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Research Article

Correlation between Nurses' Work Environment and Self-Assessed Satisfaction in Emergency Care

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Abstract

Introduction: In the Republic of Croatia, no research has been conducted that examines the work environment in the field of emergency medicine. Emergency medicine is characterized by nurses' exposure to various adverse external conditions and hazardous situations while providing interventions. A safe and supportive work environment should be one of the primary prerequisites that employers must ensure for nurses, enabling them to carry out their professional duties in a healthy, secure, and comfortable manner.

Aim: To examine the work environment and the key factors that correlate with self-assessed satisfaction among nurses employed in prehospital emergency medical services.

Methods: A total of 60 participants took part in the study, all of whom were nurses employed at the Institute of Emergency Medicine of Osijek-Baranja County. The data collection was conducted from June to July 2021. The research instrument consisted of demographic questions, self-assessment satisfaction question and the Nursing Work Environment Questionnaire.

Results: Among the participants, those with secondary vocational education were significantly the most represented (Chi-square test, $P < 0.001$). There was also a significantly higher proportion of nurses whose work tasks were aligned with their level of education, who were most frequently studying while employed, who held permanent positions, who most often worked in Team 1, and who had either 1–5 years or 16–30 years of work experience (Chi-square test, $P \leq 0.007$). Self-assessment of satisfaction with their current work situation showed that participants were fairly satisfied; the median score on a five-point scale was 2, (IQR from 1 to 2). The negative correlation between age and the topics assessed by individual subscales indicates that older participants were more likely to disagree with the statements, while positive correlation with self-assessed satisfaction means that employees who are satisfied with their current work situation are more likely to agree with the statements presented in the questionnaire. There was no significant difference regarding gender found.

Conclusion: The nursing work environment is associated with self-assessed satisfaction. However, although the self-assessed satisfaction with their current personal work situation indicated a very low level of satisfaction, this cannot be said for the other statements related to overall satisfaction with the work environment, as scores for each scale of the questionnaire are somewhat high. Satisfaction or dissatisfaction among employed nurses may ultimately lead to leaving their position or seeking employment abroad.

Keywords: Assessment of work capacity, Emergency medicine, Nurses, Self-assessed Satisfaction, Work environment

