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SYSTEMATIC REVIEW

Workplace violence against healthcare workers in emergency settings during and after COVID-19: a systematic review

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Abstract

Background: Workplace violence is a persistent occupational hazard for healthcare workers (HCWs), especially in high-risk environments such as Emergency Departments (EDs), Intensive Care Units (ICUs), and Emergency Medical Services (EMS). The COVID-19 pandemic further intensified this phenomenon, yet the post-pandemic landscape remains underexplored. This systematic review aimed to assess the prevalence of Workplace Violence (WPV), the extent of underreporting, and the barriers to disclosure among HCWs in emergency and critical care settings during the COVID-19 pandemic and the post-pandemic era. **Methods**: A systematic search was conducted in six databases (PubMed, Comulative Index to Nursing and Allied Health Literature (CINAHL), ProQuest, Scopus, Web of Science, PsycINFO) following Prefered Reporting Items for Systematic Review (PRISMA 2020) guidelines. Eligible studies included cross-sectional, qualitative, and mixed-methods designs published between March 2020 and February 2025. Methodological quality was appraised using standardized critical appraisal tools. Data were narratively synthesized based on three research questions: prevalence, underreporting, and barriers to disclosure. **Results**: Twenty-two studies were included. WPV prevalence remained high, with verbal abuse reported by over 75% of HCWs in several studies and physical violence ranging from 5.8% to 62%. Underreporting was widespread, with fewer than 25% of incidents formally documented. Main barriers to disclosure included perceived ineffectiveness of reporting, normalization of violence, lack of time, fear of retaliation, and unclear institutional procedures. **Conclusion**: WPV continues to represent a critical occupational hazard in emergency care settings post-COVID-19. Addressing it requires integrated, system-level interventions that foster leadership support, institutional accountability, and psychologically safe work environments for HCWs. **The PROSPERO Registration**: PROSPERO database (CRD420251035696).

Keywords

Workplace violence; Emergency department; Critical care; Healthcare workers; Post-COVID-19; Systematic review; Prevalence; Underreporting

1. Introduction

Workplace violence (WPV) is increasingly recognized as a pervasive occupational hazard for HCWs. The World Health Organization (WHO) defines WPV as "incidents where staff are abused, threatened, or assaulted in circumstances related to their work", including physical, verbal, sexual, and psychological forms of violence [1]. Alongside face-to-face aggression, cyberbullying, and online harassment have emerged as new concerns, particularly in EDs, given their persistence and lack of boundaries [2]. Identity-based hostility, targeting HCWs on the basis of gender, ethnicity, religion, or professional role, is also a growing challenge [3]. High-risk settings such as

EDs, EMS, and ICUs are especially vulnerable due to patient turnover, unpredictability, and emotional strain [4–6].

Reported prevalence rates vary considerably, typically ranging from 40% to over 90%, with verbal abuse being the most frequent form, followed by physical aggression and sexual harassment [7–11]. International surveys show that prevalence is shaped by clinical, socio-cultural, and organizational factors, and violence against HCWs is linked to burnout, turnover, and reduced quality of care [12]. Beyond individual and organizational impacts, WPV also generates significant economic costs, including absenteeism, staff turnover, and productivity loss [13].

Another relevant dimension is underreporting, where HCWs

experience violent incidents but refrain from reporting them due to fear, resignation, or normalization of such behaviors [14]. International initiatives, such as the Violence Study of Healthcare Workers and Systems (ViSHWaS) study, confirm the global magnitude of WPV, with high prevalence across diverse contexts, including underrepresented regions like sub-Saharan Africa and Latin America [3, 15]. The WHO 2025 framework identifies WPV as a critical priority, given its impact on workforce well-being and health system resilience [16]. Despite its consequences for staff safety and patient care, WPV remains largely underreported [17–19].

Only 6.5% to 30% of violent incidents involving nurses are formally reported [20–22]. Key barriers include time constraints, fear of retaliation, unclear procedures, and the perception that violence is "part of the job", especially in emergency care [23, 24]. These barriers limit accurate assessment and delay effective prevention strategies. Factors influencing reporting span individual aspects (fear, awareness), organizational issues (lack of support, training), and event-related dynamics (type and severity of violence, perpetrator's condition) [25–29].

Bibliometric analyses highlight a marked increase in WPV publications over the past decade, reflecting growing awareness and identifying hotspots such as risk factors, vulnerable departments, and mental health consequences [30].

Nevertheless, the literature remains fragmented, with few reviews simultaneously addressing prevalence, underreporting, and barriers to disclosure in emergency care. Most studies explore these aspects separately, thereby limiting their impact on guidelines, training, and policy. To address this gap, our review adopts the definition provided by the Italian Association of Critical Care Nurses (Aniarti) for the "critical care area", which encompasses both emergency and intensive care settings on the basis of shared characteristics.

Recent theoretical frameworks underscore the multifactorial nature of WPV, emphasizing psychosocial, systemic, environmental, and cultural dimensions. These perspectives suggest that prevention requires integrated, multilevel strategies, which provide the conceptual foundation for our analysis [31]. Fig. 1 summarizes these domains, spanning individual, organizational, environmental, and clinical factors.

This systematic review aims to assess the prevalence of WPV against healthcare professionals in emergency and critical care settings during the COVID-19 pandemic and the post-pandemic era, evaluate the extent of underreporting, and identify the barriers influencing reporting behaviors.

