



Behind the Sirens: Exploring Job Satisfaction in Zagreb's Emergency Medical Services

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Abstract

Introduction. Emergency medical service (EMS) professionals operate in high-pressure environments, making job satisfaction crucial for workforce retention, mental

well-being, and overall service quality. Identifying key determinants of job satisfaction in EMS is essential for optimizing workplace policies and reducing burnout.

Aim. This study aims to examine the relationship between demographic characteristics, education levels, and work experience with various dimensions of job satisfaction among EMS professionals in the Teaching Institute of Emergency Medicine of the City of Zagreb.

Methods. A cross-sectional study was conducted among 176 EMS employees at the Teaching Institute of Emergency Medicine of the City of Zagreb between November and December 2023. Workplace satisfaction was assessed using the Job Satisfaction Survey (JSS), covering nine dimensions: Pay Score, Promotion Score, Supervision, Fringe Benefits, Contingent Rewards, Operating Conditions, Coworkers, Nature of Work, and Communication. Data were analysed using descriptive and inferential statistical methods, including the Mann-Whitney U test, Kruskal-Wallis test, and Spearman's correlation, with a significance threshold of $p < 0.05$.

Results. Overall job satisfaction was predominantly ambivalent (median total JSS 112); 14.2% were satisfied and 2.3% dissatisfied. Men reported higher Nature of Work satisfaction than women ($p = 0.001$). Drivers reported the highest Nature of Work satisfaction ($p < 0.001$), and physicians reported higher Pay satisfaction than drivers ($p = 0.032$). Operating Conditions differed by tenure ($p = 0.008$), but post-hoc comparisons were not significant.

Conclusion. In this sample, overall job satisfaction was not high but largely ambivalent. Priority areas for improvement are Promotion, Fringe Benefits, Contingent Rewards, and Pay, while Nature of Work and Supervision were comparatively higher.

Introduction

Job satisfaction has been described as "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (1,2). It is a positive emotional state that arises from achieving workplace goals and is influenced by personal experiences, values, and beliefs (3). There is broad agreement among scholars examining the psychosocial aspects of work, supporting Locke's theory from the late 1960s. This perspective suggests that job satisfaction stems from a complex and dynamic interaction between living conditions, labor relations, work processes, and the degree of control workers have over their professional and personal environments (3,4).

From a managerial standpoint, it is considered a crucial factor influencing individual and organizational performance, with a strong connection to the quality of services delivered. (5) Service management coordinates healthcare workers to ensure quality clinical practice and patient safety. Their role is crucial in organizational and emergency planning. (6)

Emergency Medical Service (EMS) plays a crucial role in ensuring timely and effective healthcare interventions in critical situations (7). However, the challenging nature of EMS work, characterized by long hours, high-pressure decision-making, and exposure to emotionally charged incidents, can significantly impact employees' job satisfaction (8). Studies indicate that nearly half of prehospital EMS workers experience moderate to high levels of burnout, with notable differences in stress perception and job satisfaction across professional roles, where physicians report higher satisfaction levels compared to paramedics and nurses (9). In healthcare, job satisfaction is shaped by multiple factors that impact professionals' overall well-being and commitment to their work. Studies have highlighted that gender, age, education level, work experience, workplace conditions, salary, working hours, and career advancement opportunities play a significant role in determining job satisfaction (10). Job satisfaction among EMS professionals is influenced by various workplace factors, with supervisory support being one of the strongest predictors of overall satisfaction (11). Recent research suggests that social identification within the profes-

sional group plays a crucial role in shaping job satisfaction and work engagement among paramedics. Stronger group identification and workplace cohesion have been positively correlated with job satisfaction, particularly among female paramedics who exhibit a higher sense of cognitive centrality in their professional identity (12). Understanding these influences is essential for improving workplace environments, reducing burnout, and enhancing the quality of patient care.

Given the demanding nature of EMS work, it is essential to identify factors influencing job satisfaction to enhance workplace conditions and employee retention. The increasing demands of emergency medical services highlight the need for psychological and physical support systems to enhance job satisfaction and prevent burnout among EMS personnel (11).