Introduction

In the Republic of Croatia, there is a lack of research related to the work environment of nurses in the field of emergency medical services. Prehospital emergency medical care is part of primary health care, and its work is sometimes carried out under inadequate conditions and frequently requires demanding physical activities [1]. A well-organized work environment should be one of the key prerequisites for nursing practice [2,3]. The concept of the work environment encompasses a combination of physical, organizational, and social factors [4,5]. Ergonomics represents an important element that enables nurses to perform their work tasks in the most effective manner. Key work environment factors influencing work ability include the availability of resources, leadership quality, staffing levels, and workplace culture [5]. According to Ilmarinen and Rantanen, interventions aimed at improving factors that influence work ability should focus on health promotion, enhancement of professional skills, and interventions targeting both the psychosocial and physical environment [6]. A study conducted in the United States reported that interventions aimed at improving work environment standards were associated with increased employee satisfaction, reduced turnover, and longer average tenure among nurses. Other studies in the literature have clearly demonstrated an association between the work environment and nurses' well-being, even during the COVID-19 pandemic [7]. Numerous studies have shown that an empowering work environment can enhance nurses' job satisfaction by fostering a sense of organizational support and motivating them to perform their duties more effectively. A study by Teixeira, et al. (2023) reported that structural empowerment of nurses directly increases job satisfaction and indirectly reduces burnout. Structural empowerment includes systems, policies, and resource allocation at the organizational level and can have a direct impact on the work environment and job satisfaction. Furthermore, psychological empowerment has been shown to result in higher levels of job satisfaction and productivity among nurses. Psychological empowerment refers to a subjective sense of control, autonomy, meaning, and competence, and is associated with an internal perception that provides nurses with hope that they can bring about significant changes in their work and lives [8]. The work environment is linked to organizational characteristics that may either facilitate or constrain nursing practice. A lack of team dynamics, time constraints, and staffing shortages are potential factors influencing job satisfaction [9]. A study conducted in Singapore by Goh and Lopez among 814 nurses reported that leadership skills and the work environment were predictors of nurses' intentions to migrate and work abroad [10]. Job satisfaction is a key factor in nurse retention. Empowerment plays a particularly important role, as it enhances nurses' autonomy and satisfaction with their workplace. Empowerment-based strategies increase job satisfaction and promote motivation and work effectiveness among nurses [8,11,12]. Workforce turnover is not only a challenge in emergency medicine but also affects other medical disciplines within healthcare systems. Well-known examples include so-called "Magnet hospitals," which have successfully retained existing healthcare professionals and attracted new staff through changes in management strategies. By implementing organizational and leadership changes, these hospitals have minimized the phenomenon of "quiet quitting" among nurses, which has emerged as a growing global issue in recent years [13-16]. Key contributing factors included structural and process-related elements such as leadership and management style, staffing levels, opportunities for career advancement, and education [13,17]. Projections indicate a continuously increasing shortage of personnel in emergency medical services [18,19]. Among paramedics in the United States, the annual turnover rate is nearly 10% [20,21]. In Israel, Doppelt, et al. reported turnover rates among paramedics of 42% after two years of employment and over 90% after ten years [22]. A recent study from Germany revealed similarly alarmingly high figures, with 54% of paramedics considering leaving emergency medical services within one year, and 46% reporting dissatisfaction with their job. Additionally, paramedics were found to have relatively lower levels of job satisfaction and higher levels of depression [23] and burnout [24]. Prehospital emergency medical services are considered a profession in which employees are regularly exposed to external stressors specific to emergency care, such as critically ill patients, accidents, physical exertion, and occupational hazards [25]. Both internal and external stressors are important determinants of job satisfaction. Employee turnover is associated not only with increased workload for employers and disrupted interpersonal relationships, but also with high financial costs and the loss of knowledge and experience. Retaining newly trained and highly educated employees in emergency services is challenging, and low job satisfaction may be problematic not only due to workforce shortages but also because of its association with individual employee health [21].

The aim of this study is to examine the work environment and its correlation with job satisfaction among nurses in emergency medical services.

Methods

Participants

The study included a total of 60 participants, all of whom were nurses employed at the Institute of Emergency Medicine of Osijek-Baranja County, regardless of their educational level or position within Team I (comprising a physician, a nurse, and a driver), Team II (comprising two nurses, one of whom also serves as the driver), or the dispatch and call-receiving unit. All participants met the following inclusion criteria: full-time employment at the Institute of Emergency Medicine; employment in a nursing position; voluntary participation in the study. The exclusion criteria were employment in managerial or supervisory positions and unwillingness to participate in the study. Participants were assured of anonymity throughout the research process. Data collected via the questionnaire were not linked in any way to the participants'

personal information. The obtained results were entered into a computer, statistically processed, and securely stored.