2. Methods

Although the studies included in this review originate from heterogeneous healthcare settings, EMS, EDs, and ICUs, these contexts can be framed within a common conceptual domain, namely the critical care area, as defined by Aniarti. The critical care area includes both in-hospital and prehospital intensive settings, characterized by patient instability, high clinical complexity, and advanced nursing interventions. This perspective emphasizes the structural and relational elements that unify these environments, including clinical urgency, direct public access, stress and unpredictability, and intense interaction with patients and families in crisis. Adopting this framework allows for a coherent aggregation of data across diverse high-complexity settings and supports the interpretation of WPV as a systemic phenomenon transcending individual contexts.

2.1 Study design

This systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines [32]. PRISMA 2020 Checklist is provided in **Supplementary material 1**. The protocol was prospectively registered in the PROSPERO database (CRD420251035696) prior to commencing the literature search, in line with PRISMA recommendations, to ensure transparency and replicability [33]. The review was also conceptually informed by two internationally recognized frameworks: the Violence in HCWs: Systematic Worldwide Assessment Study (ViSHWaS), which provides standardized definitions and global benchmarks for WPV [3], and the Systems Engineering Initiative for Patient Safety (SEIPS) 3.0 model, recently adapted for the measurement of WPV, which emphasizes the interaction between individual, organizational, and environmental determinants of safety outcomes [34]. These frameworks guided the formulation of research questions, the categorization of determinants, and the interpretation of findings.

2.2 Research question

This review was designed to systematically examine WPV in emergency care settings (EMS, EDs, and ICUs) during the COVID-19 pandemic and the post-pandemic era, focusing on three specific research questions:

(a) What is the prevalence of WPV (physical, verbal, sexual, and gender-based) against HCWs in emergency settings?

(b) What is the rate of underreporting of WPV in these settings?

(c) What are the barriers influencing the failure to report WPV by healthcare professionals working in emergency contexts?

Based on existing literature, we hypothesized that: (H1) WPV prevalence remains high in the COVID-19 pandemic and the post-pandemic era; (H2) formal reporting rates are consistently low; and (H3) barriers to disclosure cluster across individual, organizational, and event-related domains.

2.3 Search strategy

A comprehensive literature search was conducted in six databases: PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), ProQuest, Scopus, Web of Science, and PsycINFO. The strategy combined Medical Subject Headings (MeSH) terms and free-text keywords including "Critical Care", "Delivery of Health Care", "Emergency Service", "Emergency Department", "Intensive Care Unit", "Health Personnel", "Workplace Violence", "Underreporting", and "Motivation". Search strings were adapted to the syntax and indexing of each database (full strategies are reported in **Supplementary Table 1**). Field codes varied across platforms (*e.g.*, title/abstract

F I G U R E 1. Conceptual framework of WPV factors identified in the literature.

[tiab] in PubMed, All Text (TX) in CINAHL/ProQuest, Title, Abstract, Keywords (TITLE-ABS-KEY) in Scopus) but were applied consistently to maximize sensitivity and maintain comparability across databases. In addition, broader synonyms, and regional terminology (*e.g.*, "clinicians", "emergency staff", "Accident and Emergency", Accident & Emergency ("A&E"), "abuse", "assault", "threats", "intimidation") were tested a posteriori, as suggested during peer review. No additional eligible studies were identified, confirming that the original search strategy was sufficiently comprehensive.

For transparency, the complete PubMed search string for Research Question 1 (Q1) (prevalence) is provided below:

PubMed search string (finalized 22 April 2025): ("Health Personnel" [MeSH] OR "healthcare workers" [tiab] OR "nurses" [tiab] OR "physicians" [tiab] OR "paramedics" [tiab]) AND ("Emergency Service, Hospital" [Mesh] OR "emergency department" [tiab] OR "emergency room" [tiab] OR "pre-hospital" [tiab]) AND ("Workplace Violence" [Mesh] OR "workplace violence" [tiab] OR "physical aggression" [tiab] OR "verbal abuse" [tiab] OR "sexual harassment" [tiab] OR "gender-based violence" [tiab]) AND ("prevalence" [tiab] OR "incidence" [tiab] OR "rate" [tiab]).

The search was finalized on 22 April 2025 and restricted to articles published between March 2020 and February 2025 to capture the post-COVID-19 context.

Other sources, including Embase, the Cochrane Library, and grey literature, were not included in the search strategy. The search was limited to peer-reviewed studies published in scientific journals.

2.4 Study selection

All records were imported into the Rayyan platform (Rayyan QCRI, Qatar Computing Research Institute, Hamad Bin Khalifa University, Doha, Qatar) to manage the screening process and categorize studies according to the three research questions defined in the PROSPERO protocol [35]. Screening was conducted in two phases: initial assessment of titles and abstracts, followed by full-text review. Both phases were performed independently and in blinded fashion by two reviewers. Disagreements were resolved through discussion or, if needed, by involving a third reviewer. The selection process is summarized in PRISMA flow diagrams provided in the Results section. Duplicate records were removed manually. Title and abstract screening were performed independently by two reviewers, with the senior author serving as adjudicator in case of disagreement. Full-text screening was conducted by the senior reviewer. No automation tools were applied at any

stage of the screening process.

