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Occupational Stress and Its Determinants among Red Crescent Society Rescue Workers in Markazi Province, Iran

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Original Article

Abstract

INTRODUCTION: Roadside rescue workers are highly exposed to occupational stress due to the critical and traumatic nature of their duties. However, limited evidence exists regarding stress levels among this workforce in Iran. This study aimed to assess occupational stress, identify its key dimensions, and examine socio-demographic predictors among Red Crescent Society (RCS) rescue workers in Markazi province.

METHODS: In this cross-sectional descriptive–correlational study, 327 rescue workers from road-based stations were selected using proportionate stratified random sampling in 2025. Data were collected using the Philip L. Rice Occupational Stress Questionnaire (57 items across interpersonal relations, physical working conditions, and job interests) and a demographic form. Reliability was confirmed (α=0.89). Data were analyzed using t-tests, ANOVA, and multiple linear regression.

FINDINGS: Occupational stress among RCS rescue workers was high. Interpersonal relations showed the highest mean item score, followed by physical working conditions, whereas job interests showed a moderate level of stress. Married rescue workers reported significantly higher occupational stress than single workers, and those with longer work experience reported higher stress levels. Marital status and work experience were significant predictors of occupational stress, jointly explaining a substantial proportion of its variance ($p<0.001$).

CONCLUSION: The findings indicate that Occupational stress among RCS rescue workers is high. Targeted interventions, particularly for married and experienced staff, are recommended to reduce stress and improve performance.

Keywords: Occupational stress; Rescue workers; Red Crescent Society (RCS); Work experience.

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Introduction

Work is a fundamental component of human life, providing not only financial resources but also opportunities for psychological stimulation, social interaction, achievement, and a sense of purpose. However, work can also be an important source of psychological stress, particularly when occupational demands exceed an individual's available coping resources (1). The nature and organization of work, including workload, working conditions, interpersonal relationships, and role expectations, can substantially influence employees' exposure to occupational stress (2, 3).

Occupational stress has become an important concern in occupational health and organizational research because of its potential consequences for both employees and organizations. Although a certain level of stress may facilitate motivation and performance, persistent or excessive occupational stress can adversely affect psychological well-being, job performance, absenteeism, and organizational functioning (4). These concerns are particularly relevant to

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occupations involving high levels of responsibility, uncertainty, and exposure to potentially traumatic events.

Emergency and rescue personnel are frequently exposed to such conditions. Their work is characterized by time pressure, unpredictable situations, high operational demands, and responsibility for the safety and well-being of others. Recent evidence indicates that emergency and prehospital personnel experience multiple occupational stressors, including workload, organizational pressures, resource limitations, and repeated exposure to potentially traumatic events. These conditions may contribute to burnout, reduced job satisfaction, and impaired work performance and service delivery (5–9).

Rescue and relief personnel may be particularly vulnerable because their duties can involve direct exposure to serious injuries, death, suffering, disasters, and other critical incidents. Although affected individuals are the primary victims of such events, repeated occupational exposure may place rescue workers at risk of secondary traumatic stress and other adverse psychological consequences (10–12). In addition to traumatic exposure, irregular work schedules and sleep disturbances may further increase psychological and occupational strain among emergency personnel (13, 14).

Organizational and interpersonal conditions may also play an important role in occupational stress. Poor communication, inadequate supervisory support, unclear roles, excessive workload, insufficient resources, and work–family demands have been identified as important psychosocial stressors in emergency and other high-risk occupations (18–22). Psychological resources and organizational support may, in turn, influence how employees respond to occupational stress and its consequences (23). These findings suggest that occupational stress among rescue personnel cannot be attributed solely to exposure to emergencies; organizational and job-related conditions may also contribute substantially to their overall stress experience.

Despite the importance of these issues, the psychological well-being of rescue personnel may receive less attention than that of individuals directly affected by emergencies. Rescue workers may also be reluctant to disclose psychological distress because of concerns about professional competence, organizational expectations, or job security (15–17). Consequently, occupational stress may remain underrecognized, limiting the development of appropriate organizational and preventive interventions.