Procedure

This study was conducted as a cross-sectional study [26] at the Institute of Emergency Medicine of Osijek-Baranja County during June and July 2021, following approval from the Institute's Ethics Committee. Participants received a structured questionnaire at their workplace and, after completion, deposited it into designated collection boxes to ensure anonymity. The estimated time required to complete the questionnaire was approximately 15 minutes. Data collection was carried out during the employees' free time within working hours, in coordination with the institute's chief technician. Participation in the study was anonymous and voluntary, and participants were free to withdraw at any time without any obligations. Prior to completing the questionnaire, each participant received an explanation of the study, including its purpose and objectives. The research instrument consisted of one open-ended questionnaire item and two sections: Sociodemographic and occupational characteristics, including sex, age, level of education, profession and job responsibilities, employment in accordance with the attained level of education, studying while employed, permanent employment status, job position, working hours, total years of work experience, length of service in the current position, and satisfaction with the current work situation. The Nursing Work Environment Questionnaire is a reliable and valid instrument for assessing the nursing work environment and has been translated and validated in more than 30 countries. The instrument was translated into Croatian and validated, and permission for its use was obtained from the authors [27]. Items assessing the work environment were grouped into five subscales: Nurse participation in hospital affairs – nine items; Nursing foundations for quality of care – ten items; Nurse manager ability, leadership, and support of nurses – five items; Staffing and resource adequacy – four items; Collegial nurse–physician relations – three items. The self-assessed satisfaction with the current work situation was examined with additional question. It was supposed to be answered by selecting one of five offered responses on Likert scale. The offered responses were from very satisfied, fairly satisfied, partially satisfied, fairly dissatisfied, and very dissatisfied (on Likert scale from 5 to 1). For the purpose of conducting the research at the Institute for Emergency Medicine of Osijek-Baranja County, approval was requested from their Ethics Committee. The approval was granted, before conducting the research, under class number: 034-01/21-01/16 and registration number: 381-21/1.

Statistical Analysis

All collected categorical data were presented as absolute and relative frequencies, while numerical data were expressed as medians and interquartile ranges. The Shapiro–Wilk test was used to assess the normality of data distribution and according to the results were used parametric or nonparametric measures and tests. Results were presented in tables and figures. The chi-square test was used to compare categorical variables, with Fisher's exact test applied when appropriate. Differences between two independent groups of numerical data were tested using the nonparametric Mann–Whitney U test, while differences among three or more independent groups were analyzed using the nonparametric Kruskal–Walli's test followed by Conover's post hoc test. Statistical analyses were performed using MedCalc (version 20.008, MedCalc Software Ltd., Ostend, Belgium) and IBM SPSS Statistics (version 24.0.0.0, IBM Corp., Armonk, NY, USA), with the level of statistical significance set at $\alpha = 0.05$ [28].

Results

The study included a total of 60 participants with a mean age of 37.9 (SD = 13.4) Years. A slightly higher proportion of participants were male (Table 1).

Table 1: Distribution of the demographic parameters.

Variable type	Categories	No (%)	*P**
Age	18 - 25	17 (28.3)	0.31
	26 - 35	9 (15.0)	
	36 - 45	16 (26.7)	
	46 - 55	5 (8.3)	
	> 55	13 (21.7)	
Sex	Male	36 (60.0)	0.27
	Female	24 (40.0)	
Education	Secondary	42 (70.0)	<0.001
	Bachelor	11 (18.3)	
	Master's Degree	4 (6.7)	
	Master of Science	3 (5.0)	
Total		60 (100.0)	

*Chi-square test

Among the participants, a significantly higher proportion had completed secondary-level vocational education (Chi-square test, P < 0.001). In addition, a significantly higher proportion of participants (Chi-square test, P ≤ 0.007) reported that their nursing duties were consistent with their level of education, that they most commonly studied while working, were employed on permanent contracts, most frequently worked in Team I, and had lengths of service most commonly ranging from 1 to 5 years and from 16 to 30 years (Table 2).

Table 2: Distribution of work-related parameters.

Variable type	Categories	No (%)	*P**
Nursing duties and education	nurse	43 (71.1)	<0.001
	bachelor	15 (25.0)	
	MA/MSc	2 (3.3)	
Nursing duties	Consistent with education	53 (88.3)	<0.001
	no	7 (11.7)	
Study while working	yes, while nursing	28 (46.7)	0.001
	yes, but not nursing	2 (3.3)	
	no, but I am considering it	9 (15.0)	
	no	21 (35.0)	
Contract	Permanent	51 (85.0)	<0.001
	no	9 (15.0)	
Workplace	Team I	33 (55.0)	0.007
	Team II	10 (16.7)	
	dispatch and call-receiving unit	6 (10.0)	
	Medical transport	11 (18.3)	
Current work position time length	< 1 year	7 (11.7)	0.001
	1 – 5 years	20 (33.3)	
	6 – 15 years	7 (11.7)	
	16 – 30 years	25 (41.7)	
	> 30 years	1 (1.7)	
Total		60 (100.0)	

