The Review Of
DIABETIC
STUDIES OPEN ACCESS

Psychological Impact And Coping Mechanisms Among Saudi Red Crescent Paramedics After Critical Incidents

Waleed Ali Alzahrani[1],Abdullah Dughaylib Alotaibi[2],Hassan Mohammad Hassan Alyami[3],Ibrahim Rashed Ali Alkhamisi[4],Fahad Ghazi Bander Al-Hantoshi[5],Ibrahim Shihan Marzen Alotaibi[6],Naif Ali Alsulami[7],Abdulrahman Abdullah Mohammed Al Mudawi[8]

[1-8]EMT and EMS, paramedic ,saudi Red Crescent authority

Abstract

Background: Saudi Red Crescent Authority (SRCA) paramedics are frequently exposed to critical incidents and traumatic situations that may significantly impact their mental health and well-being. Understanding the psychological consequences and coping strategies employed by these first responders is crucial for developing appropriate support systems.

Objectives: To examine the prevalence of psychological distress and post-traumatic stress disorder (PTSD) among Saudi paramedics, identify effective coping mechanisms, and assess the role of cultural and religious factors in managing stress.

Methods: A cross-sectional study design involving SRCA paramedics across multiple regions of Saudi Arabia. Data collection includes standardized psychological assessment tools, semi-structured interviews, and demographic questionnaires.

Expected Outcomes This research aims to provide evidence-based recommendations for mental health support programs tailored to the Saudi cultural context.

Keywords: Paramedics, PTSD, Critical Incidents, Coping Mechanisms, Saudi Arabia, Mental Health, First Responders

1. Introduction

1.1 Background

Emergency medical services (EMS) personnel, particularly paramedics, operate in high-stress environments where exposure to critical incidents is an occupational reality. These professionals regularly encounter life-threatening situations, severe injuries, death, and human suffering. The Saudi Red Crescent Authority (SRCA), established in 1963, serves as the primary emergency medical service provider in the Kingdom of Saudi Arabia, responding to millions of calls annually across diverse geographic and demographic contexts.

Critical incidents in paramedicine encompass traumatic events that have the potential to overwhelm an individual's usual coping mechanisms. These include mass casualty incidents, pediatric deaths, violent situations, and prolonged resuscitation attempts. The cumulative exposure to such events places paramedics at significant risk for developing psychological sequelae, including acute stress disorder, post-traumatic stress disorder (PTSD), depression, anxiety, and burnout.

1.2 The Saudi Context

The Kingdom of Saudi Arabia presents unique contextual factors that influence both the nature of critical incidents and the coping mechanisms available to paramedics. These include:

- **High traffic accident rates:** Saudi Arabia has one of the highest road traffic accident rates globally, resulting in frequent exposure to severe trauma cases

- **Mass gathering events:** The annual Hajj pilgrimage and Umrah bring millions of visitors, creating unique emergency response challenges
- **Cultural considerations:** Islamic values and Arab cultural norms significantly influence attitudes toward mental health and help-seeking behaviors
- **Occupational factors:** Work schedules, organizational support, and professional development opportunities within SRCA

1.3 Rationale and Significance

Despite growing international research on paramedic mental health, there is a notable gap in literature examining these issues within the Saudi Arabian context. Understanding the psychological impact of critical incidents on Saudi paramedics is essential for several reasons:

1. **Workforce sustainability:** Mental health issues can lead to increased absenteeism, reduced job performance, and higher turnover rates
1. **Patient care quality:** Psychological distress among paramedics may compromise clinical decision-making and patient outcomes
1. **Cultural appropriateness:** Interventions developed in Western contexts may not be suitable for Saudi Arabia without cultural adaptation
1. **Organizational responsibility:** SRCA has a duty of care to protect the mental well-being of its personnel

1.4 Research Aims and Objectives

Primary Aim: To investigate the psychological impact of critical incidents on Saudi Red Crescent paramedics and explore the coping mechanisms they employ.

****Specific Objectives:****

1. To assess the prevalence and severity of PTSD symptoms among SRCA paramedics
1. To identify common types of critical incidents that cause the greatest psychological distress
1. To examine the range of coping strategies utilized by paramedics post-incident
1. To explore the role of religious faith and cultural values in psychological resilience
1. To evaluate the adequacy of existing organizational support systems
1. To develop culturally appropriate recommendations for mental health interventions

2. Literature Review

2.1 Psychological Impact of Critical Incidents on Paramedics

2.1.1 Global Perspectives

International research consistently demonstrates that EMS personnel experience elevated rates of psychological distress compared to the general population. Studies from North America, Europe, and Australia report PTSD prevalence rates ranging from 11% to 32% among paramedics, significantly higher than the general population rate of approximately 7-8%.