2.5 Eligibility criteria

Eligibility criteria were defined as follows:

(a) Population: Healthcare professionals (nurses, physicians, paramedics, allied health staff) working in EDs, EMS, or ICUs.

(b) Exposure: Any form of WPV (physical, verbal, sexual, or gender-based).

(c) Study design: Cross-sectional, cohort, case-control, qualitative, survey-based, or mixed-methods studies.

(d) Publication type: Peer-reviewed articles published in English or Italian.

(e) Timeframe: March 2020–February 2025.

Grey literature and non-peer-reviewed publications were excluded.

2.6 Data extraction and synthesis

Data were extracted using a standardized Excel form aligned with the review objectives. Two reviewers independently collected and cross-verified information on author, year, country, study design, setting, sample size, main outcomes, and key findings. Data were synthesized narratively and organized in tables according to the three research questions: (a) prevalence, (b) underreporting, and (c) barriers to disclosure.

A quantitative meta-analysis was not conducted due to substantial heterogeneity across studies in terms of design (cross-sectional, qualitative, mixed-methods), outcome definitions (*e.g.*, verbal abuse, physical aggression, underreporting), measurement instruments (validated scales *vs. ad hoc* tools), and healthcare settings (EDs, ICUs, EMS). This variability precluded statistical pooling and justified the use of narrative synthesis, which allowed for a context-sensitive interpretation of findings. Data extraction was conducted manually with a standardized Excel form, and no automation tools were applied.

2.7 Critical appraisal

The methodological quality of included studies was assessed using validated tools: the Joanna Briggs Institute (JBI) checklists for cross-sectional and prevalence studies, the Mixed Methods Appraisal Tool (MMAT, 2018) for mixed-methods designs, and the Critical Appraisal Skills Programme (CASP) for qualitative research [35–37]. Appraisal was performed independently by two reviewers, with disagreements resolved through consensus or a third reviewer.

No studies were excluded solely based on quality scores; however, appraisal outcomes informed the interpretive weight assigned to findings. Studies with higher methodological quality (*e.g.*, JBI ≥80%, MMAT scores 4–5, or CASP with most criteria fully met) were emphasized when summarizing prevalence estimates, reporting behaviors, and explanatory factors. Conversely, findings from lower-quality studies were interpreted with caution and used primarily to identify potential trends, contextual variability, or evidence gaps.

In addition, the potential risk of reporting bias (*e.g.*, missing outcomes, selective reporting) was taken into account, as it may have led to an underestimation of WPV prevalence and reporting rates. These limitations were explicitly addressed during the synthesis and highlighted in the interpretation of results. A concise summary of the critical appraisal is provided in the main text, whereas the full item-level appraisal is available in **Supplementary Table 2**.

2.8 Operational definitions

For the purposes of this review, WPV was defined according to the WHO as "incidents where staff are abused, threatened, or assaulted in circumstances related to their work, including commuting to and from work, involving an explicit or implicit challenge to their safety, well-being or health" [16].

Identity-based violence was operationalized as any act, physical, verbal, psychological, or otherwise, directed against HCWs on the basis of race, ethnicity, gender, religion, sexual orientation, disability, or other intrinsic characteristics. This is consistent with the WHO's broader definition of violence as "the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation" [16].

In this review, underreporting in Research Question 2 (Q2) was defined as the failure to formally document or communicate incidents of WPV through institutional channels, reflecting systemic or organizational barriers such as the absence of reporting systems, unclear procedures, or the perception that reporting is ineffective. Non-disclosure in Research Question 3 (Q3), by contrast, refers to individual, cultural, or contextual motivations that deter HCWs from reporting, even when systems are in place. These include fear of retaliation, cultural stigma, normalization of violence, and ambiguity about what constitutes a reportable event.

This distinction builds on previous conceptual frameworks that differentiate between structural/organizational barriers and individual motivations [25, 26]. It ensures consistency in data extraction and synthesis, given that prevalence (Q1) is usually measured with standardized definitions, whereas reporting behaviors require a priori clarification.

For transparency, the full categorization of underreporting and barriers to disclosure factors is detailed in **Supplementary Table 3**, complementing the conceptual distinction introduced in the text.

