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Reducing workplace violence in emergency medical services: a Finnish Delphi study to develop prevention guidelines

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Abstract

Background Workplace violence (WPV) is a risk to emergency medical services (EMS) personnel. The purpose of this study is to create consensus-based guidelines for EMS supervisory level to address the risk of WPV in EMS work.

Methods Delphi method was utilised with multiprofessional Finnish expert panel ($n=43$). The study included two web-based Delphi stages. Consensus was considered achieved when ≥ 80% agreement was reached.

Results Round one comprised of EMS WPV related topics organised into five predefined thematic areas, developed by the study group based on a literature review and tacit professional expertise. Each theme included both structured statement ratings and open-ended questions to explore panellists' perspectives and reasoning. For round two, 25 statements were aggregated. Consensus agreement threshold was reached on 19 of 25 statements. Three core priorities were identified for reducing WPV in EMS: (1) defining acceptable behaviour for staff and patients in EMS, (2) mental health training and de-escalation skills, and (3) national systemic models and technology in WPV prevention.

Conclusions Zero tolerance policies towards violence in EMS are not feasible in practise. Emergency medical services supervision should prioritise WPV risk assessment, risk management by pragmatic standardised training programs and systemic tools, and ongoing intervention evaluations.

Keywords Emergency medical services, Workplace violence, Paramedics, Violence, Delphi technique

Introduction

Workplace violence (WPV), such as verbal abuse, threats or physical assaults are among the risks faced by personnel in the emergency medical services (EMS) [1]. Most WPV incidents in EMS occur in urban settings at night and are associated with alcohol abuse and mental health issues [2–5]. Violence is typically non-physical, but physical assaults are also reported at alarming rates (38–70% of paramedics reported experiencing some form of physical assault in the last 12 months) [4, 6, 7]. The incidence of WPV is 0.4–0.7% [3, 8, 9]. In 2024, Finnish EMS personnel responded to over 672 000 assignments [10] which translates to 7–13 violent incidents daily.

From the perpetrators' perspective, threats and violent behaviour toward EMS personnel appear to arise from perceived disrespectful or poor communication by the EMS [6, 11–13]. Also, the patient's vulnerable state, such as intoxication, mental health problems or unmet expectations are described as contributing to violent behaviour [6, 11–13].

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General life experience (age) and greater work experience reduce the likelihood of workplace violence [6, 7]. It is hypothesised that more experienced EMS personnel have greater exposure to different manifestations of WPV and trust their intuitive feelings when preparing for situations where WPV might occur, but robust evidence is lacking [13, 14].

There are several systemic approaches to reducing the risk or consequences of WPV, such as requesting police protection, wearing protective vests or careful scene observation and assessment, but their efficacy varies [3, 14–16]. Systematic risk assessment, de-escalation techniques, and physical self-defence training are identified as plausible tools that may reduce the occurrence of WPV and mitigate its effects [6, 7, 13, 15].

Research on WPV in EMS is limited mainly to individual or statistical perspectives, and there is a lack of consensus-based guidelines informed by multiprofessional expertise. This gap is critical, as WPV mitigation requires systemic, context-specific solutions that balance clinical, legal and operational considerations. Hence, the aim of this study is to develop guidelines for the EMS supervisory level to address the risk of WPV in EMS work. This study provides a wider, multiprofessional expert panel's insight into threatening situations and workplace violence in Finnish prehospital emergency care.

Methods

Study design

An iterative expert consensus design was employed, using multiple rounds of questionnaires with controlled feedback in accordance with the classical Delphi technique. In the health sciences, the Delphi method is widely used to harness the collective judgement of expert panels to achieve consensus on complex or contested topics [17–18]. This approach was selected to elicit anonymous expert perspectives on the multifaceted challenge of workplace violence in emergency medical services (EMS) and to support the development of consensus-based guidelines. Given the ongoing debate regarding effective strategies to address, reduce, and prevent WPV in EMS, this topic is particularly well-suited to exploration using a Delphi approach.

