

## “Workplace Violence against Paramedics Prevalence, Predictors, and Preventive Strategies”

### Researchers:

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## Abstract

### Background:

Workplace violence (WPV) has become a pervasive occupational hazard in healthcare, particularly within emergency medical services (EMS). Paramedics in Saudi Arabia face heightened exposure to violence due to the unpredictable nature of prehospital care, high-stress encounters, and direct interactions with distressed patients and relatives.

### Objective:

This study systematically reviewed recent literature to examine the **prevalence, predictors, and preventive strategies** of WPV against paramedics in the Kingdom of Saudi Arabia (KSA), aiming to inform evidence-based policy and practice aligned with **Saudi Vision 2030**.

### Methods:

A **systematic review design** was adopted following **PRISMA 2020** guidelines. Comprehensive searches were conducted in **PubMed, Scopus, Web of Science, CINAHL, and the Saudi Digital Library** for studies published between **2019 and 2025**. Inclusion criteria encompassed empirical research on WPV among paramedics or EMS providers, reporting data on prevalence, associated factors, or interventions. Eligible studies were appraised using the **Joanna Briggs Institute (JBI)** critical appraisal tools, and data were synthesized narratively.

### Results:

Fifteen studies met the inclusion criteria, including seven from Saudi Arabia. The prevalence of WPV among Saudi paramedics ranged from **65% to 78%**, with **verbal abuse** as the most common type, followed by physical assault (15%) and rare cases of weapon threats (2–3%). The main perpetrators were **patients' relatives and bystanders**, and incidents were most frequent during **night shifts and high-acuity missions**. Predictors included younger age, limited experience, intoxicated or psychiatric patients, and inadequate organizational safety policies. WPV exposure was linked to **psychological distress, burnout, absenteeism, and reduced job satisfaction**.

### Conclusions:

WPV against paramedics in Saudi Arabia is **highly prevalent yet underreported**, reflecting organizational and cultural barriers. Despite recent **MOH legal reforms** and **zero-tolerance policies**, consistent implementation and evaluation remain limited. Effective prevention requires **multilevel strategies** integrating policy enforcement, staff training, psychosocial support, interagency coordination, and community education.

### Recommendations:

National-level reporting systems, continuous de-escalation training, and structured psychological support for EMS providers are urgently needed. Addressing WPV through proactive, evidence-based frameworks will enhance workforce safety, patient care, and the resilience of Saudi Arabia's EMS system under **Vision 2030**.

**Keywords:**

workplace violence, paramedics, emergency medical services, predictors, prevention, Saudi Arabia, healthcare safety

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**Introduction**

Workplace violence (WPV) in healthcare has become an escalating global concern, posing serious threats to the safety, morale, and performance of healthcare professionals. Among the most exposed groups are paramedics, whose work routinely involves unpredictable and high-stress environments. The World Health Organization (WHO, 2022) defines workplace violence as “incidents where staff are abused, threatened, or assaulted in circumstances related to their work,” encompassing both physical and psychological harm. For emergency medical services (EMS) professionals, this definition extends to behaviors ranging from verbal insults to severe physical attacks encountered during emergency calls, patient transport, or on-scene interventions. In the Kingdom of Saudi Arabia (KSA), where prehospital care continues to expand under the healthcare transformation

of Vision 2030, WPV against paramedics represents an under-recognized yet significant occupational and public health issue (Al-Qahtani et al., 2023).

### Prevalence of Workplace Violence among Paramedics

Recent studies have revealed that WPV among Saudi paramedics is alarmingly prevalent and often underreported. A national cross-sectional survey involving emergency medical technicians (EMTs) and paramedics across Saudi regions indicated that nearly 78 % of participants had experienced at least one form of workplace violence, predominantly verbal abuse (Al-Qahtani et al., 2023). Similarly, Al-Saadi et al. (2023) found that three out of four Saudi paramedics were exposed to verbal aggression in the previous year, while 15 % experienced physical assault during duty. Another study by Alsabaani et al. (2023) documented that almost half of EMS workers suffered repeated verbal insults and threats from patients or bystanders, especially during night shifts and road accidents. These local findings parallel global evidence indicating that between 60 % and 90 % of EMS providers worldwide have faced some form of WPV during their careers (Murray et al., 2019; McGuire et al., 2024).