This study examines job satisfaction among EMS professionals in Zagreb, focusing on the effects of gender, education, and work experience across various job satisfaction dimensions using the Job Satisfaction Survey (JSS) as the primary tool for assessment (13).

Aim

The study aims to provide actionable insights for improving the work environment and enhancing overall employee well-being in high-stress medical settings by identifying key drivers of satisfaction and dissatisfaction.

Methods

Study Design and Participants

A cross-sectional study was conducted at the Teaching Institute of Emergency Medicine of the City of Zagreb between November and December 2023. All active clinical and non-clinical staff were invited; 176 complete responses were received. The final sample comprised 40 Medical Doctors (MD), 68 nurses, 57 drivers, and 11 other staff (Table 1). Inclusion criteria were current employment at the Institute and age ≥ 18 years; there were no exclusion criteria beyond incomplete questionnaires. Data were collected using online and paper self-administered questionnaires. The online survey was accessed via a secure link and did not record names, IDs, or IP addresses. Paper questionnaires were returned to staff, and the research team entered paper forms into an electronic database without personal identifiers.

Approval for the study was obtained from the Ethics Committee of the Teaching Institute of Emergency Medicine of the City of Zagreb (approval no. 4641/2023, September 21, 2023).

Instrument

Job satisfaction was measured with Paul E. Spector's 36-item Job Satisfaction Survey (JSS), covering nine facets (4 items each): Pay, Promotion, Supervision, Fringe Benefits, Contingent Rewards, Operating Conditions, Coworkers, Nature of Work, and Communication. Items are rated 1-6 (strongly disagree-strongly agree) (13). Each subscale contains 4 items (range 4-24); the total score (36 items) ranges 36-216. In this sample, internal consistency was $\alpha = 0.916$ for total and acceptable-to-good for most subscales. We used the official Croatian translation of Spector's JSS, obtained from the author's repository, with permission (14,15). Negatively worded items were reverse-scored (recode = 7 - result), so higher values indicate greater satisfaction. For interpretive categories, we used the absolute approach: after reverse-scoring, mean item ≥ 4 denotes "satisfied", ≤ 3 "dissatisfied", and 3-<4 "ambivalent" (mapped to totals: 144-216 / 36-108 / 108-144). (13,15)

Table 1. Participant characteristics

| Demographic characteristics | n | % | |
|-----------------------------|--------------------------|-----|------|
| Gender | Men | 129 | 73.3 |
| | Women | 47 | 26.7 |
| Work experience in years | ≤ 5 | 56 | 31.8 |
| | 6-10 | 30 | 17 |
| | 11-20 | 40 | 22.7 |
| | 21-30 | 32 | 18.2 |
| | 31-40 | 16 | 9.1 |
| | ≥ 40 | 2 | 1.1 |
| Occupation | MD | 40 | 22.7 |
| | Nurse | 68 | 38.6 |
| | Driver | 57 | 32 |
| | Other | 11 | 6.3 |
| Education | Lower level | 95 | 54 |
| | Higher level | 81 | 46 |
| Department | Medical | 163 | 92.6 |
| | General Affairs | 6 | 3.4 |
| | Economic & Legal Affairs | 4 | 2.3 |
| | Directorate | 2 | 1.1 |
| | Technical | 1 | 0.6 |
| Supervisory role | Yes | 12 | 6.8 |
| | No | 164 | 93.2 |

Facet definitions:

- Pay – satisfaction with salary level and fairness of pay.
- Promotion – opportunities for advancement and fairness/transparency of promotion.
- Supervision – quality of immediate supervision (support, competence, fairness).
- Fringe Benefits – satisfaction with benefits (e.g., health insurance, leave, pension).
- Contingent Rewards – recognition and rewards contingent on good performance (e.g., praise, bonuses, awards).
- Operating Conditions – rules, procedures, and “red tape” that make work easier or harder.
- Coworkers – relationships and cooperation with colleagues.
- Nature of Work – intrinsic interest, meaningfulness, and enjoyment of the work itself (not autonomy).
- Communication – flow and clarity of information within the organization.