Several studies in Iran and other countries have examined occupational stress among healthcare workers, emergency nurses, firefighters, and other emergency personnel (18–21). However, evidence specifically addressing occupational stress among road-based rescue workers of the Red Crescent Society (RCS) in Iran remains limited. This gap is important because road-based rescue workers operate in field environments characterized by unpredictable incidents, emergency response demands, traumatic scenes, and operational pressures that may differ from those experienced by hospital-based healthcare personnel.

Understanding the level and dimensions of occupational stress in this population is therefore important for developing context-specific preventive and organizational interventions. Identifying the major sources of stress within interpersonal relationships, physical working conditions, and job-related interests may help RCS managers and policymakers identify areas requiring organizational improvement. The use of a standardized occupational stress instrument can provide a structured basis for assessing these dimensions.

Accordingly, the present study used the Philip L. Rice Occupational Stress Questionnaire to assess occupational stress among RCS rescue workers in Markazi Province, Iran. The study aimed to determine the level of occupational stress, identify the dominant dimensions and major stressors within these dimensions, and examine the predictive role of selected sociodemographic characteristics, including age, work experience, marital status, and employment type.

The study addressed three main questions: 1) What is the level of occupational stress among RCS rescue workers, and which occupational stress dimension is most prominent? 2) What are the major stressors within the interpersonal relations, physical working conditions, and job interests dimensions? and 3) To what extent do selected sociodemographic characteristics predict occupational stress among RCS rescue workers?

Methods

This descriptive–correlational, cross-sectional study was conducted in 2025 among personnel working at road rescue bases of the RCS in

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Markazi province, Iran. According to official organizational records, the study population comprised 1,350 rescue workers and all personnel working at the included road rescue bases were male.

The required sample size was initially estimated at 297 participants using Cochran's formula, assuming a 95% confidence level, a 5% margin of error, and a population proportion of 0.50. The target sample was subsequently increased to 327 participants to allow for potential non-response or incomplete questionnaires. Participants were selected using proportionate stratified random sampling according to the number of eligible rescue workers at each road rescue base

Participants were eligible if they had at least one year of operational experience, were employed full-time, had worked at their current rescue base for at least six months, and provided informed consent. Questionnaires with more than 10% missing responses were excluded from the analysis. Participants who withdrew from the study were also excluded. Self-reported diagnosed psychiatric disorders were considered an exclusion criterion according to the study protocol.

Data were collected using a two-part questionnaire. The first part collected sociodemographic information, including age, marital status, work experience, employment type, and educational level. The second part consisted of the Philip L. Rice Occupational Stress Questionnaire, which had been localized for use in Iran by Hatami (1999).

The questionnaire contains 57 items across three dimensions: interpersonal relations (26 items), physical working conditions (22 items), and job interests (9 items). Items are scored on a five-point Likert scale, with a total possible score ranging from 57 to 285. Higher scores indicate greater occupational stress. Stress levels were classified as low, moderate, or high according to the scoring procedure applied to the instrument.

Validity and Reliability

The content validity of the instrument had been established previously. In the present study, its face and content validity were reassessed by seven experts in health management and psychology and three experienced rescue workers. Minor wording revisions were made based on their feedback.

Internal consistency was assessed using Cronbach's alpha in a pilot sample of 30 participants who were not included in the final analysis. The Cronbach's alpha coefficient was 0.89 for the overall questionnaire and 0.91, 0.85, and 0.78 for the interpersonal relations, physical working conditions, and job interests dimensions, respectively, indicating satisfactory internal consistency.

Statistical Analysis

Data were analyzed using SPSS version 28. Descriptive statistics, including means, standard deviations, minimum and maximum values, frequencies, and percentages, were used to summarize the data. The distribution of continuous variables was assessed using the Kolmogorov–Smirnov test. Based on the assessment of distributional assumptions, parametric statistical procedures were applied where appropriate.