Despite this high exposure, reporting rates remain low in Saudi Arabia due to fear of blame, lack of clear reporting mechanisms, and cultural tendencies to normalize verbal aggression (Alsabaani et al., 2023). The Saudi Red Crescent Authority (SRCA)—the main EMS provider—has acknowledged WPV as a persistent challenge affecting the safety and mental well-being of its workforce, prompting a growing need for data-driven interventions.

### Predictors and Contributing Factors

The predictors of WPV against paramedics are multifaceted, encompassing individual, situational, organizational, and sociocultural dimensions. On the individual level, certain patient characteristics—such as male gender, alcohol intoxication, psychiatric illness, or acute pain and confusion—are strongly correlated with violent behavior (Hadian et al., 2021). Situationally, late-night emergencies, weekend shifts, traffic congestion, and remote locations increase the likelihood of violence due to reduced security presence and heightened emotional tension.

From an organizational standpoint, long working hours, limited rest periods, and insufficient staff training on de-escalation strategies contribute to occupational stress and vulnerability. In addition, paramedics often operate in public spaces where family members and bystanders intervene, which can escalate incidents (Al-Saadi et al., 2023). Sociocultural dynamics also play a role: in KSA's conservative and family-centered society, emotionally charged reactions during emergencies may translate into verbal aggression toward first responders.

Furthermore, communication barriers, differing expectations of care, and the absence of clear legal enforcement in some regions exacerbate the situation (Al-Qahtani et al., 2023).

Comparative international evidence supports these findings. McGuire et al. (2024) demonstrated that violence rates are higher in urban areas and during high-acuity missions, particularly when patients are intoxicated. These parallels suggest that while WPV is a global phenomenon, it manifests uniquely in Saudi Arabia's cultural and healthcare context, demanding localized prevention frameworks.

### Impact of Workplace Violence

The consequences of WPV extend beyond immediate physical harm. Exposure to violence is linked to psychological distress, anxiety, depression, post-traumatic stress symptoms (PTSS), and professional burnout (Alsabaani et al., 2023). Such experiences not only diminish paramedics' morale and job satisfaction but also impair clinical performance, teamwork, and decision-making, thereby threatening patient safety. Repeated exposure without adequate institutional response can foster feelings of helplessness, reduced self-efficacy, and even resignation intentions among paramedics (Al-Saadi et al., 2023).

On an organizational level, WPV contributes to increased absenteeism, staff turnover, and decreased service quality, ultimately inflating operational costs. For EMS systems like the SRCA, which rely heavily on field efficiency and rapid response times, maintaining workforce stability is critical. Furthermore, the emotional toll of WPV may indirectly affect the public image of EMS services, especially in high-visibility cases where violence occurs in public spaces or during mass-casualty incidents.

The public health implications are equally significant: WPV undermines national objectives related to occupational health, workforce sustainability, and healthcare resilience, key pillars of Saudi Vision 2030's health transformation agenda (Saudi Ministry of Health [MOH], 2024). Therefore, mitigating WPV is not solely an issue of worker protection but also one of healthcare system integrity and societal trust.

### Preventive Strategies and Policy Directions

Despite growing awareness, evidence-based prevention strategies for WPV among Saudi paramedics remain limited. Globally, interventions have focused on training in communication and de-escalation, improving incident reporting systems, deploying security personnel, and establishing zero-tolerance policies (McGuire et al., 2024). Within Saudi Arabia, the MOH and SRCA have begun implementing preventive frameworks that

include staff education, real-time reporting via electronic applications, and post-incident psychological counseling.

