. QoL scores by education level**

Domain	$\chi^2$ (K-W)	$p$ (K-W)	M (Secondary)	SD	M (Bachelor)	SD	M (Master's)	SD	Post hoc comparison	$p$ (post hoc)
Psychological health	7.31	0.027	62.3	28.7	56.1	24.9	56.6	24.1	Secondary > Master's	0.022
Social relationships	6.55	0.038	70.8	29.8	65.4	25.2	54.7	22.3	Secondary > Master's	0.035



Some differences in average QoL scores were observed between male and female participants, with male nurses reporting slightly higher scores in overall quality of life, physical health, and environment. However, these differences were not statistically significant across any domain in the present study. This contrasts with findings from studies conducted in Saudi Arabia and Brazil, which reported better QoL among male healthcare workers compared to their female colleagues (16, 17). Although the present study does not confirm consistent gender-based differences across all domains, previous research suggests that factors such as increased physical and emotional strain, domestic responsibilities, and structural inequalities in the workplace may contribute to lower perceived QoL among female nurses.

Recent research confirms that female emergency nurses experience significantly higher levels of emotional exhaustion and work-family conflict compared to males, due to gendered role expectations and the emotional toll of caregiving roles (18). To address these issues, organizational change is needed, including the implementation of gender equality policies, access to childcare support, and fair promotion systems.

Contrary to expectations, nurses with secondary education reported better QoL in the domains of psychological health, social relationships, and overall satisfaction compared to those with higher education levels. In the Croatian context, secondary education refers to a five-year vocational nursing program at the secondary school level, which qualifies individuals to work as registered nurses. This finding challenges the assumption that more education correlates with greater well-being and is consistent with Gabrić's findings (1). Possible explanations include lower job-related stress and responsibility in roles requiring only secondary education, and more realistic expectations regarding work-life balance. These results suggest that increased professional demands placed on more educated nurses may negatively affect their QoL. Further research is needed to examine how job responsibilities and expectations differ by education level and how they impact well-being.

The participants working in Rijeka reported significantly higher scores in the environment domain compared to those working in Zagreb, likely reflecting the advantages of a smaller and less congested city. Factors such as reduced traffic, lower cost of living, and better access to green spaces may contribute to this

outcome. These findings are consistent with studies associating higher QoL with smaller urban environments which provide more accessible community resources and a slower pace of life (19). However, the lack of significant differences in other domains suggests that institutional factors, such as management practices, staffing levels, and workplace culture, also play a role in shaping perceived QoL.

These international comparisons suggest that cultural context, healthcare system structure, and workplace support mechanisms all contribute to how demographic variables affect perceived QoL. They highlight the need for location-specific and demographically sensitive interventions aimed at improving the quality of life of emergency nurses.

Recommended strategies include increasing staffing to reduce workload, providing wellness and mental health programs, ensuring gender equality policies, and offering flexible schedules for older staff. In larger cities such as Zagreb, interventions should focus on reducing environmental stressors, while in smaller cities, initiatives could build on existing community strengths.

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## Limitations

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This study has several limitations. The cross-sectional design restricts causal inference, and reliance on self-reported data introduces the risk of response bias due to participants' subjective perceptions. Additionally, the sample was geographically limited to emergency departments in two Croatian cities, which may reduce the generalizability of findings to other regions or healthcare systems. One notable limitation concerns the age distribution of the participants: only three respondents were aged 56 or older, which led to the merging of this group with the 46-55 category for statistical analysis, potentially masking age-specific trends.

While post hoc tests were performed for statistically significant results in age and education, the limited sample size in some subgroups still reduces statistical power. Future research should consider longitudinal designs to observe changes over time and

should include a broader, more diverse sample, both geographically and across different healthcare settings, to allow for comparisons between institutions, specialties, and countries.

## Conclusion

This study examined the quality of life of nurses working in emergency departments in Rijeka and Zagreb. The overall QoL was found to be moderate, with the highest satisfaction reported in the domain of social relationships and the lowest in physical health. Statistically significant differences were identified across age, education level, and workplace in specific QoL domains, while no significant gender-based differences were observed. Younger nurses and those with secondary education reported higher scores in several areas, while nurses employed in Rijeka rated the environment domain more positively than those in Zagreb. These findings address the research questions and emphasize the relevance of demographic and contextual factors in evaluating nurse well-being.

## Author contributions

Conceptualization and methodology (KL, KI); Data curation and formal analysis (KL, MM, KI); Investigation and project administration (KL, MM, KI); and Writing – original draft and review & editing (KL, MM, KI). All authors have approved the final manuscript.

## Conflict of interest

The authors declare no conflicts of interest.

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