Common psychological consequences include:

- **Post-Traumatic Stress Disorder (PTSD):** Characterized by intrusive memories, avoidance behaviors, negative alterations in cognition and mood, and hyperarousal
- **Depression and Anxiety:** Persistent low mood, loss of interest, and excessive worry
- **Burnout:** Emotional exhaustion, depersonalization, and reduced personal accomplishment
- **Substance Use Disorders:** Increased risk of alcohol and drug misuse as maladaptive coping strategies

- **Suicidal Ideation:** Elevated rates compared to general population

2.1.2 Risk Factors

Research has identified several risk factors that increase vulnerability to psychological distress:

- **Incident characteristics:** Pediatric deaths, mass casualties, prolonged incidents, and incidents involving colleagues
- **Individual factors:** Previous trauma exposure, personal mental health history, younger age, less experience
- **Organizational factors:** Lack of support, inadequate debriefing, high workload, shift work
- **Social factors:** Limited social support, stigma around mental health help-seeking

2.1.3 Protective Factors

Conversely, protective factors that promote resilience include:

- Strong social support networks
- Effective coping skills
- Organizational support and recognition
- Previous training in stress management
- Sense of purpose and meaning in work
- Psychological flexibility

2.2 Coping Mechanisms in Emergency Services

2.2.1 Theoretical Framework

Coping mechanisms can be understood through Lazarus and Folkman's transactional model of stress and coping, which distinguishes between:

- **Problem-focused coping:** Direct action to address the stressor
- **Emotion-focused coping:** Managing emotional responses to stress
- **Meaning-focused coping:** Drawing on values and beliefs to manage stress

2.2.2 Common Coping Strategies

Research identifies various coping strategies employed by paramedics:

Adaptive strategies:

- Peer support and social connection
- Physical exercise and healthy lifestyle
- Professional counseling and therapy
- Mindfulness and relaxation techniques
- Seeking supervision and professional development
- Work-life balance maintenance

Maladaptive strategies:

- Substance use
- Emotional suppression and avoidance
- Social withdrawal
- Overwork and excessive dedication

2.3 Cultural and Religious Factors in the Middle Eastern Context

2.3.1 Islamic Perspectives on Mental Health and Coping

Islamic teachings provide frameworks for understanding and managing psychological distress:

- **Sabr (patience):** Enduring hardship with patience and trust in Allah
- **Tawakkul (reliance on God):** Placing trust in divine wisdom
- **Dua (supplication):** Prayer as a coping mechanism
- **Community support:** Emphasis on collective responsibility and mutual care

2.3.2 Cultural Considerations

Arab cultural values relevant to mental health include:

- **Family centrality:** Family as primary source of support
- **Honor and reputation:** Concerns about stigma and social perception
- **Gender roles:** Different expectations and experiences for male and female paramedics
- **Authority respect:** Hierarchical organizational structures

2.3.3 Stigma and Help-Seeking

Mental health stigma remains a significant barrier in many Middle Eastern societies. Traditional views may perceive psychological distress as weakness or spiritual inadequacy, potentially deterring help-seeking behavior.

2.4 Gaps in Current Research

While international literature on paramedic mental health is growing, significant gaps exist:

1. Limited research from Middle Eastern countries, particularly Saudi Arabia
1. Insufficient examination of culturally specific coping mechanisms
1. Lack of validated assessment tools adapted for Arabic-speaking populations
1. Minimal investigation of Islamic religious practices as coping resources
1. Limited understanding of organizational support systems in non-Western EMS contexts

3. Methodology

3.1 Study Design

This research employs a mixed-methods approach combining quantitative and qualitative methodologies to provide comprehensive understanding of the psychological impact and coping mechanisms among SRCA paramedics.

Study Type: Cross-sectional descriptive and exploratory study

Timeline: 12-month study period

3.2 Study Setting

The study will be conducted across multiple SRCA stations in different regions of Saudi Arabia, including:

- Urban centers (Riyadh, Jeddah, Dammam)
- Holy cities (Makkah, Madinah)
- Rural areas

This geographic diversity ensures representation of varied operational contexts and incident types.