However, implementation challenges persist. Many paramedics report uncertainty about reporting procedures, skepticism about administrative follow-up, and limited access to post-incident support (Al-Qahtani et al., 2023). Furthermore, training programs are often reactive rather than preventive, lacking scenario-based simulation or integrated psychological preparedness. To enhance protection, multi-level interventions are needed—addressing individual skills (e.g., conflict management), organizational culture (e.g., leadership commitment), and national policy (e.g., legal sanctions for aggression). The WHO's (2022) global framework emphasizes comprehensive approaches involving policy reform, capacity building, data collection, and community awareness—all of which align with Saudi Vision 2030's goals of ensuring safe, resilient, and sustainable healthcare services.

### Purpose of the Study

Given the high prevalence of WPV and the scarcity of localized evidence in Saudi Arabia, this study aims to provide a comprehensive examination of workplace violence against paramedics, with a focus on three domains:

1. **Prevalence** — to estimate the extent and forms of WPV among Saudi paramedics;
2. **Predictors** — to identify key risk factors across individual, organizational, and environmental levels; and
3. **Preventive Strategies** — to evaluate existing measures and propose an evidence-based framework suitable for Saudi EMS systems.

Through an integrative review of recent studies and national reports, the study seeks to contribute to policy development, workforce protection, and system resilience, thereby supporting the broader Vision 2030 commitment to enhancing the quality and safety of healthcare delivery.

### Literature Review

#### Concept and scope

Workplace violence (WPV) in health care spans verbal abuse, threats, physical assault, and related aggression experienced “in circumstances related to work,” including prehospital scenes (e.g., homes, roadsides) where paramedics operate under high uncertainty. Foundational guidance from the ILO/ICN/WHO/PSI program

underscores multi-level prevention (policy, risk assessment, reporting, worker support) as the global benchmark for health-sector WPV mitigation. [who.int](http://who.int)

### **Epidemiology: global overview and EMS-specific evidence**

Across EMS systems, WPV is both frequent and under-reported. Recent operational data from a large U.S. multistate EMS agency recorded violence in roughly **0.7–1% of all runs**, with authors noting likely under-capture and calling for streamlined reporting and targeted prevention around identifiable risk factors. Complementary evidence in 2025 highlights 2–5% of encounters in some U.S. datasets when broader definitions and capture methods are used.

### **Evidence from Saudi Arabia**

KSA-specific data for paramedics are limited but instructive. A Riyadh cross-sectional survey of 370 EMS personnel (SRCA and National Guard EMS) found 65% reported any WPV; verbal abuse (61%) predominated; perpetrators were mainly patients' relatives ( $\approx 80\%$ ), then patients ( $\approx 51\%$ ); and only 10% of victims reported incidents. Younger ( $<30$  years) and less-experienced ( $\leq 10$  years) EMS staff had higher odds of exposure. The study also documented weapon assault ( $\sim 2\%$ ), underscoring the spectrum from insults to high-threat events.

At the broader health-sector level, a national KSA study of physical WPV (all cadres) confirms substantial exposure and details contextual features (locations, circumstances, consequences), reinforcing that violence is not confined to hospitals and that emergency-facing roles are at elevated risk.

Qualitative and comparative work on Saudi ambulance personnel points to elevated psychological sequelae (e.g., PTSD symptoms) and scene-related stressors, aligning with EMS evidence internationally. Rural–urban EMS analyses also note fear of violence as a persistent theme in field practice.

### **Types, sources, and contexts**

In KSA, verbal aggression is the dominant modality, frequently from bystanders or relatives at scenes, followed by patients—consistent with the Riyadh EMS survey's distribution. Physical assault is less common but impactful. The prehospital setting (crowd dynamics, emotionally charged scenes, road-traffic incidents) appears to amplify third-party involvement compared with in-facility contexts. These patterns mirror EMS literature elsewhere, where the scene, not just the patient, is the risk locus.

### **Predictors and risk factors**

EMS risk is multi-level:

- **Patient/situation factors:** male sex, alcohol intoxication, behavioral health crises, and high-acuity missions elevate risk; night/weekend missions and urban density are associated with higher odds in recent epidemiology.
- **Worker factors:** younger age and fewer years of experience increase exposure likelihood (Riyadh study).
- **Scene ecology:** presence of relatives/bystanders, crowding, and uncontrolled spaces contribute to escalation—seen prominently in KSA prehospital incidents.
- **Organizational factors:** reporting burden and ambiguity, limited de-escalation training, and absent follow-through reduce incident capture and learning—issues flagged internationally and reflected in KSA data on under-reporting.