3. Results

The findings of this systematic review are organized according to the three predefined research questions. Thirteen studies addressed the prevalence of WPV (Q1), four examined the rate of underreporting (Q2), and five explored barriers to disclosure (Q3). A global overview of the geographical distribution of the included studies is presented in Fig. 2. The study selection process, conducted in accordance with PRISMA 2020 guidelines, is summarized in Fig. 3 (Q1). A graphical synthesis of prevalence patterns across included studies is presented in Fig. 4 (Ref. [38–50]). The study selection processes for Q2 and Q3 are summarized in Figs. 5,6, respectively [32]. Study
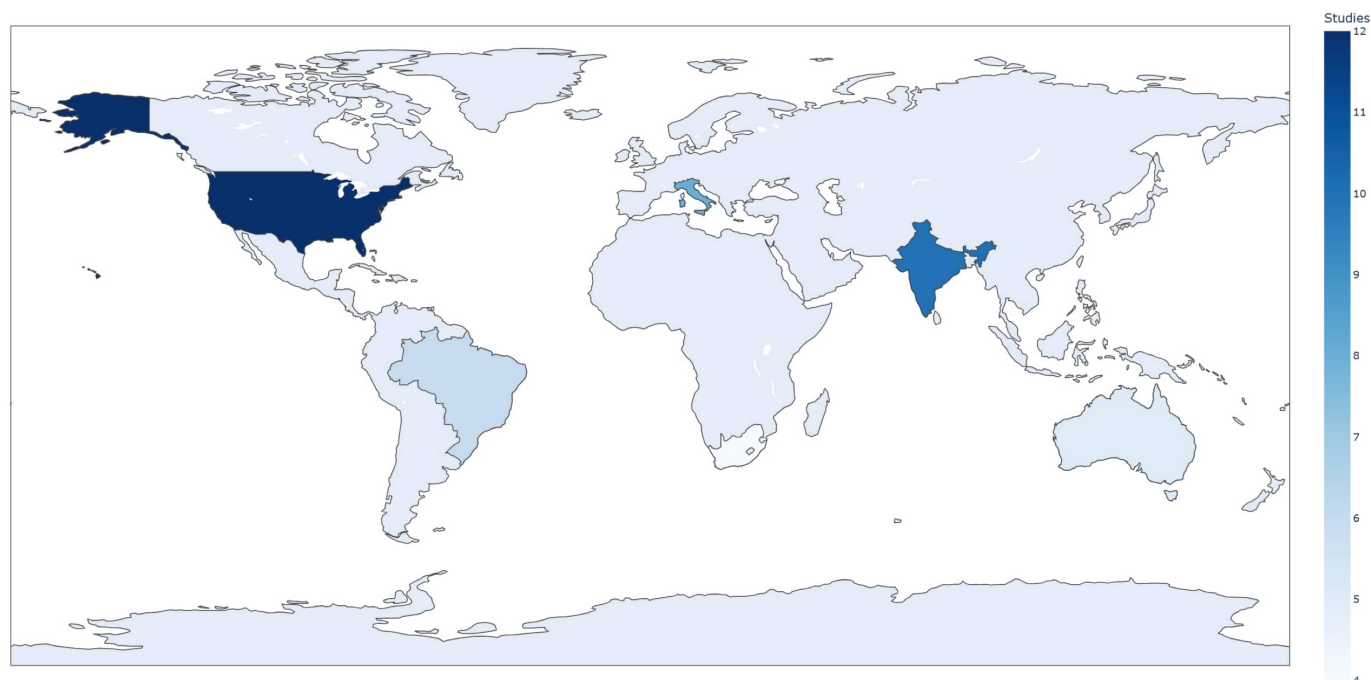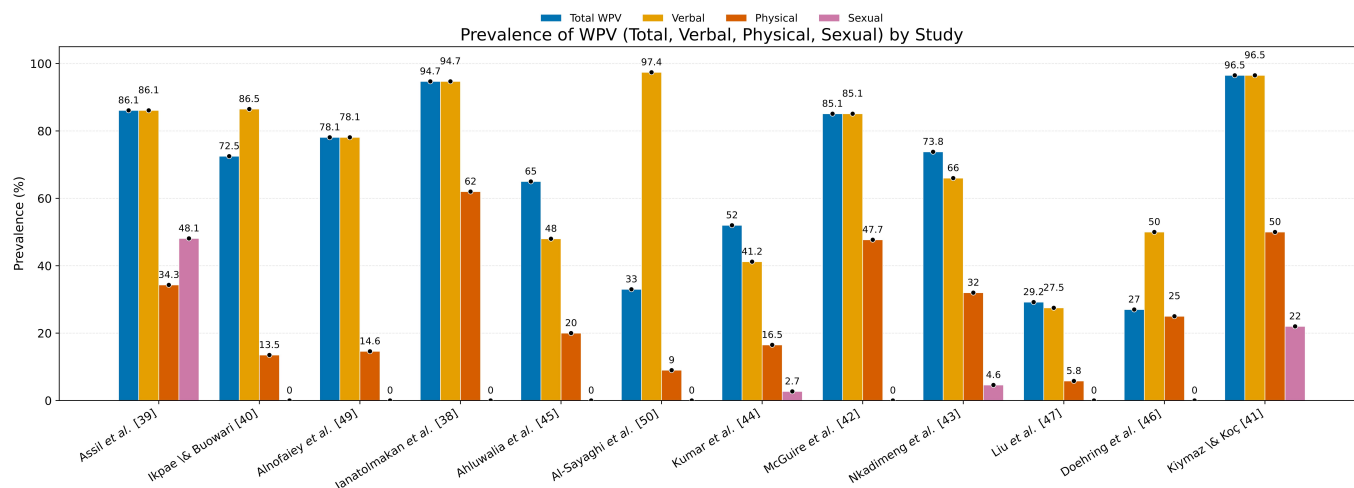
F I G U R E 2. Global distribution of included studies on WPV in emergency care during the post-pandemic period.
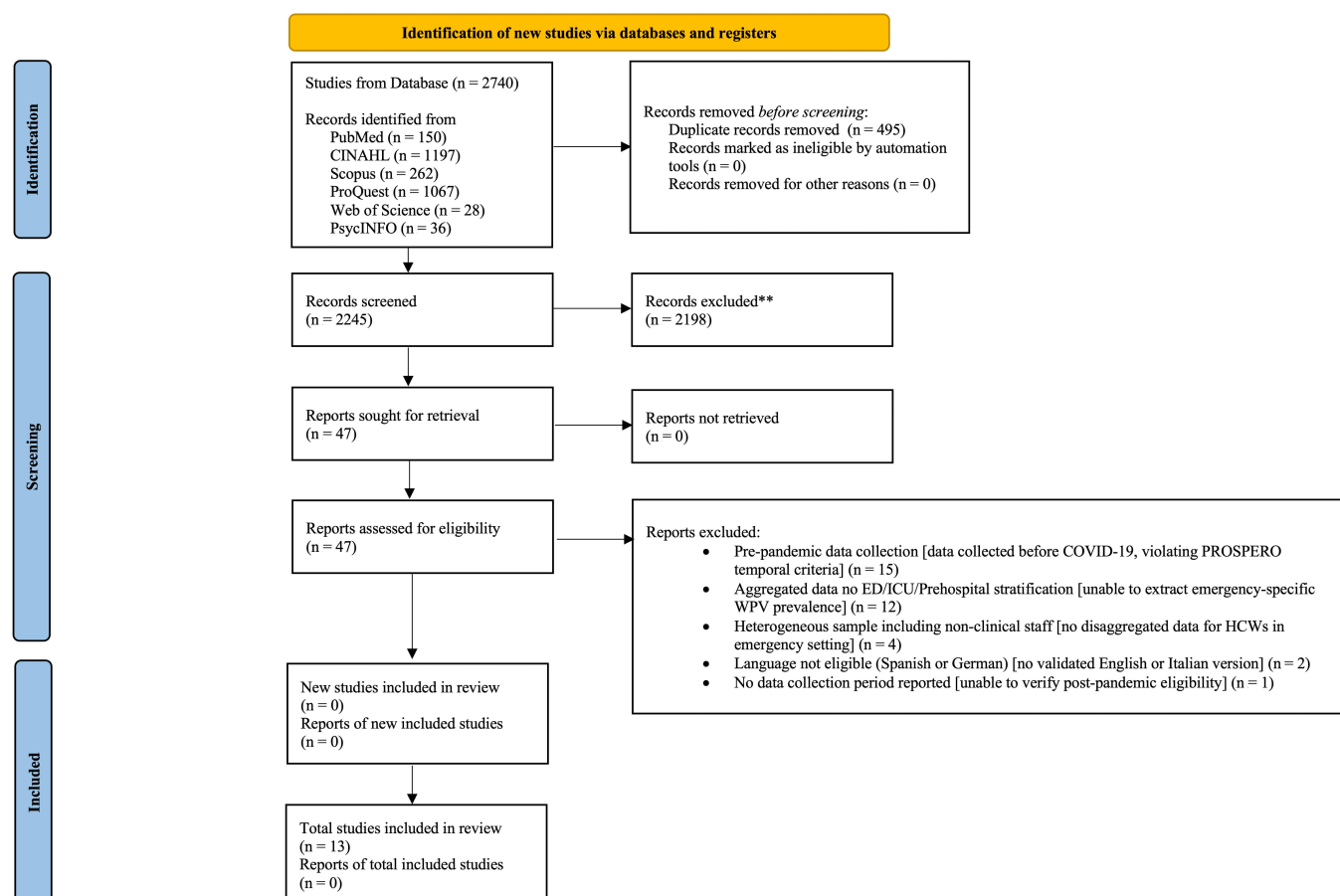
F I G U R E 3. PRISMA 2020 flow diagram for study selection (Q1). ED: Emergency Department; ICU: Intensive Care Unit; WPV: workplace violence; HCWs: healthcare workers.