Setting

Emergency medical services in Finland are organized under national legislation by 21 wellbeing services counties and operate within a multi-tiered response model that accounts for patient acuity, care capabilities, and regional risks. Most units are basic or advanced life support ambulances typically staffed by two crew members whose qualifications vary by unit level. Field supervisors and physician units act as EMS support units. All emergency calls are centralized through the national 112 system operated by the Emergency Response Centre Agency (ERCA), which uses standardised protocols to prioritise calls and dispatch appropriate resources in close coordination with EMS, police, and fire services. Operational communications rely on the secure Virve digital radio network, which includes an emergency alert function enabling ERCA to monitor scenes and rapidly dispatch assistance if EMS safety is threatened. ERCA also manages a police warning information database, allowing mission-relevant safety information—such as known dangerous individuals, locations, or hazardous materials—to be automatically identified and shared with EMS during emergency responses.

Sample

A total of 43 Finnish expert panellists were approached for the Delphi panel. Panellist candidates were identified using snowball sampling method and then selected purposefully to cover adequately all recognized multiprofessional stakeholder groups [11, 13, 19, 20] listed below in the inclusion criteria. Regarding EMS experts, panel balance in area coverage (city/rural), education and work background and level of expertise was also considered in panellist recruiting. Trained expert-by-experience is a person with recent personal experience on violent confrontation with EMS as a patient [21]; these panellists were recruited through local expert-by-experience program. Clinical or general work experience was not part of the panellist inclusion criteria, as in this multiprofessional approach expertise or experience on WPV in EMS was more desirable. This also promoted group heterogeneity and thus could enhance study quality [18]. Hence, general inclusion criteria for all expert panellists were:

- Expertise in violence and/or threatening situations in the prehospital emergency care setting.
- Professional background in EMS, occupational health and safety, mental health, law enforcement, ERCA, rescue services or expert-by-experience.
- Finnish-speaking.
- Willing and able to take part in two to three Delphi rounds during the year 2025.

Data collection and analysis

Two Delphi rounds were conducted utilizing online Delphi platform on www.edelphi.org. Panellist anonymity was maintained throughout the study in communications and by the online platform. Accessing the online answering platform was considered as a consent to participate in the study. Round one took place in June–August 2025 and round two in October 2025. The Delphi questionnaires were piloted by two external EMS experts (both with master's degree and >10 years clinical and/or

managerial experience) to assess question clarity, terminology, and technical usability.

The first Delphi round was partly explorative in nature, while round two evaluated statements for consensus. The complete study process is described in Fig. 1. Round one aimed to validate literature-based WPV mitigation strategies in Finnish context and explore the in-depth views of the expert panellists on EMS personnel competencies, legal, and moral issues. Round one comprised 44 topics organized into five predefined thematic areas, developed by the study group based on a literature review, grey literature and tacit professional expertise collected in prior project workshops (Finnish Work Environment Fund project 230300, described further in [3, 22]), thereby defining the scope of the study. Each theme included both structured statement ratings and open-ended questions to elicit panellists' reasoning, perspectives and additional insights:

- Personal competencies (4 open-ended questions and 10 structured statement ratings),
- EMS personnel legal status (2 open-ended questions and 2 structured statement ratings),
- Boundaries of harassment and violence in EMS work (12 open-ended questions and 12 structured statement ratings).
- Patient groups associated with WPV in EMS (7 open-ended and questions 7 structured statement ratings).
- Reported strategies for the prevention of WPV in EMS (13 open-ended questions and 26 structured statement ratings).

No additional information was provided to expert panellists prior to round one to minimise influencing panellist's judgement and to prevent bias. The researchers used the recommendations from the Conducting and Reporting Delphi Studies (CREDES) guidelines for this work [23].