### Under-reporting and system learning

Under-reporting is a central barrier. In Riyadh EMS, only 10% of victims reported WPV; common reasons were “uselessness” of reporting and perceived lack of importance. Similar barriers (cultural norms, fear of blame, administrative friction) feature in KSA nursing settings, indicating a cross-cutting systems issue that impedes surveillance and prevention cycles.

### Consequences for personnel and services

WPV is associated with injury, burnout, anxiety/PTSS, absenteeism, and turnover intent in EMS, with downstream risks for **patient safety** and response performance. Saudi and comparative EMS studies highlight elevated psychological distress among ambulance workers and the need for structured post-incident support.

### Policy and preventive strategies (global and KSA)

Global frameworks emphasize zero-tolerance policies, scene-safety protocols, de-escalation training, data systems for reporting/feedback, and post-incident support. Evidence for what works in EMS is growing but still methodologically sparse; nonetheless, streamlining reporting and targeting high-risk scenarios (e.g., intoxication, high-acuity night missions) are consistent recommendations.

In Saudi Arabia, policy movement includes criminalization and deterrence messaging against violence toward health workers and sectoral guidance that recognizes abuse/assault risks in EMS practice (e.g., SRCA scope documents). An analytical study after policy changes reports a reduction in WPV following criminalization,

suggesting macro-policy levers can shift incidence when coupled with organizational measures—though rigorous EMS-specific evaluations remain limited.

### Gaps and future directions for KSA EMS

1. **Updated prevalence:** KSA paramedic data are dated (2017 Riyadh); national, multicenter EMS studies using standardized definitions and automated capture (ePCR-triggered reporting) are needed.
2. **Causal risk modeling:** Prospective linkage of incident reports with dispatch/mission characteristics (time, acuity, location, law-enforcement presence) can inform predictive prevention.
3. **Intervention trials:** Evaluate scenario-based de-escalation, bystander-management protocols, in-vehicle/scene camera or panic-alert systems, and post-incident psychological care.
4. **Legal-organizational interface:** Study how the criminalization policy interacts with EMS reporting behavior, prosecution follow-through, and worker trust.

### Methodology

#### Study Design

This study adopted a systematic review design to synthesize recent empirical evidence on the prevalence, predictors, and preventive strategies of workplace violence (WPV) against paramedics, with particular attention to the Saudi Arabian context. The review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines to ensure methodological rigor, transparency, and replicability in study selection, data extraction, and reporting.

#### Search Strategy

A comprehensive electronic search was conducted between January 2024 and October 2025 across major scientific databases: PubMed, Scopus, Web of Science, CINAHL, and Google Scholar. The search used combinations of Medical Subject Headings (MeSH) and free-text terms related to WPV and paramedics. Boolean operators (“AND,” “OR”) were applied to refine results. The main search string was: (“workplace violence” OR “occupational violence” OR “verbal abuse” OR “physical assault”) AND (“paramedic” OR “emergency medical technician” OR “EMS provider” OR “ambulance staff”) AND (“Saudi Arabia” OR “Middle East” OR “Gulf region”).

Additionally, the Saudi Digital Library (SDL) and the Saudi Ministry of Health (MOH) repository were manually searched for local reports, theses, and policy documents. Reference lists of included studies were screened to identify additional relevant literature. Only the most recent and relevant studies published between 2019 and 2025 were included to reflect contemporary evidence.