FIGURE 4. Prevalence of total, verbal, physical, and sexual WPV across the included studies (Q1). WPV: workplace violence.
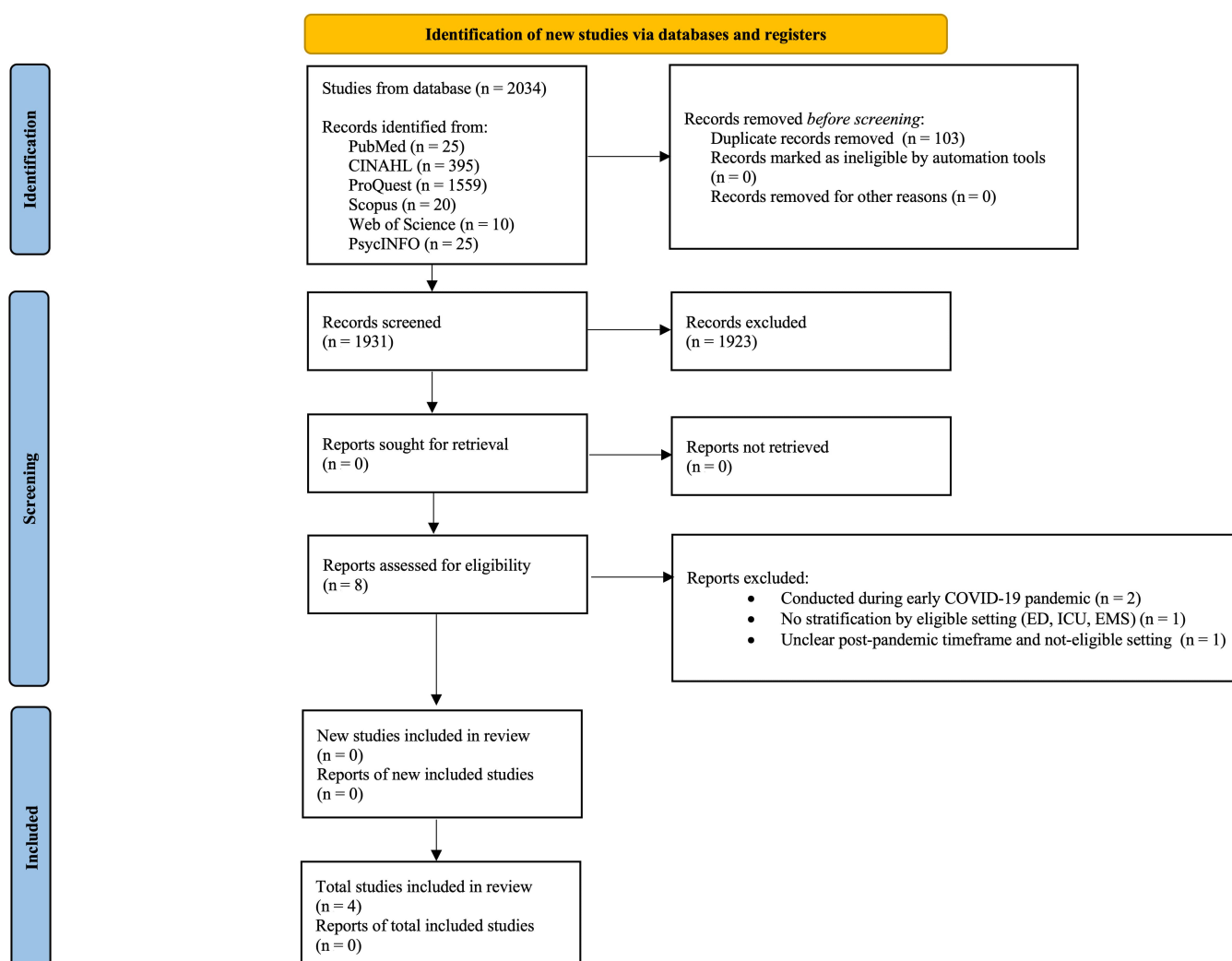
FIGURE 5. PRISMA 2020 flow diagram for study selection (Q2). ED: Emergency Department; ICU: Intensive Care Unit; EMS: Emergency Medical Services.
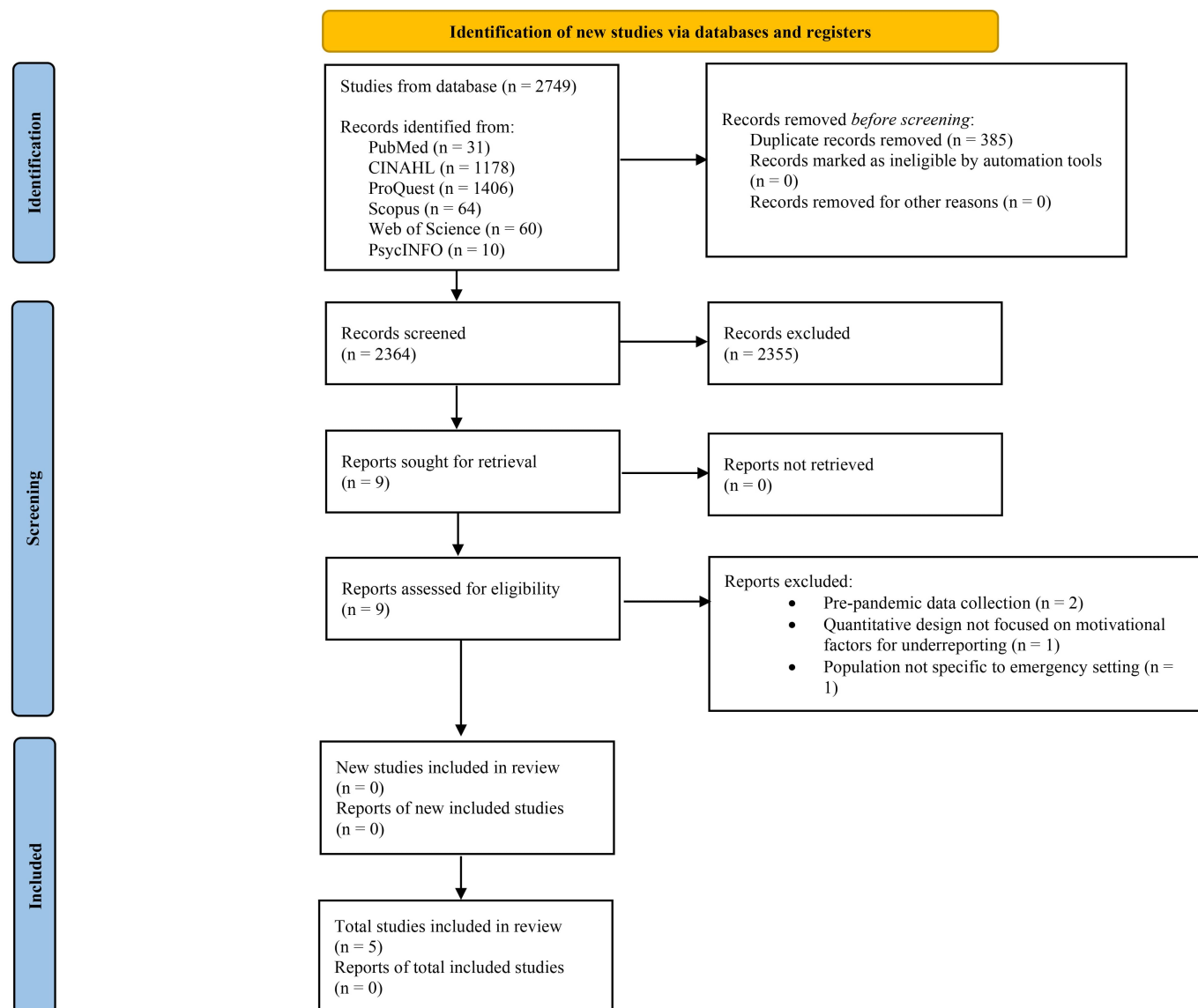
Identification of new studies via databases and registers