*Chi-square test

On average, participants had 15.1 (SD = 12.6) years of total work experience. The self-assessment of satisfaction with the current work situation indicated that participants were fairly satisfied as the median overall score on a five-point Likert scale was 2, with IQR from 1 to 2 (Figure 1).

Comparison of the subscales of the questionnaire by participants' sex did not reveal any statistically significant differences between the subscales (Table 3). The associations between the questionnaire subscales and age were negative and ranged from weak to moderate, whereas associations with satisfaction with the current work situation were positive with somewhat stronger correlation coefficient. For both variables, statistically significant correlations were observed (Kendall's Tau test, P ≤ 0.01) for almost all subscales of the questionnaire used (Table 4).

The negative correlation between age and the domains assessed by individual subscales indicates that older participants more frequently disagreed with the statements, which applied to all subscales except Nursing Foundations for Quality of Care, for which the Tau correlation coefficient was small and no statistically significant association was observed.

In contrast to age, satisfaction with the current work situation was positively correlated with all subscales, with statistically significant associations (Kendall's Tau test, P < 0.001) and somewhat higher Tau correlation coefficients (Tau > 0.3). As expected, participants who were more satisfied with their current work situation were more likely to agree with the statements presented in the individual items of the Practice Environment Scale of the Nursing Work Index (Table 4).

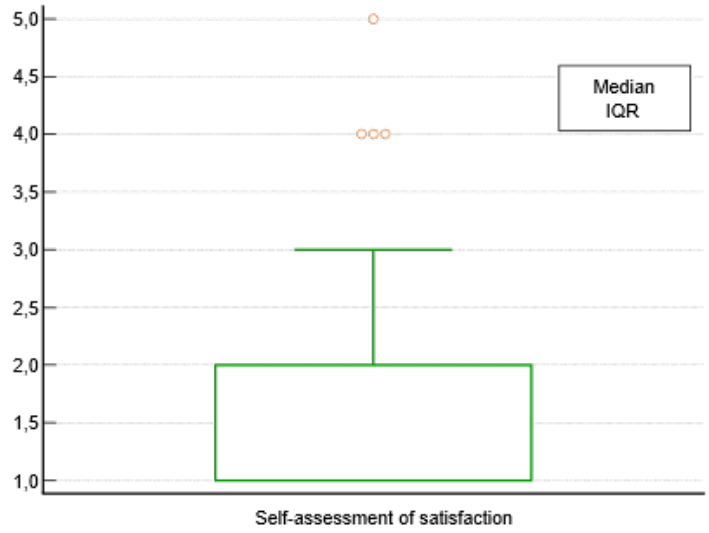

Figure 1: Self-assessment of satisfaction with the current work situation.

Table 3: Comparison of subscales of the Practice Environment Scale of the Nursing Work Index by participants' sex.

Subscale	Me (25 - 75 %)		*P**
	Male /n=36	Female /n=24	
Nurse participation in hospital affairs	4.3 (3.1 – 5.1)	4.2 (3.1 – 4.5)	0.27
Nursing foundations for quality of care	4.2 (3.4 – 4.9)	4.0 (3.2 – 4.5)	0.46
Nurse manager ability/leadership/support	4.2 (3.7 – 5.6)	3.9 (2.6 – 4.9)	0.14
Staffing and resource adequacy	3.8 (2.3 – 4.6)	3.0 (1.6 – 4.6)	0.41
Collegial nurse-physician relations	5.0 (3.7 – 6.8)	6.0 (4.5 – 7.0)	0.24

*Mann-Whitney test

Table 4: Associations between subscales of the Practice Environment Scale of the Nursing Work Index, age, and satisfaction with the current work situation.