The online Delphi platform provided item-by-item statistical analysis on structured statement ratings that were combined with thematic analysis of the corresponding open-ended questions. Responses from round one were aggregated by the study group to generate 25 joint statements for round two. The expert panellists were given feedback from round one on each statement using percentages, summaries, anonymous quotes and/or definitions reflecting panellists' collective reasoning on the statement topic. Consensus criteria were defined a priori at the individual item level, with consensus considered achieved when ≥ 80% agreement was reached. This threshold was selected to reflect a high level of agreement among experts and is consistent with thresholds commonly applied in Delphi studies within the health sciences [18, 24]. Full round one and two questionnaires are included as supplementary material.

As per guidelines for the responsible conduct of research published by the Finnish National Board on Research Integrity, research permit for the study was obtained from The Wellbeing Services County of Southwest Finland (T1645/2024) and ethics of this study was evaluated and approved by The Research Ethics Committee of Turku University of Applied Sciences (decision 10/2024).

Results

Round one questionnaire was sent to all recruited 43 expert panellists and completed by 35 expert panellists. Background of the expert panel was varied in terms of gender, age, education, and work background (Table 1). Geographic coverage included urban, suburban, and rural areas of Finland. Self-assessed expertise of panellists with WPV in EMS ranged from familiar to expert/instructor level.

The round two questionnaire was completed by 29 of the 35 expert panellists (response rate 82.86%). Consensus agreement threshold was reached on 19 of 25 statements (Table 2). Panellists who disagreed with a statement were given the opportunity to justify their reasoning through an open-ended question. The results were grouped into four themes to highlight key findings and guide practical actions: personal skills, risk tolerance, training needs and EMS system tools.

Discussion

This Delphi study identified three core priorities for reducing WPV in EMS: (1) defining acceptable behaviour in EMS, (2) mental health training and de-escalation

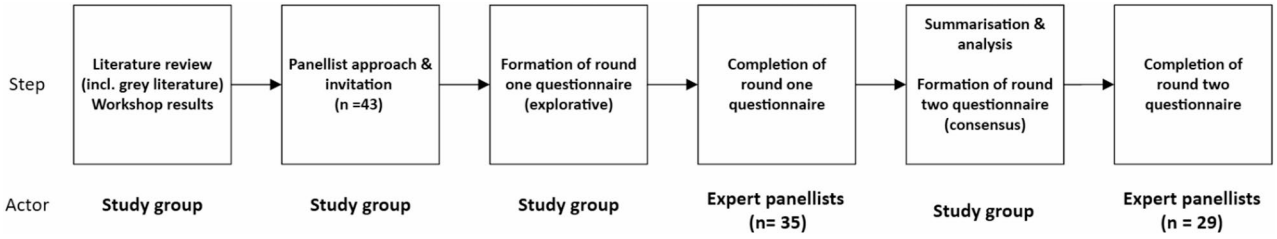

Fig. 1 The study process

Table 1 Expert panel ($n = 35$) characteristics, round 1

Demographic detail/s	*N* (%)
Gender	17 (48.6%)
Male	18 (51.4%)
Female	
Age groups	6 (17.1%)
20–30	13 (37.1%)
30–40	12 (34.3%)
40–50	2 (5.7%)
50–60	2 (5.7%)
60+	
Education	5 (14.3%)
Secondary/vocational degree	14 (40.0%)
Bachelor	14 (40.0%)
Master	2 (5.7%)
Doctorate	
Work	2 (5.9%)
EMS physician	5 (14.7%)
EMS officer or specialist	11 (32.4%)
EMS nurse	4 (11.8%)
EMS paramedic/firefighter	5 (14.7%)
Mental health expert	2 (5.9%)
Expert-by-experience	3 (8.8%)
Other authorities	2 (5.9%)
Other	
Geographical	Panellists represent seven welfare counties across Finland
Self-assessed level of expertise in violence and/or threatening situations in prehospital emergency care setting	0 (0.0%)
Layman	11 (31.4%)
Familiar with WPV in EMS	17 (48.6%)
Very familiar with WPV in EMS	7 (20.0%)
Expert/instructor with WPV in EMS	

skills, and (3) National systemic models and technology in WPV prevention. Notably, the expert panel reached full consensus (100%) on the importance of interaction skills and risk management training, while opinions remained divided on interventions like protective vests and automatic threat assessment tools. These findings highlight the need for systemic, context-specific solutions that balance clinical, operational and legal considerations.