An independent-samples t-test was used to compare occupational stress scores between married and single participants. One-way analysis of variance (ANOVA) was used to examine differences in occupational stress across categories of work experience, employment type, and educational level. Where the ANOVA was statistically significant, Tukey's post hoc test was used for pairwise comparisons.

The three dimensions of occupational stress were also compared using repeated-measures analysis of variance when its assumptions were satisfied. When these assumptions were not met, the Friedman test was used. Stressors within each dimension were ranked according to their mean item scores. For reverse-scored items in the job interests dimension, lower observed scores represented higher levels of stress.

Finally, multiple linear regression analysis using the stepwise method was performed to identify sociodemographic predictors of total occupational stress. Age, work experience, marital status, and employment type were entered as candidate independent variables, while the total occupational stress score was treated as the dependent variable. Regression assumptions were assessed before model estimation. Statistical significance was set at $p < 0.05$.

Findings

A total of 327 rescue workers from road rescue bases of the RCS in Markazi Province participated in the study. The participants had a

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mean age of 36.2 years and a mean work experience of 12.4 years. Most participants were married. The distribution of work experience was as follows: less than 3 years, 3–10 years, 10–20 years, and more than 20 years.

The overall level of occupational stress was high. Among the three dimensions, interpersonal relations showed the highest mean item score, followed by physical working conditions, whereas job interests showed a moderate level of stress (Table 1)

Table 1. Descriptive statistics of occupational stress dimensions among rescue workers (n=327)

Dimension	No. of Items	Mean	Stress Level
Interpersonal Relations	26	3.54	High
Physical Working Conditions	22	3.26	High
Job Interests	9	2.61	Moderate
Total Occupational Stress	57	187.4	High

Marital Status

A repeated-measures analysis showed a statistically significant difference among the three occupational stress dimensions ($p<0.001$). Post hoc comparisons with Bonferroni adjustment indicated that interpersonal relations had significantly higher scores than both physical working conditions and job interests, while physical working conditions also had significantly higher scores than job interests.

Work Experience

Occupational stress differed significantly according to marital status. Married rescue workers reported higher stress levels than single workers across all three dimensions and in the overall occupational stress score (Table 2). The largest difference was observed in the interpersonal relations dimension.

Table 2. Comparison of occupational stress dimensions based on marital status

Occupational Stress Dimension	Married (n=254)	Single (n=73)	t-value	p-value
Interpersonal Relations	94.8 ± 13.9	83.5 ± 14.2	4.18	< 0.001
Physical Conditions	73.5 ± 10.6	66.2 ± 11.8	3.82	< 0.001
Job Interests	24.2 ± 5.8	20.6 ± 6.4	3.12	0.002
Total Score	192.5 ± 24.1	170.3 ± 28.9	5.38	< 0.001

Occupational stress also differed significantly across work-experience groups ($p<0.001$). Post hoc comparisons showed that rescue workers with more than 20 years of experience reported significantly higher stress than those with less than 3 years and 3–10 years of experience. Participants with 10–20 years of experience also reported higher stress than those with less than 3 years of experience (Table 3). Overall, occupational stress tended to increase with increasing work experience.

Table 3. Comparison of total occupational stress scores by work experience

Work Experience Group	n (%)	Mean ± SD
< 3 years	57 (17.4%)	174.2 ± 25.6
3–10 years	122 (37.3%)	180.5 ± 24.9
10–20 years	101 (30.9%)	190.3 ± 26.1
> 20 years	47 (14.4%)	205.8 ± 27.4
Total	327 (100%)	187.4 ± 26.8

Predictors of Occupational Stress

Stepwise multiple linear regression was used to examine the predictive contribution of age, work experience, marital status, and employment type to occupational stress. The final regression model was statistically significant and explained 24% of the variance in occupational stress. Marital status and work experience remained significant predictors, whereas age and employment type did not contribute significantly to the final model.