Studies from database (n = 2749)

Records identified from:
PubMed (n = 31)
CINAHL (n = 1178)
ProQuest (n = 1406)
Scopus (n = 64)
Web of Science (n = 60)
PsycINFO (n = 10)

Records removed *before screening*:
Duplicate records removed (n = 385)
Records marked as ineligible by automation tools (n = 0)
Records removed for other reasons (n = 0)

Records screened (n = 2364)

Records excluded (n = 2355)

Reports sought for retrieval (n = 9)

Reports not retrieved (n = 0)

Reports assessed for eligibility (n = 9)

Reports excluded:
- Pre-pandemic data collection (n = 2)
- Quantitative design not focused on motivational factors for underreporting (n = 1)
- Population not specific to emergency setting (n = 1)

New studies included in review (n = 0)
Reports of new included studies (n = 0)

Total studies included in review (n = 5)
Reports of total included studies (n = 0)

Identification / **Screening** / **Included**

FIGURE 6. PRISMA 2020 flow diagram for study selection (Q3).

design, sample characteristics, and main findings for each research question are summarized in Table 1 (Ref. [38–50]); Table 2 (Ref. [51–54]); Table 3 (Ref. [28, 51, 55–57]).

3.1 Geographical distribution of included studies

The review encompassed studies from 15 countries across Africa (Egypt, Nigeria, South Africa), Asia (China, India, Iran, Malaysia, Pakistan, Saudi Arabia, Turkey), North America (United States, Canada), Oceania (Australia, New Zealand), and Europe (Denmark) (Fig. 2). This broad distribution highlights the global relevance of WPV in emergency care, while also revealing regional gaps, particularly in South America and parts of Europe, where evidence remains scarce.

3.2 Prevalence of workplace violence

Thirteen studies [38–50], assessed the prevalence of WPV among HCWs in EDs, ICUs, and EMS during the COVID-19 pandemic and the post-pandemic era. Prevalence rates were consistently high, with substantial heterogeneity by region,

professional role, and type of violence. Most study populations included nurses and physicians, although several also involved paramedics, technicians, support staff, and prehospital providers.

Verbal abuse emerged as the most frequent form of WPV, with prevalence exceeding 75% in multiple studies. Janatolmakan *et al.* [38] reported a rate of 94.7% among 150 nurses in Iran; Assil *et al.* [39] found 86.1% among 108 HCWs (67 physicians and 41 nurses) in Egypt; Ikpae *et al.* [40] observed 86.5% among 51 participants in Nigeria (33 nurses and 18 physicians); and Kiymaz & Koç [41] reported 83.8% among 198 nurses in Turkey. In the United States, McGuire *et al.* [42] found that 85.1% of emergency personnel experienced verbal abuse during the mid-to-late phase of the pandemic (n = 221).

Physical violence was less common but remained a significant concern. Janatolmakan *et al.* [38] reported 62%, followed by McGuire *et al.* [42] (45.7%) and Nkadimeng *et al.* [43] (32%). Other studies reported rates between 5.8% and 25%. Physical aggression was often associated with demographic variables: Assil *et al.* [39] and Ikpae *et al.* [40] found links with age and gender, while Kumar *et al.* [44] in Pakistan

T A B L E 1. Summary of included studies on the prevalence of WPV among healthcare workers in emergency and critical care settings (Q1).