Defining acceptable behaviour in EMS

Zero-tolerance policy on WPV did not reach expert panel consensus, although this policy has a long history in healthcare and its message is amplified by the increase of WPV in EMS [15, 25]. While zero-tolerance may be an effective slogan for public campaigns against WPV, the panel noted that violence must instead be viewed as an operational risk in EMS that requires systematic assessment and management to mitigate.

The expert panel's consensus on the need for clear boundaries directly addresses a well-documented gap in EMS practice, where ambiguous expectations often contribute to conflicts and escalation [11, 12]. Research consistently identifies failed communication, lack of empathy, and disrespectful interactions as primary triggers for WPV in prehospital settings [12, 13]. These guidelines provide paramedics with both moral support and operational clarity in high-stress situations, by explicitly distinguishing between tolerable behaviours (e.g., patient distress due to illness or intoxication) and illegal threats, defined under Finnish law as actions causing a person to fear for their safety or property [26].

The panel emphasised that EMS personnel must be equipped to manage minor misbehaviour (e.g., verbal frustration or agitation) without overreacting, while also recognising when patient or bystander behaviour crosses into legally actionable threats. This aligns with prior studies highlighting how unclear boundaries can lead to inconsistent responses, increasing the risk of violence escalation [11]. The high consensus on interaction and communication skills, including cultural competence, empathy, and de-escalation techniques, underscores their role as foundational tools for navigating ambiguous or volatile encounters. These skills act as a proactive framework, enabling EMS personnel to set limits while maintaining patient-centered care [4].

However, applying these boundaries requires further exploration, particularly in culturally and linguistically diverse settings, where norms around authority, personal space, and emotional expression may vary. Future research should investigate how such boundaries can be operationalized in practice, ensuring they are both clear to EMS personnel and sensitive to patient needs [12]. For example, what constitutes "tolerable behavior" may differ across cultures, necessitating context-specific training and protocols.

Mental health training and de-escalation skills

The expert panel's strong consensus on the importance of mental health training and de-escalation skills reflects the growing prevalence of mental health crises in EMS calls [3, 11]. Studies consistently show that mental health-related incidents are a significant contributor to WPV in prehospital settings, as patients in crisis may exhibit unpredictable or aggressive behaviours [12, 13]. While mental health training is widely advocated, the 2020 Cochrane Review found no definitive evidence that education and training programs effectively reduced workplace aggression in healthcare settings [27]. This discrepancy underscores the need for rigorous evaluations of pragmatic training programs to determine their impact on WPV incidence, paramedic confidence, and patient outcomes.

The panel's findings align with prior research emphasizing the value of physical contact training in violent

Table 2 Delphi guideline statements sorted by consensus level

Topic	Subheading	Agreement (%)
Interaction skills in challenging situations	Personal skills	100%
Ability to manage risks by training occupational safety skills	Training needs	100%
Operating model to address a partner's behaviour that provokes the patient	EMS system tools	100%
General interaction skills and emotional skills	Personal skills	97%
Self-awareness ability	Personal skills	97%
Ability to be present for the patient and empathy skills	Personal skills	96%
Risk assessment and management training	Training needs	96%
National operating model for threat and violence situations	EMS system tools	96%
Previous threat and violence situations reported within patient records	EMS system tools	96%
Protective vests do not provoke patients	EMS system tools	96%*
Mental health competence	Training needs	93%
Workforce counselling for improved self-awareness	EMS system tools	92%
Graduating EMS personnel skills require improvement	EMS system tools	91%
Cultural competence	Personal skills	90%
Physical fitness and training	Personal skills	89%
Scene assessment as EMS personnel duties	Risk tolerance	89%
Units for mental health patients	EMS system tools	89%
Risk of violence as part of work	Risk tolerance	85%
Behaviour tolerance and boundaries in EMS work	Risk tolerance	85%
Automatic threat assessment tool	EMS system tools	79%
Zero violence tolerance	Risk tolerance	75%
Shift planning in WPV prevention	EMS system tools	74%
Protective vests always on	EMS system tools	62%
Provocative equipment carriers	EMS system tools	50%
Preventing WPV with multiple EMS units	EMS system tools	48%