3.3 Study Population
3.3.1 Target Population

Active-duty paramedics employed by SRCA with minimum 6 months of service.

3.3.2 Inclusion Criteria

- Currently employed as paramedic by SRCA
- Minimum 6 months of field experience
- Willingness to participate and provide informed consent
- Arabic or English language proficiency

3.3.3 Exclusion Criteria

- Administrative staff without field duties
- Paramedics on extended leave (>3 months)
- Incomplete survey responses (<80% completion)

3.3.4 Sample Size

Quantitative component:
Target sample: 400 participants

- Calculation based on estimated PTSD prevalence of 20% ± 4% margin of error
- 95% confidence level
- Accounting for 20% non-response rate

Qualitative component:

- 30-40 in-depth interviews (achieving data saturation)
- 6-8 focus group discussions (6-8 participants each)

3.4 Sampling Strategy
Quantitative: Stratified random sampling based on:

- Geographic region
- Years of experience
- Station type (urban/rural)

Qualitative: Purposive sampling to ensure diversity in:

- Experience levels
- Exposure to different incident types
- Gender representation
- Cultural backgrounds

3.5 Data Collection Methods
3.5.1 Quantitative Instruments

1. Demographic and Occupational Questionnaire

- Age, gender, marital status, education
- Years of service, position, work schedule

- Previous training in psychological first aid

2. PTSD Checklist for DSM-5 (PCL-5) - Arabic Version

- 20-item self-report measure
- Assesses PTSD symptom severity
- Validated tool with established psychometric properties

3. Depression, Anxiety and Stress Scale (DASS-21) - Arabic Version

- 21-item measure of emotional states
- Three subscales for depression, anxiety, and stress

4. Maslach Burnout Inventory - Human Services Survey (MBI-HSS)

- Measures emotional exhaustion, depersonalization, and personal accomplishment
- Adapted for Arabic context

5. Brief COPE Inventory - Arabic Version

- 28-item measure assessing coping strategies
- Includes both adaptive and maladaptive coping styles

6. Religious Coping Scale (RCOPE) - Islamic Adaptation

- Measures positive and negative religious coping
- Modified for Islamic context

7. Critical Incident Exposure Scale

- Custom-designed checklist of common critical incidents
- Frequency and perceived impact ratings

8. Organizational Support Questionnaire

- Assesses perceived organizational support
- Availability and utilization of support services

3.5.2 Qualitative Methods

1. Semi-Structured Individual Interviews (60-90 minutes)
Key domains:

- Personal experiences with critical incidents
- Emotional and psychological responses
- Coping strategies employed
- Role of faith and culture
- Organizational support experiences
- Recommendations for improvement

2. Focus Group Discussions (90-120 minutes)
Topics:

- Collective experiences and shared challenges
- Peer support dynamics

- Cultural norms around emotional expression
- Barriers to help-seeking
- Preferred support interventions

3.6 Data Collection Procedures
3.6.1 Recruitment

- Official approval from SRCA leadership
- Information sessions at participating stations
- Written and verbal study information
- Voluntary participation emphasis
- No penalty for non-participation or withdrawal

3.6.2 Survey Administration

- Online platform (preferred) or paper-based options
- Private completion environment
- Anonymous response option
- 20-30 minute completion time
- Available in Arabic and English

3.6.3 Interview Procedures

- Scheduled at participant convenience
- Private, comfortable setting
- Audio recording with consent
- Professional interpreter if needed
- Immediate support resources available

3.7 Data Analysis
3.7.1 Quantitative Analysis

Statistical Software: SPSS version 27.0 or later

Descriptive Statistics:

- Frequencies and percentages for categorical variables
- Means and standard deviations for continuous variables
- Prevalence rates with 95% confidence intervals

Inferential Statistics:

- Independent t-tests and ANOVA for group comparisons
- Chi-square tests for categorical associations
- Pearson/Spearman correlations between variables
- Multiple regression analysis to identify predictors
- Significance level: $p < 0.05$

3.7.2 Qualitative Analysis

Approach: Thematic analysis using Braun and Clarke's framework

Process:
1. Transcription and translation (Arabic to English where necessary)
1. Familiarization with data

1. Initial coding generation
1. Theme identification and development
1. Theme review and refinement
1. Final theme definition and naming
1. Report production with illustrative quotes

Software: NVivo 14 for coding and theme management

Quality assurance:

- Multiple coders with inter-rater reliability checks
- Member checking with participants
- Peer debriefing
- Reflexivity and researcher positioning statements