Statistics

Analyses were performed in Jamovi (v2.6). Continuous variables were assessed for normality with the Shapiro-Wilk test and summarized as median (IQR); categorical variables as n (%). Between-group differences were tested with the Mann-Whitney U test (two groups) and the Kruskal-Wallis test (≥ 3 groups), with Dunn pairwise comparisons using Holm adjustment when global tests were significant. Associations between satisfaction scores (total and domain-specific) and continuous variables were examined with Spearman's rank correlation (ρ). All tests were two-tailed with $\alpha = 0.05$; correlation magnitudes were interpreted as weak ($|\rho| < 0.30$), moderate ($0.30 \leq |\rho| < 0.70$), strong ($0.70 \leq |\rho| < 0.90$), and very strong ($|\rho| \geq 0.90$).

Internal consistency was excellent for total JSS (Cronbach's $\alpha = 0.916$) and acceptable-to-good for most subscales: Pay 0.734, Promotion 0.823, Supervision 0.796, Fringe Benefits 0.662, Contingent Rewards 0.753, Coworkers 0.670, Nature of Work 0.708, Communication 0.746. Operating Conditions showed low $\alpha = 0.239$ and should be interpreted with caution. Shapiro-Wilk indicated non-normal distributions for most facets (p from 4.4×10^{-6} to 0.041); Coworkers ($p = 0.067$) and Total ($p = 0.058$) were approximately normal.

Results

Job Satisfaction Scores by Sex and Education Level

Of 176 participants, the median age was 40 years; 73.3% were men and 26.7% were women. Women reported higher Pay scores than men (median 11 vs 8, $p = 0.003$), whereas men reported higher Nature of Work scores than women (median 19 vs 16, $p = 0.001$). Participants with higher education reported higher Pay scores (median 10 vs 8, $p = 0.012$), while those without higher education reported higher Operating Conditions (median 14 vs 12, $p = 0.005$) and Nature of Work (median 19 vs 17, $p < 0.001$).

Job Satisfaction Scores by Work Experience

Only Operating Conditions differed by work experience (Kruskal-Wallis $H = 15.60$, $p = 0.008$), but no pairwise contrasts remained significant after Holm adjustment. No statistically significant differences were found for any other JSS dimension with respect to work experience.

Job Satisfaction Scores by Occupation

Across occupations, significant differences were observed for Pay ($p = 0.031$), Operating Conditions ($p = 0.007$), and Nature of Work ($p = 0.001$) (Table 3). Post-hoc testing showed that Pay was higher in physicians than drivers ($p = 0.032$), while other pairwise comparisons were not significant. For the Nature of Work, drivers scored higher than physicians ($p < 0.001$) and higher than nurses ($p = 0.001$); the nurses vs physicians comparison was not significant after adjustment ($p = 0.078$). For Operating Conditions, drivers scored higher than physicians ($p = 0.048$) and higher than other staff ($p = 0.020$); remaining contrasts were not significant. Total JSS did not differ by occupation ($p = 0.883$).

Job Satisfaction Scores by Department and Supervisory Position

Because non-medical departments were very small, department-level results are presented descriptively. In supervisory status comparisons, supervisors re-

Table 2. Job Satisfaction Scores by Sex and Education Level among EMS Professionals