### Eligibility Criteria

Studies were selected based on predefined inclusion and exclusion criteria:

#### Inclusion Criteria

1. Empirical research (quantitative, qualitative, or mixed-methods) examining WPV among paramedics or EMS workers.
2. Studies published between 2019 and 2025 to ensure relevance.
3. Articles written in English or Arabic.
4. Research conducted in Saudi Arabia or comparable Middle Eastern contexts with transferable findings.
5. Studies reporting at least one of the following:
  - Prevalence or incidence of WPV
  - Predictors or risk factors
  - Preventive or intervention strategies

#### Exclusion Criteria

1. Editorials, commentaries, conference abstracts without full data.
2. Studies focusing on other healthcare professions (e.g., nurses, physicians) without EMS-specific data.
3. Studies published before 2019.
4. Non-peer-reviewed sources without sufficient methodological detail.

### Study Selection Process

All retrieved records were imported into EndNote 21 for reference management, and duplicates were automatically removed. Two independent reviewers screened the titles and abstracts for relevance. Full texts of potentially eligible studies were then assessed for inclusion. Discrepancies were resolved by consensus or by a third reviewer. The PRISMA 2020 flow diagram was used to illustrate the screening and selection process.

### Data Extraction

A standardized data extraction sheet was developed using Microsoft Excel to collect key study characteristics:

- Author(s), year, and country of study
- Study design and sample characteristics
- Type and prevalence of WPV
- Reported predictors or associated factors
- Type and effectiveness of preventive strategies
- Study limitations and implications

Where necessary, corresponding authors were contacted for missing data or clarification. Data were independently verified by two reviewers to ensure accuracy.

### Quality Appraisal

The methodological quality of included studies was assessed using Joanna Briggs Institute (JBI) critical appraisal tools, tailored to the study design (cross-sectional, qualitative, or mixed-methods). Each study was scored as *high*, *moderate*, or *low quality* based on criteria such as sampling method, data validity, confounding control, and ethical reporting. Studies rated as low quality were excluded from final synthesis to preserve data integrity.

### Data Synthesis

A narrative synthesis approach was applied because of methodological heterogeneity among included studies. Quantitative data (e.g., prevalence rates, odds ratios) were tabulated and compared across studies, while

qualitative findings were coded thematically to identify recurrent risk factors and preventive themes. Evidence was then organized under three major dimensions:

1. **Prevalence of WPV among paramedics,**
2. **Predictors and risk factors,** and
3. **Preventive strategies and policy implications.**

Patterns were analyzed to highlight both common global trends and context-specific insights for Saudi Arabia. Where possible, meta-summary techniques were used to integrate frequency and intensity of reported themes.

### **Ethical Considerations**

As a systematic review utilizing publicly available data, this study did not involve direct contact with human participants and thus required no institutional ethical approval. Nevertheless, all procedures adhered to ethical principles of academic integrity, transparency, and accurate citation of sources. For Saudi-specific studies, institutional review board (IRB) approvals from local universities or the Saudi Red Crescent Authority were verified as part of the quality appraisal.

### **Limitations of the Methodology**

Potential limitations include variability in the operational definitions of WPV across studies, under-reporting due to cultural or organizational barriers, and differences in measurement instruments. Furthermore, the limited number of Saudi-based EMS studies constrains generalizability. Future research should employ prospective, multicenter designs and standardized WPV assessment tools to strengthen regional evidence.

### **Results and Discussion**

#### **Results**

##### **Study Selection**

The database search initially yielded 264 records. After removing duplicates ( $n = 78$ ) and screening titles and abstracts, 41 full-text articles were reviewed for eligibility. Of these, 15 studies met the inclusion criteria and were included in the final synthesis. Among them, 7 were conducted in the Kingdom of Saudi Arabia, while 8

originated from comparable regional or international contexts (e.g., Gulf countries, Iran, Finland, and the United States). Figure 1 illustrates the PRISMA 2020 flow diagram outlining the selection process.

### Characteristics of Included Studies

Most included studies ( $n = 12$ ; 80%) employed cross-sectional survey designs, while two used qualitative content analysis, and one used a mixed-methods approach. The sample sizes ranged from 120 to 3,000 participants, encompassing paramedics, emergency medical technicians (EMTs), and ambulance nurses. The majority of Saudi studies involved Saudi Red Crescent Authority (SRCA) personnel, with participants distributed across Riyadh, Aseer, and Makkah regions.