3.7.3 Integration of Mixed Methods

- Convergence analysis to identify complementary findings
- Expansion of quantitative findings through qualitative insights
- Triangulation to validate findings across methods
- Development of comprehensive interpretation

3.8 Ethical Considerations
3.8.1 Ethical Approval

- Institutional Review Board (IRB) approval from relevant Saudi institution
- SRCA organizational approval
- Compliance with Saudi Arabian research regulations
- Declaration of Helsinki principles

3.8.2 Informed Consent

- Written informed consent for all participants
- Clear explanation of study purpose, procedures, and rights
- Right to withdraw without consequences
- Separate consent for audio recording

3.8.3 Confidentiality and Anonymity

- De-identified data storage
- Secure data management systems
- Limited access to identifiable information
- Aggregate reporting to prevent identification

3.8.4 Participant Wellbeing

- Risk assessment for psychological distress during participation
- Immediate access to mental health resources
- List of counseling services provided
- Debriefing procedures post-interview
- Monitoring for adverse reactions

3.8.5 Cultural Sensitivity

- Culturally competent research team

- Gender-matched interviewers when requested
- Respect for religious practices and prayer times
- Appropriate dress and behavior codes
- Language accessibility

3.9 Limitations and Mitigation Strategies
Potential Limitations:

1. **Selection bias:** Volunteers may differ from non-participants
- *Mitigation:* Compare sample demographics to population parameters
1. **Social desirability bias:** Underreporting of symptoms due to stigma
- *Mitigation:* Anonymous surveys, rapport building, normalize experiences
1. **Recall bias:** Difficulty accurately remembering past incidents
- *Mitigation:* Focus on recent experiences, use validated measures
1. **Cross-sectional design:** Cannot establish causality
- *Mitigation:* Acknowledge in interpretation, recommend longitudinal follow-up
1. **Cultural adaptation of instruments:** Potential validity concerns
- *Mitigation:* Use validated Arabic versions, pilot testing, cultural expert consultation

4. Expected Results

4.1 Anticipated Quantitative Findings
Based on international literature and contextual considerations, we anticipate:

4.1.1 Prevalence of Psychological Distress

- PTSD symptom prevalence: 15-25% of participants
- Clinically significant depression: 20-30%
- Anxiety symptoms: 25-35%
- Burnout (high emotional exhaustion): 30-40%

4.1.2 High-Impact Critical Incidents

Expected most distressing incident types:

1. Pediatric deaths or severe injuries
1. Mass casualty incidents (especially during Hajj)
1. Colleague injury or death
1. Violent encounters with patients or bystanders
1. Unsuccessful resuscitation attempts

4.1.3 Coping Mechanisms

Anticipated most frequently used strategies:

- Religious coping (prayer, Quranic recitation): 70-85%
- Peer support: 60-75%
- Family support: 65-80%
- Physical exercise: 40-55%
- Professional counseling: 15-25% (lower due to stigma)

4.1.4 Predictive Factors
Risk factors expected to correlate with higher PTSD/distress:

- Younger age and less experience

- Higher frequency of critical incident exposure
- Lack of organizational support
- Maladaptive coping strategies
- Lower religious coping scores
- Previous mental health issues

Protective factors expected to correlate with resilience:

- Strong social support
- Positive religious coping
- Adequate training
- Perceived organizational support
- Effective stress management skills

4.2 Anticipated Qualitative Themes
4.2.1 Nature of Psychological Impact

- Emotional numbing and detachment
- Intrusive memories and nightmares
- Hypervigilance in personal life
- Changed worldview and existential concerns
- Impact on family relationships
- Moral injury from difficult decisions

4.2.2 Cultural and Religious Dimensions

- Faith as primary source of meaning and comfort
- Concept of qadar (divine destiny) in processing trauma
- Tension between professional detachment and emotional authenticity
- Role of community and collective identity
- Gender-specific experiences and expectations

4.2.3 Organizational Factors

- Perception of support adequacy
- Barriers to accessing mental health services
- Stigma within the organization
- Need for critical incident stress debriefing
- Training gaps in psychological preparation

4.2.4 Coping Strategy Narratives

- Compartmentalization between work and home life
- Peer bonding and shared understanding
- Religious rituals and practices
- Physical outlets and activities
- Professional identity and sense of duty

4.3 Integration of Findings
The mixed-methods approach will yield:

1. **Quantified prevalence** of mental health issues with **lived experience narratives** providing context and depth
1. **Statistical identification** of risk factors with **personal accounts** explaining mechanisms and processes

1. **Measurement of coping strategy frequency** with **qualitative exploration** of effectiveness and cultural meaning
1. **Assessment of organizational support utilization** with **barriers and facilitator identification** through interviews

5. Discussion (Projected)

5.1 Interpretation of Findings
The expected findings will be interpreted within the Saudi Arabian sociocultural context, considering:

5.1.1 Comparison with International Literature

- How do prevalence rates compare with Western countries?
- What similarities and differences exist in symptom presentation?
- Are there culturally unique expressions of distress?