*Reversed

situations, which enhances EMS personnel self-awareness and situational responsiveness [13, 14]. However, the identified deficiencies in graduating EMS personnel communication and de-escalation skills suggest a critical gap in current education. This gap is particularly concerning given that new EMS personnel, who lack the intuitive experience of their more seasoned colleagues, are at higher risk of encountering WPV, as noted also by Maguire and Zhelyazkova [5, 6]. The panel's recommendation for mandatory WPV prevention modules in EMS personnel education highlights the urgency of integrating structured, evidence-based training into national curricula.

The consensus extends beyond new graduates: the panel emphasized that all EMS personnel, regardless of experience, require ongoing risk management and occupational safety training. This reflects the dynamic and unpredictable nature of EMS work, where even experienced providers benefit from continual training in de-escalation techniques, cultural competence, and mental health crisis intervention [4, 15, 19]. Mental health education was seen as a critical component of EMS personnel skillset, enabling them to recognize and appropriately respond to psychiatric emergencies, which often present with unpredictable or volatile behaviours [16].

National systemic models and technology in WPV prevention

The expert panel calls for national, system-wide operating models, policies and tools to standardise WPV prevention. This response aligns with successful initiatives, where emergency dispatchers used police databases to identify high-risk calls [3]. By providing EMS teams with warnings about known threats or dangerous locations, this approach demonstrated the potential to mitigate WPV through better situational awareness. Similarly, the proposal to integrate WPV warnings into electronic medical records (EMR) could further enhance preparedness by linking threat histories to patient or location data [9]. Such systems would enable paramedics to anticipate and mitigate risks before arriving on scene, a critical advantage in dynamic and unpredictable environments.

Simple, EMS-specific patient violence risk assessment checklists, such as ABRAT-EMS, have shown promise [28]. However, the panel's lack of consensus on automatic threat assessment tools reflects valid concerns about their accuracy, reliability and potential for bias. While AI-assisted tools might offer real-time risk assessments, their effectiveness depends on high-quality data and contextual nuance, both of which require careful evaluation. The risk of false positives (e.g., mislabelling patients or locations as high-risk) or false negatives (e.g.,

failing to identify genuine threats) could undermine trust in the system or lead to inappropriate responses. Future research should explore how these tools can be designed and validated to support clinical judgment in high-stakes situations.

According to Paulin et al. [3], police presence does not eliminate violent attacks towards EMS personnel, and due to the different nature of work, police may perceive the threat on scene differently than EMS personnel, thereby denying support altogether [14]. A protective vest (body armour) provides EMS personnel with protection against weapons and other physical attacks, but on the other hand they may provide a false sense of safety [15] and be associated with law enforcement, and therefore, vests may in fact worsen perceptions of EMS personnel and potentially increase the prevalence of WPV [16].

Future research directions

To advance these findings, future research should prioritise three critical areas, in addition to an international policy Delphi for global WPV mitigation. First, while the expert panel endorsed interaction and de-escalation training, the 2020 Cochrane Review found no definitive evidence of its effectiveness in reducing workplace violence [27]; thus, controlled trials are needed to evaluate standardized programs incorporating simulation-based learning, scenario practice, and interdisciplinary collaboration with mental health professionals, ensuring EMS personnel are both knowledgeable and competent in high-risk situations. Second, studies should assess the real-world impact of protective vests, balancing their potential safety benefits against concerns about escalating tension or altering patient perceptions [15]. Finally, the proposed national operating model (96% agreement) should be piloted in diverse EMS systems to refine its adaptability to local culture, legal, and operational contexts. Addressing these gaps will help translate expert consensus into evidence-based, actionable solutions.