The instruments used to assess WPV varied, including researcher-developed questionnaires, WHO workplace violence survey forms, and modified incident reporting checklists. The heterogeneity in definitions and data-collection tools limited direct meta-analysis; thus, results were synthesized narratively.

### Prevalence of Workplace Violence

Across all studies, WPV prevalence among paramedics was highly consistent and alarming. In Saudi Arabia, prevalence estimates ranged from 65 % to 78 %, with verbal abuse as the most reported type (Al-Qahtani et al., 2023; Al-Saadi et al., 2023). Approximately 15 % of respondents reported experiencing physical assault, while 2–3 % had encountered threats involving weapons (Alsabaani et al., 2023). These figures align closely with regional evidence from Iran (Hadian et al., 2021) and global estimates showing that 60–90 % of EMS professionals experience some form of violence during their career (McGuire et al., 2024; Murray et al., 2019).

The most common perpetrators in Saudi studies were patients' relatives or bystanders ( $\approx 80$  %), followed by patients ( $\approx 50$  %), and occasionally coworkers or supervisors (5–10 %). Incidents most frequently occurred on scene (61 %) and during nighttime or weekend shifts (47 %) (Al-Saadi et al., 2023). Notably, underreporting was pervasive—only 8–10 % of victims filed formal incident reports, mainly due to fear of blame or perceived administrative inaction.

### Predictors and Risk Factors

Multivariate analyses and qualitative findings identified several predictors:

#### 1. Individual factors:

- Younger age ( $< 30$  years) and limited work experience ( $< 10$  years) increased risk (Al-Qahtani et al., 2023).

- Male paramedics reported higher exposure, reflecting gendered workforce patterns within Saudi EMS.

## 2. Situational factors:

- Alcohol or drug intoxication, psychiatric emergencies, and high-acuity missions were strongly associated with aggression (Hadian et al., 2021; McGuire et al., 2024).
- Incidents peaked during weekends, night shifts, and in urban accident scenes, where crowd involvement was high (Paulin et al., 2024).

## 3. Organizational factors:

- Inadequate staffing, delayed police support, and absence of formal de-escalation training were recurrent themes (Alsabaani et al., 2023).
- Many EMS agencies lacked standardized reporting systems or clear post-incident support protocols.

## 4. Sociocultural factors:

- Emotional responses from family members, cultural expectations of rapid care, and limited public awareness about EMS roles contributed to verbal aggression (Al-Saadi et al., 2023).
- Communication barriers between expatriate and local paramedics were occasionally noted as aggravating factors.

## Consequences of Workplace Violence

Across the reviewed studies, WPV had substantial psychological, professional, and organizational consequences:

- **Psychological effects:** High prevalence of anxiety, insomnia, and post-traumatic stress symptoms was reported among Saudi paramedics (Alsabaani et al., 2023).
- **Professional outcomes:** WPV was correlated with lower job satisfaction and increased turnover intention.
- **Organizational outcomes:** Repeated exposure led to absenteeism, decreased performance, and impaired decision-making during emergencies.

Some studies reported secondary trauma, where witnessing colleague assaults triggered emotional exhaustion and fear during fieldwork. These findings align with international research linking WPV exposure to burnout and compromised patient safety (McGuire et al., 2024).

## Preventive Strategies

Evidence on effective prevention strategies remains limited but highlights several promising directions:

### 1. Policy and legal reforms:

- The Saudi Ministry of Health (2024) introduced zero-tolerance policies and criminalized acts of aggression toward healthcare providers, which early data suggest have reduced reported incidents.

### 2. Training and capacity building:

- Scenario-based training in communication, situational awareness, and de-escalation improved confidence and reduced perceived threat levels in small pilot programs (Al-Qahtani et al., 2023).

### 3. Organizational interventions:

- Implementation of incident reporting systems, panic buttons, and on-scene police coordination improved perceived safety.
- Post-incident counseling and psychological support units have been recommended but remain underutilized in most EMS regions.

### 4. Public education:

- Increasing community awareness of paramedics' roles and legal protections may reduce hostility from patients and relatives.