5.1.2 Cultural Uniqueness

- Role of Islamic faith as both protective factor and potential source of guilt/moral injury
- Collectivist versus individualist coping approaches
- Family involvement in recovery versus individual therapy models
- Concept of mental health and psychological distress in Arab culture

5.1.3 Organizational Implications

- Adequacy of current SRCA support systems
- Gap between available resources and utilization
- Stigma within occupational culture
- Need for culturally adapted interventions

5.2 Clinical and Practical Implications
5.2.1 Mental Health Intervention Recommendations

Organizational Level:
1. **Mandatory Critical Incident Stress Management (CISM) Program**
- Immediate debriefing post-incident
- Follow-up assessments
- Culturally trained peer supporters
1. **Accessible Confidential Counseling Services**
- On-site or easily accessible mental health professionals
- Islamic counseling integration
- Telehealth options for privacy
1. **Routine Psychological Screening**
- Annual mental health assessments
- Early identification and intervention
- Non-punitive approach
1. **Education and Training**
- Pre-service psychological preparation
- Stress management and resilience training
- Stigma reduction campaigns
- Family education programs
****Individual Level:****
1. **Psychoeducation**
- Normal reactions to abnormal events
- When to seek help

- Available resources
1. **Skills Development**
- Evidence-based coping strategies
- Mindfulness and relaxation techniques
- Work-life balance skills
1. **Culturally Adapted Therapies**
- Integration of Islamic principles
- Cognitive-behavioral approaches
- Trauma-focused interventions
- Group support programs

5.2.2 Policy Recommendations

1. **Mental Health Policy Development**
- Formal SRCA mental health policy
- Protected time for recovery post-critical incident
- Confidentiality protections
1. **Workforce Support**
- Adequate staffing levels to reduce chronic stress
- Reasonable shift lengths and rest periods
- Career development and rotation opportunities
1. **Research Infrastructure**
- Ongoing monitoring and evaluation
- Longitudinal studies for long-term outcomes
- Intervention effectiveness research

5.3 Theoretical Contributions
This research will contribute to theoretical understanding by:

1. **Expanding stress and coping models** to incorporate religious and cultural dimensions
1. **Validating instruments** in Arabic-speaking, Islamic contexts
1. **Developing culturally grounded frameworks** for paramedic mental health
1. **Informing occupational health psychology** in Middle Eastern contexts

5.4 Strengths and Limitations
Strengths:

- First comprehensive study of Saudi paramedic mental health
- Mixed-methods approach providing depth and breadth
- Cultural sensitivity and adaptation
- Multiple geographic sites
- Validated instruments

Limitations:

- Cross-sectional design limits causal inference
- Potential selection and social desirability bias
- Self-report measures
- Generalizability to other Middle Eastern countries uncertain
- Longitudinal outcomes unknown

5.5 Future Research Directions
1. **Longitudinal studies** tracking mental health trajectories over careers
1. **Intervention trials** testing culturally adapted programs
1. **Comparative studies** across different Middle Eastern countries
1. **Family impact studies** examining secondary traumatization

1. **Gender-specific research** exploring unique experiences
1. **Occupational comparison** with other emergency services (police, firefighters)
1. **Mechanism studies** exploring how religious coping operates

6. Conclusion

This research addresses a critical gap in understanding the psychological well-being of Saudi Red Crescent Authority paramedics who serve as the frontline of emergency medical care in the Kingdom. The anticipated findings will provide evidence-based insights into:

1. The prevalence and nature of psychological distress following critical incidents
1. The range and effectiveness of coping mechanisms employed
1. The unique role of Islamic faith and Saudi culture in resilience and recovery
1. The adequacy of existing organizational support systems
1. Culturally appropriate intervention recommendations

The significance of this research extends beyond academic contribution. It has the potential to:

- **Improve paramedic wellbeing**, leading to enhanced quality of life and job satisfaction
- **Enhance patient care**, as mentally healthy paramedics provide better clinical outcomes
- **Strengthen the SRCA organization**, through reduced absenteeism, turnover, and improved performance
- **Inform regional policy**, providing a model for other Middle Eastern emergency services
- **Advance cultural understanding**, contributing to global occupational health psychology

The integration of Islamic values and Arab cultural perspectives into mental health interventions represents a crucial step toward developing effective, acceptable, and sustainable support systems. Rather than simply importing Western models, this research seeks to honor and incorporate the spiritual and cultural resources that Saudi paramedics naturally draw upon.

Ultimately, this research recognizes that those who dedicate themselves to saving lives in the most critical moments deserve comprehensive support for their own psychological well-being. Investing in paramedic mental health is not merely an organizational obligation—it is a moral imperative and a strategic priority for maintaining a resilient, effective emergency medical service.

The path forward requires commitment from multiple stakeholders: SRCA leadership must prioritize mental health infrastructure; policymakers must allocate adequate resources; mental health professionals must develop culturally competent interventions; and paramedics themselves must feel empowered to seek support without stigma or professional consequences.

As the Kingdom of Saudi Arabia continues its journey of transformation and development under Vision 2030, ensuring the psychological well-being of its emergency responders represents an essential component of building a healthy, resilient society. This research aims to contribute meaningfully to that vital goal.

References

1. Alexander, D. A., & Klein, S. (2001). Ambulance personnel and critical incidents. *British Journal of Psychiatry*, 178(1), 76-81.
2. Bennett, P., Williams, Y., Page, N., Hood, K., & Woollard, M. (2004). Levels of mental health problems among UK emergency ambulance workers. *Emergency Medicine Journal*, 21(2), 235-236.
3. Berger, W., Coutinho, E. S., Figueira, I., et al. (2012). Rescuers at risk: A systematic review and meta-regression analysis of the worldwide current prevalence and correlates of PTSD in rescue workers. *Social Psychiatry and Psychiatric Epidemiology*, 47(6), 1001-1011.
4. Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the Brief COPE. *International Journal of Behavioral Medicine*, 4(1), 92-100.

5. Clohessy, S., & Ehlers, A. (1999). PTSD symptoms, response to intrusive memories and coping in ambulance service workers. *British Journal of Clinical Psychology*, 38(3), 251-265.
6. Donnelly, E., & Bennett, M. (2014). Development of a critical incident stress inventory for the emergency medical services. *Traumatology*, 20(1), 1-8.
7. Folkman, S., & Lazarus, R. S. (1988). Coping as a mediator of emotion. *Journal of Personality and Social Psychology*, 54(3), 466-475.
8. Grevin, F. (1996). Posttraumatic stress disorder, ego defense mechanisms, and empathy among urban paramedics. *Psychological Reports*, 79(2), 483-495.
9. Halpern, J., Gurevich, M., Schwartz, B., & Brazeau, P. (2009). What makes an incident critical for ambulance workers? Emotional outcomes and implications for intervention. *Work & Stress*, 23(2), 173-189.
10. Hegg-Deloye, S., Brassard, P., Jauvin, N., et al. (2014). Current state of knowledge of post-traumatic stress, sleeping problems, obesity and cardiovascular disease in paramedics. *Emergency Medicine Journal*, 31(3), 242-247.
11. Pargament, K. I., Koenig, H. G., & Perez, L. M. (2000). The many methods of religious coping: Development and initial validation of the RCOPE. *Journal of Clinical Psychology*, 56(4), 519-543.
12. Regehr, C., Goldberg, G., & Hughes, J. (2002). Exposure to human tragedy, empathy, and trauma in ambulance paramedics. *American Journal of Orthopsychiatry*, 72(4), 505-513.
13. Shakespeare-Finch, J., Gow, K., & Smith, S. (2005). Personality, coping and posttraumatic growth in emergency ambulance personnel. *Traumatology*, 11(4), 325-334.
14. Sterud, T., Ekeberg, Ø., & Hem, E. (2006). Health status in the ambulance services: A systematic review. *BMC Health Services Research*, 6, 82.
15. Weathers, F. W., Litz, B. T., Keane, T. M., Palmieri, P. A., Marx, B. P., & Schnurr, P. P. (2013). *The PTSD Checklist for DSM-5 (PCL-5)*. National Center for PTSD.