

Research Hotspots and Evolution of Mental Health in Emergency Responders and Military Personnel: A Comparative BERTopic Analysis

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Abstract

Emergency responders and military personnel are routinely exposed to traumatic events, prolonged occupational stress, and high-risk working environments, making mental health a major concern in occupational health research. Despite the rapid growth of publications in this field, the thematic structure and developmental trajectories of mental health research across these two high-risk occupational groups remain insufficiently understood. This study aimed to identify and compare research hotspots and their temporal evolution using BERTopic-based topic modeling. A total of 1,231 publications published between 2005 and 2025 were retrieved from the Web of Science, Scopus, and PubMed databases. Titles, abstracts, and keywords were integrated into a text corpus, and BERTopic was employed to identify latent semantic topics, which were further analyzed through temporal trend analysis to explore their evolution over time. The identified topics were synthesized into three conceptual domains: occupational stress and contextual factors, help-seeking and service utilization, and psychological problems and outcomes. Although both occupational groups shared a similar thematic framework, substantial differences were observed in their research priorities. Studies involving emergency responders primarily emphasized occupational exposure, organizational context, cumulative stress, and work-related psychological adaptation, whereas research on military personnel focused more heavily on post-traumatic outcomes, mental health stigma, suicide risk, and mental health service utilization. Temporal analysis further demonstrated that research in both fields has gradually shifted from early problem identification toward prevention, intervention, and service-oriented strategies, while exhibiting distinct occupational trajectories. These findings provide a comprehensive understanding of the thematic landscape and evolution of mental health research in two major high-risk occupational populations and offer evidence to support occupation-specific mental health policies, intervention development, and future research priorities.

Keywords

Emergency Responders, Military Personnel, Occupational Mental Health, BERTopic, Topic Modeling, Help-seeking, Psychological Resilience