Marital status was the stronger predictor, followed by work experience. Both variables were positively associated with occupational stress (Table 4).

Table 4. Results of multiple linear regression analysis for predicting occupational stress

Predictor	B	SE	β	t	p-value
Constant	152.4	6.8	—	22.41	< 0.001
Marital status (married vs. single)	18.6	3.5	0.35	5.31	< 0.001
Work experience (years)	1.2	0.3	0.28	4.00	< 0.001

Ranking of Occupational Stressors

The 57 questionnaire items were ranked within each dimension according to their mean scores. Because some items in the job interests dimension were reverse-coded, lower scores on these items indicated higher occupational stress.

In the interpersonal relations dimension, the leading stressors were unclear job descriptions, uncertainty about expectations, tension between operational and administrative staff, ineffective supervision, and lack of recognition. In the physical working conditions dimension, the main stressors included excessive workload, the predominance of emergency situations, insufficient in-service training, and inadequate welfare services. In the job interests dimension, the leading stressors reflected reduced job motivation, including unwillingness to choose the occupation again, low job excitement, continuing the job due to financial necessity, loss of interest in work, and feelings of being trapped in the occupation. The five highest-ranked stressors in each dimension are presented in Table 5

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Table 5. Top five ranked stressors across the three dimensions

Dimension	Rank	Item No.	Item (Abbreviated)	Mean Score
Interpersonal Relations	1	2	Unclear job descriptions	4.03
	2	3	Uncertainty about expectations	3.95
	3	10	Tension between operational and administrative staff	3.95
	4	7	Inefficient supervisors with enforced compliance	3.92
	5	16	Lack of recognition by supervisors	3.92
Physical Working Conditions	1	38	Excessive workload	4.33
	2	30	Work dominated by emergency situations	4.23
	3	46	Insufficient in-service training	3.92
	4	40	Inefficient welfare personnel	3.72
	5	39	Shortage of welfare personnel	3.67
Job Interests	1	57	Would not choose this job again	2.23*
	2	50	Low job excitement	2.28*
	3	55	Continuing job due to financial need	2.05*
	4	52	Loss of interest in work	2.77
	5	56	Feeling trapped in the job	2.90

*Note: *In the job interests dimension, lower scores indicate higher stress due to reverse coding.*

Discussion and Conclusion

The findings demonstrate that rescue workers of the RCS in Markazi Province experience high levels of occupational stress. This level appears to be higher than that reported in some comparable Iranian studies. For example, Rashidi et al. (18) reported moderate stress among employees of Ilam University of Medical Sciences, while Mollaahmadi et al. (19) reported lower levels of occupational stress among primary healthcare workers. These differences may be related to the crisis-oriented nature of rescue work, irregular working conditions, and repeated exposure to demanding and potentially traumatic situations.

These findings are broadly consistent with international evidence indicating that emergency and other high-risk occupations are associated with elevated occupational stress. Gill et al. (5) reported a high burden of perceived stress among emergency medical personnel and highlighted its association with reduced job satisfaction and increased turnover intention. Similarly, Golshiri et al. (20) reported higher occupational stress among emergency nurses than among hospital administrative staff. Together, these findings support the view that the operational demands and high-pressure environment of emergency services may contribute substantially to occupational stress.

Among the three dimensions assessed in the present study, interpersonal relations had the highest mean item score. This finding suggests that organizational communication, supervisory relationships, and workplace interactions may represent important sources of stress among RCS rescue workers. This result is consistent with findings reported by Samadirad et al. (21), Bromandan et al. (22), and Meyer et al. (24), which emphasize the importance of organizational and interpersonal factors in occupational stress. Thus, in addition to the inherent demands of rescue work, the organizational environment may play an important role in shaping employees' experiences of occupational stress. Strengthening communication, supervisory support, and workplace social support may therefore be relevant components of occupational stress reduction programs.