| Dimension | Sex | | p | Higher level of education | | p |
|----------------------|----------------|------------------|--------------|---------------------------|----------------|-------------------|
| | Male (n = 129) | Female (n = 47) | | Yes (n = 81) | No (n = 95) | |
| Pay Score | 8 (6-12) | 11 (6-13) | 0.003 | 10 (8-14) | 8 (6-12) | 0.012 |
| Promotion Score | 6 (4-11) | 7 (5-10) | 0.389 | 7 (5-10) | 6 (4-11) | 0.52 |
| Supervision Score | 17 (14-20) | 17 (15-19.5) | 0.732 | 17 (14-19) | 17 (14-20) | 0.857 |
| Fringe Benefits | 9 (6-11) | 10 (7-13) | 0.087 | 9 (5-13) | 9 (7-11) | 0.655 |
| Contingent Rewards | 9 (6-12) | 10 (7-12.5) | 0.097 | 9 (5-12) | 8 (7-12) | 0.068 |
| Operating Conditions | 13 (12-16) | 13 (11.5-16) | 0.592 | 12 (11-15) | 14 (12-16) | 0.005 |
| Coworkers | 16 (14-19) | 16 (13.5-18.5) | 0.615 | 16 (14-19) | 15 (13.5-19) | 0.916 |
| Nature of Work | 19 (16-21) | 16 (13.5-18) | 0.001 | 17 (14-20) | 19 (16-21) | p<0.001 |
| Communication | 14 (10-16) | 13 (10-16) | 0.864 | 13 (10-16) | 14 (10.5-17) | 0.504 |
| Total Score | 112 (95-129) | 112 (98.5-128.5) | 0.73 | 112 (96-127) | 112 (95-130.5) | 0.825 |

Values are median (IQR). Mann-Whitney U for sex/education comparisons. Bold indicates p < 0.05.

Table 3. Job Satisfaction Scores by Occupation

| Dimension | Occupation | | | | p |
|----------------------|-------------------|--------------------|-----------------|------------------|--------------|
| | MD (n = 40) | Nurse (n = 68) | Driver (n = 57) | Other (n = 11) | |
| Pay Score | 11.5 (8.75-14.25) | 9 (6-13) | 8 (6-13) | 9 (5.5-14) | 0.031 |
| Promotion Score | 7 (5-9.25) | 6.5 (5-11) | 6 (4-9) | 11 (7-15) | 0.095 |
| Supervision Score | 16 (15-19) | 18 (13.75-20) | 17 (14-20) | 18 (16.5-19) | 0.709 |
| Fringe Benefits | 9 (5.75-13) | 9 (6-11.25) | 9 (6-11) | 10 (6-13.5) | 0.733 |
| Contingent Rewards | 10 (7-13.25) | 9 (6-11) | 8 (5-13) | 9 (8-12.5) | 0.13 |
| Operating Conditions | 12 (11-15.25) | 13 (12-15) | 15 (13-16) | 10 (9-13) | 0.007 |
| Coworkers | 16.5 (14-19) | 15.5 (13.75-18.25) | 16 (14-20) | 15 (12.5-17.5) | 0.65 |
| Nature of Work | 15.5 (12-18) | 18 (15-20) | 20 (18-22) | 19 (16-22.5) | 0.001 |
| Communication | 13 (11.5-15.25) | 12.5 (10-17) | 15 (11-18) | 12 (9-15) | 0.479 |
| Total Score | 111 (99-124.25) | 114 (93.75-129.25) | 112 (98-140) | 102 (99.5-122.5) | 0.883 |

Values are median (IQR). Comparisons across occupations use Kruskal-Wallis (two-tailed); Dunn-Holm post-hoc was used when the global test was significant. Bold indicates p < 0.05. MD = medical doctors.

ported higher Nature of Work scores (median 20 vs 18, $p = 0.024$) and higher Total JSS scores (median 122 vs 112, $p = 0.048$) than non-supervisors.

Job Satisfaction Scores by Age

Age showed a weak negative correlation with Operating Conditions ($p = -0.222$, $p = 0.003$). No significant correlations were observed for other dimensions, including total satisfaction ($p > 0.05$).