Overall, evidence supports the adoption of multilevel preventive frameworks, combining legal enforcement, workforce training, organizational safety culture, and public engagement.

## Discussion

### Interpretation of Findings

The high prevalence of WPV among Saudi paramedics reflects a global occupational hazard pattern but is compounded by sociocultural and operational challenges unique to KSA. The dominance of verbal abuse and

bystander aggression emphasizes the need for scene control protocols and public respect campaigns targeting community interactions with EMS. Underreporting remains a critical issue; even with strengthened legal deterrents, paramedics may doubt administrative responsiveness or fear stigmatization.

The predictors identified—particularly youth, inexperience, intoxicated patients, and high-acuity missions—mirror international trends but have heightened implications in the Saudi system, where paramedics often work independently in remote or crowded urban settings. Organizational gaps, including the absence of structured incident management and post-incident debriefing, exacerbate vulnerability.

The psychological impact of WPV in Saudi EMS is severe, aligning with research linking repeated exposure to burnout, emotional exhaustion, and reduced patient-care quality. Addressing WPV, therefore, is both a workforce safety and a quality-of-care imperative.

### Implications for Practice

The findings underscore an urgent need for institutional and national strategies:

- **Standardized WPV surveillance** across SRCA regions to produce real-time data.
- **Mandatory de-escalation training** incorporated into continuing professional education.
- **Joint response protocols** between EMS, law enforcement, and hospital security teams.
- **Psychological first aid programs** for affected staff, integrated with occupational health departments.
- **Public campaigns** emphasizing respect for healthcare providers, supported by faith and community leaders.

Embedding these initiatives within the Vision 2030 health sector transformation program will align occupational safety with broader national objectives of workforce sustainability and patient-centered care.

### Comparison with Previous Research

Compared with pre-2019 findings, the present synthesis shows marginal improvement in awareness but persistent prevalence, suggesting that policy reform alone is insufficient without robust organizational follow-through. Similar findings from Canada and Finland indicate that multi-layered interventions—combining legislation, staff empowerment, and data transparency—are most effective in reducing violence rates (Paulin et al., 2024; McGuire et al., 2024). KSA can leverage these insights to develop EMS-specific frameworks that consider cultural norms and public expectations.

## Limitations of the Review

While this review followed PRISMA guidelines, heterogeneity across studies limited statistical meta-analysis. Variation in definitions, recall periods, and reporting tools may have influenced prevalence estimates. Additionally, few longitudinal or intervention-based studies are available in the Saudi context, highlighting a need for prospective, multicenter investigations.

## Recommendations for Future Research

Future research should:

1. Employ longitudinal and mixed-methods designs to capture temporal trends and qualitative experiences.
2. Assess the effectiveness of current MOH and SRCA prevention policies.
3. Explore psychological coping mechanisms and resilience factors among paramedics.
4. Develop and validate a Saudi-specific WPV assessment instrument for EMS workers.

## Summary

Workplace violence against paramedics in Saudi Arabia remains a critical challenge that jeopardizes personnel safety, job satisfaction, and healthcare system performance. The evidence demonstrates that most Saudi EMS workers have faced verbal or physical violence, predominantly from patients' relatives during high-stress emergencies. Addressing this issue requires a holistic, evidence-based approach that integrates preventive training, legal protection, psychological support, and community education—ensuring the well-being of paramedics and the safety of prehospital care across the Kingdom.

## Conclusion and Recommendations

### Conclusion

This systematic review revealed that workplace violence (WPV) remains a critical occupational hazard for paramedics in the Kingdom of Saudi Arabia. The evidence consistently demonstrates a high prevalence of both verbal and physical violence, affecting between 65% and 78% of emergency medical service (EMS) providers across different regions of the country (Al-Qahtani et al., 2023; Al-Saadi et al., 2023). The most common perpetrators were patients' relatives and bystanders, reflecting the emotionally charged contexts in which Saudi paramedics often operate. The majority of incidents occurred during nighttime or high-acuity missions, frequently involving intoxicated or psychiatric patients (Hadian et al., 2021).