Marital status was significantly associated with occupational stress, with married rescue workers reporting higher stress levels than single workers. One possible explanation is greater work–family conflict associated with irregular working hours, prolonged missions, and the demanding nature of emergency rescue work. This interpretation is consistent with findings reported by Andiyana et al. (7) and Sharp et al. (15), although the finding differs from that reported by Rashidi et al. (18). Such differences may reflect variations in occupational setting, workload, organizational conditions, and characteristics of the study populations. Because the present study was cross-sectional, the observed association should not be interpreted as evidence of a causal effect of marital status on occupational stress.

Work experience was also positively associated with occupational stress. Rescue workers with more than 20 years of experience reported the highest stress levels. Although occupational experience may contribute to adaptation and improved coping in some settings, prolonged exposure to demanding operational conditions may also be associated with cumulative occupational strain, fatigue, and

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burnout. Previous research has similarly highlighted the relationship between prolonged occupational demands, coping capacity, resilience, and burnout among emergency personnel (11, 16). However, further longitudinal research is required to determine whether the observed association reflects cumulative exposure, changes in job responsibilities, organizational factors, or other characteristics associated with longer service.

Multiple regression analysis showed that marital status and work experience were significant predictors of occupational stress and jointly explained 24% of its variance. Although these variables were statistically significant, the remaining unexplained variance indicates that occupational stress is likely influenced by multiple individual, interpersonal, and organizational factors. These may include perceived organizational support, psychological capital, coping strategies, resilience, and psychosocial working conditions. Recent evidence has highlighted the potential role of psychological resources and organizational support in reducing the adverse effects of occupational stress among healthcare and emergency personnel (16, 25). Therefore, interventions should not be limited to demographic characteristics but should also address modifiable organizational and psychological factors.

The findings have practical implications for the management of RCS rescue workers. Stress-management and resilience-building programs may be incorporated into occupational health services, with particular attention to personnel experiencing greater occupational demands. Organizational interventions should also focus on improving communication between operational and administrative staff, strengthening supervisory support, addressing workload, enhancing in-service training, and improving welfare services. Measures that support work–family balance and appropriate work scheduling may further contribute to reducing occupational strain. Future intervention studies should evaluate the effectiveness of such measures using longitudinal or controlled designs.

Overall, RCS rescue workers in Markazi Province experienced high levels of occupational stress, with interpersonal relations emerging as the most prominent dimension. Marital status and longer work experience were significantly associated with higher occupational stress. These findings highlight the importance of addressing both organizational and individual factors in occupational stress management among rescue personnel. Given the essential role of rescue workers in emergency response, maintaining their psychological well-being should be considered an important component of organizational preparedness and service quality.

This study has several limitations. First, its cross-sectional design precludes causal inference. Second, the use of self-report measures may have introduced response and reporting bias. Third, the study was conducted in a single province, which may limit the generalizability of the findings to rescue workers in other regions of Iran. Finally, potentially relevant factors such as resilience, social support, coping strategies, psychological capital, and perceived organizational support were not assessed. Future studies should use longitudinal or interventional designs and examine these factors to provide a more comprehensive understanding of occupational stress among rescue workers.

Compliance with Ethical Guidelines

Ethical principles were observed throughout all stages of the study. Participant confidentiality was maintained, and informed consent was obtained from all participants before data collection.

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Author's Contributions

Mohsen Khorram conceptualized and designed the study. Saeed Givehchi contributed to the development of the theoretical framework and study design. Material preparation, data collection, and data analysis were performed by Mohsen Khorram, Ghasem Mehrabadi, Elaheh Nebton, and Seyed Loghman Hosseini. Saeed Givehchi, as the corresponding author, supervised the overall implementation of the study. Mohsen Khorram contributed to the interpretation of the findings, drafted the initial manuscript, edited the manuscript, and handled correspondence and final submission. All authors reviewed and approved the final manuscript.

Conflict of Interests

The authors declare no conflict of interest.

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