	Subscale	Tau	95% CI	*P**
Age	Nurse participation in hospital affairs	-0.329	-0.514 to -0.118	<0.001
	Nursing foundations for quality of care	-0.122	-0.306 to 0.091	0.17
	Nurse manager ability/leadership/support	-0.317	-0.486 to -0.126	<0.001
	Staffing and resource adequacy	-0.183	-0.409 to 0.043	0.04
	Collegial nurse-physician relations	-0.219	-0.395 to -0.039	0.01
self-assessed satisfaction at the current work position	Nurse participation in hospital affairs	0.447	0.239 to 0.579	<0.001
	Nursing foundations for quality of care	0.301	0.079 to 0.486	<0.001
	Nurse manager ability/leadership/support	0.339	0.122 to 0.518	<0.001
	Staffing and resource adequacy	0.301	0.080 to 0.485	<0.001
	Collegial nurse-physician relations	0.353	0.153 to 0.548	<0.001

*Kendall's Tau correlation test

Discussion

When examining the age distribution of the participants, the largest proportion consisted of the youngest respondents aged up to 25 years (28.3%), followed by those aged 36–45 years (26.7%) and participants older than 55 years (21.7%). The remaining age groups accounted for 23.3% of the sample. Given the specific demands of prehospital emergency medical services, which require, among other competencies, good physical fitness, the age distribution can be considered satisfactory, as more than two thirds of the participants were younger than 45 years. On the other hand, the presence of highly experienced nurses suggests that they will have sufficient time to transfer experiential knowledge to younger colleagues prior to retirement -knowledge that cannot be acquired through formal education but is essential for safer and more competent emergency care practice. This also strengthens teamwork, which is particularly crucial in emergency situations requiring a well-coordinated healthcare team.

These observations are further supported by the length of work experience. The majority of participants belonged to the groups with 1–5 years (33.3%) and 16–30 years (41.7%) of tenure at their current workplace. Considering all these data, it can be concluded that most participants possess sufficient professional experience that contributes to higher quality of care and enables long-term efforts toward its continuous improvement. Given that these nurses still have many years of work ahead of them, it is essential to emphasize the important role of management in ensuring an adequate work environment to achieve high levels of job satisfaction, thereby preventing or reducing staff turnover and migration to other institutions or to countries within the European Union [29].

Prehospital emergency medical services involve activities related to urgent patient care, often performed under unfavorable climatic conditions (rain, ice, snow, high temperatures) and requiring considerable physical exertion (lifting and lowering injured or ill patients, extrication, carrying). For this reason, there are stereotypes that this field predominantly requires male labor. The demographic data of this study indicate a majority of male participants (60%); however, the proportion of female participants (40%) is not negligible. This suggests that there are no evident gender biases or discrimination regarding workforce composition within the Institute, which may, in turn, contribute to higher personal job satisfaction among employees.

With regard to educational level, nurses with basic nursing education were the most represented (71.1%), followed by bachelor's degree–prepared nurses (25%) and a small proportion of nurses holding a master's degree in nursing (3.3%). A finding that provides reassurance both for employees and the organization is that the majority of participants (85%) were employed on permanent contracts, which may be associated with a greater sense of job security and, consequently, improved staff retention and continued employment at the current workplace. Furthermore, as many as 88.3% of participants agreed that they perform work tasks consistent with their level of education. All employees are required to engage in continuous professional education, which is prescribed and largely organized by the employer [30]. Particularly noteworthy are the enthusiasm and motivation for professional development, as well as the aspiration for further education and acquisition of new knowledge. Supporting this, 46.7% of participants were pursuing higher education in their own profession alongside work, while 3.3% were studying in another field, which may indicate satisfaction with their current workplace. These findings are comparable to studies conducted among nurses in Norwegian hospitals, which report that continuing education is one of the factors influencing job satisfaction and intention to remain in the workplace and the profession (1). The fact that the Institute encourages further education of nurses at higher academic levels reflects a forward-looking and visionary approach. In this context, the Ministry of Health introduced specialization programs for bachelor's degree–prepared nurses in 2023 as part of further emergency medicine reforms, which is expected to substantially improve nurses' expertise within emergency medical teams and, consequently, the quality of services provided [31].