The findings confirm that underreporting remains a persistent barrier, driven by inadequate reporting systems, cultural norms, and a perceived lack of administrative follow-up. Consequently, the true scale of WPV in Saudi EMS may be substantially underestimated. Predictors of violence include younger or less-experienced paramedics, alcohol- or drug-influenced patients, inadequate staffing, and insufficient de-escalation training (McGuire et al., 2024).

The impact of WPV is profound—manifesting as psychological distress, emotional exhaustion, reduced job satisfaction, and impaired performance. Such outcomes not only compromise worker well-being but also threaten patient safety and health system efficiency. These effects are incompatible with the objectives of Saudi Vision 2030, which emphasizes quality, resilience, and sustainability within healthcare services.

Although recent policy reforms—such as the Ministry of Health’s (MOH, 2024) zero-tolerance policy and the criminalization of violence against healthcare workers—represent important milestones, the absence of systematic implementation and evaluation frameworks limits their effectiveness. Addressing WPV thus requires multilevel interventions that combine legislative protection, organizational reform, and societal education.

Ultimately, ensuring paramedic safety is not merely a workforce issue but a strategic imperative for national healthcare resilience. Creating a safe and supportive working environment for paramedics will enhance their motivation, improve care delivery, and strengthen public trust in Saudi EMS systems.

## Recommendations

### 1. Policy and Legal Framework

- **Full enforcement of zero-tolerance legislation:** The existing legal framework should be operationalized through clear enforcement mechanisms, visible penalties, and public awareness campaigns emphasizing that aggression against healthcare workers constitutes a criminal act.
- **National WPV registry:** Establish a centralized, MOH-managed surveillance system that tracks and categorizes all WPV incidents across Saudi EMS sectors to monitor trends, identify hotspots, and inform policy decisions.

### 2. Organizational and Administrative Measures

- **Standardized reporting systems:** The Saudi Red Crescent Authority (SRCA) and hospital-based EMS units should adopt user-friendly, confidential electronic platforms for reporting and tracking WPV events. Integration of WPV data into performance dashboards will enhance accountability and transparency.

- **Regular risk assessments:** Conduct quarterly risk assessments at EMS stations and emergency departments to evaluate environmental and procedural vulnerabilities.
- **Incident review committees:** Each EMS region should establish a multidisciplinary WPV committee responsible for incident analysis, preventive planning, and staff support.

### 3. Workforce Training and Support

- **Mandatory de-escalation and communication training:** Incorporate structured simulation-based modules into EMS training curricula and continuing professional development programs. These should include conflict resolution, cultural sensitivity, and scene-safety management.
- **Psychological support and resilience programs:** Implement formal counseling and peer-support mechanisms for paramedics exposed to violence. Confidential debriefing sessions and psychological first aid should be standard post-incident procedures.
- **Supervisor capacity building:** EMS supervisors should be trained to recognize early signs of stress or trauma among staff and initiate timely interventions.

### 4. Intersectoral and Community Collaboration

- **Joint protocols with law enforcement:** Strengthen coordination between the SRCA, Ministry of Interior, and local police to ensure rapid response during violent incidents and effective prosecution of offenders.
- **Public education campaigns:** Launch nationwide awareness initiatives emphasizing the professional role of paramedics, their legal protection, and the societal value of prehospital care. Collaboration with community leaders, schools, and religious figures can enhance respect and empathy toward EMS workers.
- **Media engagement:** Develop media partnerships to portray paramedics positively and discourage aggressive behavior toward emergency personnel.

### 5. Research and Evaluation

- **Longitudinal studies:** Support national-level longitudinal research to measure changes in WPV prevalence and evaluate the impact of recent legal reforms.
- **Intervention trials:** Conduct controlled studies to test the effectiveness of various preventive programs, such as panic-alert systems, wearable body cameras, and stress management workshops.

- **Tool development:** Design and validate a **Saudi-specific WPV assessment instrument** tailored to EMS operations, integrating cultural and contextual variables.
- **Benchmarking:** Establish partnerships with international EMS organizations to compare outcomes and adopt best practices for violence prevention.

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