Limitations

While the characteristics of WPV perpetrators, incident prevalence and paramedic experiences share similarities globally [3, 9, 11], the Finnish context, including its unique EMS structure, cultural norms, and legal frameworks, may limit the direct transferability of these findings to other countries. Nonetheless, the international relevance of the study lies in its contribution to the broader understanding of WPV mitigation strategies, which can inform similar efforts in diverse EMS systems.

A key strength of this study is its inclusive expert panel, representing a range of stakeholder groups, including EMS providers, mental health professionals, and law enforcement. This diversity ensured a comprehensive exploration of WPV from multiple perspectives. Most panellists had EMS backgrounds, but the Delphi process actively encouraged input from all participants, ensuring a balanced representation of views while maintaining anonymity.

However, limitations must be acknowledged. First, while the Delphi method is highly effective for achieving expert consensus on complex issues, it does not substitute for empirical validation of proposed interventions, such as longitudinal, controlled trials. For example, recommendations such as de-escalation training programs or the use of protective vests require real-world testing through controlled trials or pilot studies to rigorously assess their effectiveness in reducing WPV [27]. Second, the Finnish-specific context, such as the integration of EMS with police and fire services, or the use of the Virve communication network, may not directly translate to systems in other countries, where operational structures, legal definitions of threats, or cultural attitudes toward authority differ significantly. This requires careful interpretation and evaluation of existing operating models before applying the findings of this study. Finally, while the panel included multiprofessional representation, the majority EMS background of participants may have influenced the prioritisation of certain strategies over others (e.g., clinical vs. policy-focused solutions).

Conclusions

Recognizing that EMS work inherently involves multiple risks, with violence being a persistent and significant threat, our findings emphasize that while zero-tolerance policies are an ideal, they are not always feasible in practice. Instead, pragmatic, context-sensitive strategies are required to mitigate WPV as a risk while acknowledging the complexities of prehospital care.

The expert panel's recommendations define clear boundaries that provide paramedics with moral and operational support in escalating situations. These boundaries help distinguish between tolerable behaviours (e.g., patient distress due to illness or intoxication) and unacceptable threats, offering a framework for consistent, fair, and legally grounded responses. Critically, the study underscores the central role of communication and interaction skills, including de-escalation, cultural competence, and empathy, in preventing provocation and managing high-risk encounters. These competencies are not only foundational for paramedic practice but also empower personnel to navigate ambiguous or volatile situations with confidence and professionalism.

On EMS supervisory level these key points should be prioritised:

- Standardised training programs that integrate simulation-based learning, mental health crisis

intervention and interdisciplinary collaboration to bridge the gap between theory and real-world application.
- Pilot testing of systemic tools, such as national operating models and EMR-integrated threat warnings, to ensure they are adaptable to diverse cultural, legal, and operational contexts.
- Ongoing evaluation of interventions like protective vests and automatic threat assessment tools, balancing their potential benefits against risks such as altered patient perceptions or false alarms.

Abbreviations

WPV	Workplace violence
EMS	Emergency medical services
ERCA	Emergency Response Centre Agency

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12245-026-01245-7.

Supplementary Material 1

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Author contributions
All authors contributed to the study design, article revisions and approved the final manuscript.

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Data availability
The Delphi rounds datasets (in Finnish) used during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
This research was conducted according to Finnish National Board on Research Integrity TENK guidelines on good scientific practice and research integrity and in accordance with the Declaration of Helsinki. The Research Ethics Committee of Turku UAS 10/2024. Research permit: The wellbeing services county of Southwest Finland T1645/2024. The expert panellists were provided with information on the study on recruitment and further on accessing the online Delphi platform. Panellist's informed consent was considered given by accessing and proceeding with the online questionnaire.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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