Participants' self-assessed satisfaction with their current work situation, measured on a scale from 1 to 5, yielded a high score of 4. This finding suggests that participants are highly satisfied, demonstrating optimism and commitment to their current positions, thereby confirming satisfaction with their career choice. This level of satisfaction is comparable to, and even relatively high when contrasted with, data from European Union countries that have investigated job satisfaction among nurses [32]. For most items in the questionnaire, the largest proportion of respondents selected a neutral response ("neither agree nor disagree"). However, higher levels of agreement were observed for items related to opportunities for advancement, trust in management due to responsiveness to employee concerns, and the accessibility of the head nurse to staff, with responses ranging from neutral to strong agreement. A study by Smith et al. reported that the approachability and availability of the head nurse significantly influence nurses' satisfaction with the work environment, enabling them to focus more effectively on patient care. This study included 233 nurses [33]. Other neutral responses are consistent with findings from similar studies, particularly regarding limited involvement in management processes and participation in decision-making [34].

It is important to note that participants expressed the view that the quality of care is inconsistent due to staffing shortages. These perceptions align with challenges faced by healthcare systems worldwide and represent a major focus of contemporary research. Studies indicate that an insufficient number of adequately trained healthcare professionals can significantly affect the quality of patient care [35]. Approximately one third of participants reported being fully satisfied with collaboration and teamwork with physicians within the team, which is particularly important given the urgency inherent in emergency patient care. The International

Council of Nurses emphasizes that a positive and healthy work environment has a significant impact on nurses and highlights the work environment as a critical dimension that should be of major importance to healthcare organizations [36,37]. When a healthy work environment is present, lower levels of burnout and nurse migration are observed, alongside higher job satisfaction and reduced rates of presenteeism [38,39]. Addressing work environment–related challenges require policies that encourage nurses to participate in management alongside leadership, promote open communication about workplace issues, and foster a positive organizational climate in which nurses feel valued and accepted [40-46].

Limitations of the Study and Future Work

The limitations of this study include the relatively small sample size and the restricted geographical area, which may reduce the representativeness of the findings and limit the generalizability of the results. Additionally, the cross-sectional design further constrains the study, as data were collected at a single point in time, thereby limiting the ability to assess causal relationships between the variables examined. In the future work it would be beneficial to conduct research on larger sample and compare results internationally.

6. Conclusion

Average self-assessment of satisfaction with the current personal work situation indicates very low level of individual satisfaction. However, this cannot be equally applied to other statements examined with Nursing Work Environment Questionnaire, as scores for each scale are somewhat high. The nursing work environment is positively associated with self-assessed satisfaction and negatively with age, however there was no significant difference regarding gender. Employees who are satisfied with their current work situation are more likely to agree with the statements presented in the questionnaire. Also, a high level of enthusiasm and a strong desire for professional development, further training, and the acquisition of new knowledge were observed among the participants.

Author contribution

a) Acquisition of data: NB

b) Administrative, technical, or logistic support: MRV, DMB, JN

c) Analysis and interpretation of data: NB, KK, PM

d) Conception and design: NB, AB

e) Critical revision of the article for important intellectual content: NB, AB, AM

f) Drafting of the article: NB, DMB

g) Final approval of the article: KK, MRV, DMB

h) Guarantor of the study: AB, KŠ

i) Provision of study materials or patients: JN, AM, PM

j) Statistical expertise: KŠ, KK

Conflict of interest

The authors declare that there is no conflict of interest.

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