Discussion

The findings indicate predominantly ambivalent overall job satisfaction, with higher scores for Nature of Work and Supervision, and lower for Promotion, Fringe Benefits, Contingent Rewards, and Pay. These findings align with existing research, which highlights the complex interplay of workplace conditions, compensation structures, and professional development opportunities in shaping job satisfaction among emergency healthcare workers. Aligned with global trends, as-

Table 4. Job Satisfaction Scores by Department and Supervisory Position

| Dimension | Department | | | | | <i>p</i> | Supervisory | | <i>p</i> |
|-------------------------|---------------------------|-------------------------------|--|------------------------------|----------------------|----------|-------------------------|-----------------------|--------------|
| | Medical (n = 163) | General Affairs (n = 6) | Economic and Legal Affairs (n = 4) | Directorate (n = 2) | Technical (n = 1) | | Yes (n = 12) | No (n = 164) | |
| Pay Score | 6.5 (4-11.5) | 10 (6.5- 13) | 8 (6-13) | 14.5 (14.25- 14.75) | 10 | 0.558 | 10 (9-15) | 9.5 (6-13) | 0.144 |
| Promotion Score | 11.5 (9.25- 13.5) | 6 (5-10) | 9 (6.5- 11.5) | 15.5 (13.75- 17.25) | 5 | 0.124 | 10.5 (6-12) | 6 (5-10) | 0.069 |
| Supervision Score | 18.5 (17.75- 20.25) | 17 (14- 20) | 18 (16.5- 18.75) | 17 (15.5- 18.5) | 23 | 0.313 | 18 (15- 20.8) | 17 (14- 20) | 0.159 |
| Fringe Benefits | 11 (8.5- 14.5) | 9 (6-11) | 7.5 (4.25- 12.25) | 12.5 (11.75- 13.25) | 13 | 0.262 | 12 (8-13) | 9 (6-11) | 0.115 |
| Contingent Rewards | 12.5 (10.5- 15.5) | 9 (6-12) | 8.5 (8- 12.75) | 11.5 (10.25- 12.75) | 11 | 0.526 | 10.5 (8.75- 13.3) | 9 (6-12) | 0.171 |
| Operating Conditions | 9.5 (8.25- 11.75) | 14 (12- 16) | 11 (10- 13.5) | 13.5 (11.25- 15.75) | 12 | 0.37 | 13 (11.5- 17) | 13 (11.8- 16) | 0.804 |
| Coworkers | 17 (14.75- 19.75) | 16 (14- 19) | 13 (11- 15.75) | 14 | 17 | 0.493 | 16 (14- 18.3) | 16 (13.8- 19) | 0.83 |
| Nature of Work | 21 (18.25- 23.25) | 18 (15- 21) | 17 (13.75- 21) | 19.5 (19.25- 19.75) | 22 | 0.412 | 20 (19- 22.3) | 18 (15- 21) | 0.024 |
| Communication | 13.5 (10.75- 16.75) | 13 (10- 16) | 12.5 (9.5- 14.75) | 12 (10.75- 14.25) | 19 | 0.75 | 16 (12.5- 17.5) | 13 (10- 16) | 0.116 |
| Total Score | 112 (101.25- 138.5) | 112 (95-129) | 100.5 (89.5- 117.5) | 130.5 (125.75- 135.25) | 132 | 0.522 | 122 (110- 134) | 112 (94.8- 128) | 0.048 |

Notes. Values are median (IQR). Department results are presented descriptively only due to very small group sizes; the supervisory comparison uses Mann-Whitney U (two-tailed). Bold indicates $p < 0.05$.

pects such as Pay, Supervision, and the Nature of work emerged as key determinants of satisfaction (10). However, Operating procedures and Communication challenges were frequently highlighted as sources of dissatisfaction. The findings revealed significant differences in satisfaction levels across gender, education, and years of work experience.

The analysis revealed that women had significantly higher scores in the Pay Score dimension, suggesting a potential perception of greater financial fairness or satisfaction among female employees. This finding may reflect a contextual discrepancy, as prior research often points to lower pay satisfaction. (16) However, in the emergency medicine context, this result might be influenced by specific organizational factors or compensation structures. It is also worth noting that while wom-

en reported higher satisfaction with pay, studies have consistently shown that they face significant challenges in achieving work-life balance in emergency medicine roles, which can negatively impact their overall job satisfaction in other domains. (16) Research suggests that women in healthcare roles often have lower salary expectations than their male counterparts, which may contribute to a greater perception of fairness in compensation despite actual wage disparities. The differences in expectations are influenced by gender norms, career advancement opportunities, and perceived self-worth in the profession. (17,18) This highlights the complex interplay of factors impacting job satisfaction and underscores the importance of considering tangible and intangible aspects of workplace well-being. (19)

Men scored higher in Nature of Work, indicating greater perceived intrinsic meaningfulness and enjoyment of daily tasks, rather than decision-making autonomy. This finding aligns with existing research showing that men and women prioritise different aspects of job satisfaction. Men tend to place greater emphasis on autonomy and job engagement, while women are more likely to value pay equity and workplace support systems (20).

The relationship between work experience and satisfaction with Operating Conditions is also notable. Less experienced employees reported higher satisfaction in this domain, whereas those with longer tenures expressed greater dissatisfaction. This supports the honeymoon-hangover effect proposed by Boswell et al., which suggests that new employees initially experience high job satisfaction due to novelty and optimism. Over time, exposure to workplace challenges leads to decreasing job satisfaction (21). The study also found that older employees reported lower satisfaction with Operating Conditions, which may be linked to greater physical and cognitive demands in EMS roles as professionals age. The findings reinforce the importance of targeted retention strategies, such as professional development programmes and workplace mental health initiatives, to sustain job satisfaction among experienced EMS personnel. Interpretation of Operating Conditions warrants caution given its low internal consistency ($\alpha = 0.239$) in this sample.

From an occupational perspective, differences in satisfaction across roles within EMS highlight the need for targeted interventions. Differences in Pay satisfaction across occupations likely reflect role-specific remuneration structures within EMS; in our sample MDs reported higher pay satisfaction than drivers, whereas other facets (e.g., Nature of Work) favored drivers. Higher Nature of Work among men and drivers is interpreted as greater intrinsic meaningfulness/enjoyment of daily tasks, not autonomy or decision-making responsibility. The Operating Conditions facet reflects rules, procedures and bureaucratic barriers; the negative association with tenure suggests increasing sensitivity to administrative burden over time. Interventions should prioritise streamlining procedures, rather than mental-health programmes per se, for this facet.

The supervisory role factor also contributed to overall job satisfaction, with supervisors reporting higher satisfaction with both the Nature of Work and total job satisfaction scores. This may be attributed to the enhanced autonomy, leadership opportunities, and

sense of accomplishment associated with supervisory positions (22). Additionally, supervisors often have more opportunities for professional development and career advancement, which can further enhance their job satisfaction. Given that supervisory support plays a critical role in job satisfaction, improving managerial strategies and fostering supportive work environments could mitigate stress and enhance workforce retention in EMS (11).

Limitations

While this study provides important insights, several limitations should be acknowledged. The use of convenience sampling may limit the generalizability of findings beyond the Zagreb EMS workforce. Although questionnaires were anonymous and contained no identifying fields, paper-based return within the workplace may have reduced perceived anonymity and introduced social desirability bias. Additionally, the cross-sectional design prevents establishing causal relationships between job satisfaction factors. Future research should explore longitudinal trends in job satisfaction and assess the impact of intervention strategies designed to improve job conditions and well-being. Because part of the data was collected on paper, perceived anonymity may have been lower (particularly if questionnaires were returned directly to staff), which could have influenced responses.

Conclusions

Overall job satisfaction was predominantly ambivalent rather than high, indicating room for improvement but no evidence of uniformly low satisfaction across domains. Satisfaction was highest for Nature of Work and Supervision, and lowest for Promotion, Fringe Benefits, Contingent Rewards and Pay. Men and drivers reported higher Nature of Work; longer tenure was associated with poorer Operating Conditions. These results prioritise interventions in career progression, recognition/remuneration and streamlining procedures.

Author contributions

Conceptualization and methodology (MČ, NK); data curation and formal analysis (NK); investigation and project administration (MČ); and writing - original draft and review & editing (BF). All authors have approved the final manuscript.

Conflict of interest

The authors declare no conflicts of interest.

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