Author (year)	Country	Sample size	Main finding (prevalence)
Assil *et al.* [39] (2022)	Egypt	108 HCWs	86.1% verbal violence; relatives main perpetrators
Ikpae *et al.* [40] (2023)	Nigeria	51 HCWs	72.5% WPV; verbal 86.5%; 86.5% underreported
Alnofaiey *et al.* [48] (2022)	Saudi Arabia	96 physicians	78.1% verbal; 14.6% physical; underreporting 55.2%
Mausz *et al.* [50] (2024)	Canada	266 paramedics (502 reports)	25% identity-based verbal abuse; 13% affected
Janatolmakan *et al.* [38] (2023)	Iran	150 nurses	62% physical; 94.7% verbal; low reporting (22.6%)
Ahluwalia *et al.* [45] (2024)	India	200 HCWs	48% verbal; 20% physical; 86% did not report incidents
Al-Sayaghi *et al.* [49] (2023)	Yemen	234 HCWs	33.3% WPV; mostly non-physical; 55.1% did not report
Kumar *et al.* [44] (2023)	Pakistan	182 HCWs	41.2% verbal; 16.5% physical; 26.9% bullying
Nkadimeng *et al.* [43] (2024)	South Africa	65 HCWs	73.8% WPV; verbal 66%, physical 32%, racial 40%
Liu *et al.* [47] (2021)	China	1103 clinicians	29.2% WPV (25.7% verbal, 5.8% physical)
Doehring *et al.* [46] (2024)	USA	72 HCWs (575 shifts)	WPV in 50% of shifts; verbal 50%, threats 19%, physical 25%
Kiymaz *et al.* [41] (2023)	Turkey	198 nurses	89.4% WPV; verbal 83.8%; linked to intention to leave
McGuire *et al.* [42] (2022)	USA	480 HCWs	85.1% verbal; 45% physical; WPV increased during COVID-19

Abbreviations: WPV: workplace violence; HCWs: healthcare workers.

T A B L E 2. Summary of included studies on underreporting of WPV among healthcare workers in emergency and critical care settings (Q2).

Author (year)	Country	Sample size	Main finding (% reporting)
Scallan *et al.* [51] (2024)	USA	112 invited	Reporting increased by 1080% post-intervention; anonymity encouraged reporting, but barriers ("nothing will change", lack of time) persisted
Parke *et al.* [52] (2023)	Australia & New Zealand	629 HCWs	Only ~24% of bullying, discrimination, or sexual harassment cases were reported; main reason for not reporting: belief that no action would be taken
Mausz *et al.* [53] (2024)	Canada	204 paramedics	83% reported incidents at least sometimes; underreporting linked to low perceived severity and lack of support
Mugharbel *et al.* [54] (2024)	Saudi Arabia	130 nurses	51.5% experienced WPV; only 49.2% reported; 40% cited absence of a reporting system

Abbreviations: WPV: workplace violence; HCWs: healthcare workers.

T A B L E 3. Summary of included studies on motivational barriers to reporting WPV among healthcare workers in emergency and critical care settings (Q3).

Author (year)	Country	Sample size	Main finding (motivational barriers)
Whalen *et al.* [57] (2024)	USA	21 interviews (ED nurses)	Fear of retaliation, normalization of violence, lack of managerial support
Schøsler *et al.* [56] (2024)	Denmark	1102 nurses	Violence seen as "part of the job"; reporting considered futile; lack of time and tools
Minhat *et al.* [55] (2023)	Malaysia	557 nurses	Fear of blame, lack of feedback, belief reporting useless
Cai *et al.* [28] (2024)	China	312 HCWs	Distrust in reporting system, bureaucratic burden, no protection from leadership
Scallan *et al.* [51] (2024)	USA	112 (ED nurses)	Barriers: "nothing will change", limited anonymity, time pressure

Abbreviations: HCWs: Healthcare Workers; ED: Emergency Department.

reported higher risk for younger workers. Doehring *et al.* [46], analyzing 575 shift reports from 72 emergency staff in a U.S. academic hospital, identified significantly higher exposure among nurses (Odds Ratio (OR) = 3.1) and workers aged ≤40 years (OR = 2.0), although confidence intervals were not provided.

Identity-based violence was also investigated in several studies. Mausz *et al.* [50], analyzing 502 incident reports from 266 Canadian paramedics, found that 25% of events involved sexist, racist, or homophobic abuse, directly affecting 13% of the workforce. Doehring *et al.* [46] reported sexist and racist content in 25% and 7% of cases, respectively. In South Africa, Nkadimeng *et al.* [43] found high prevalence of racial harassment (40%), bullying (25%), and sexual harassment (4.6%) among 65 emergency workers. Kumar *et al.* [44], in Pakistan, confirmed the multifaceted nature of WPV, with 41.2% reporting verbal abuse, 16.5% physical violence, 26.9% bullying, and 2.7% sexual abuse among 182 participants.

Some studies also examined psychological, organizational, and systemic correlates of WPV. Liu *et al.* [47], using a national sample of 1103 emergency clinicians in China, reported a prevalence of 29.2% and found a significant association with lower quality-of-life scores (Analysis of Covariance (ANCOVA), $p < 0.01$). Effects were more pronounced among smokers, individuals with anxiety, and those with relatives affected by COVID-19. In Saudi Arabia, Alnofaiey *et al.* [48] reported a prevalence of 78.1% for verbal violence and 14.6% for physical violence among 96 physicians, with an underreporting rate of 55.2%. Similarly, Al-Sayaghi *et al.* [49] found that low motivation to report WPV was significantly associated with higher risk of exposure (OR = 1.95; 95% Confidence Interval (CI): 1.04–3.65).

In the United States, McGuire *et al.* [42] documented a marked increase in WPV incidents during the pandemic compared with pre-COVID periods (2.53 *vs.* 1.13 and 1.24 episodes per 1000 ED visits; $p < 0.001$) and observed a positive correlation between local COVID-19 case rates and WPV incidence ($r = 0.24$). By contrast, Ahluwalia *et al.* [45], in a multicenter study conducted after the pandemic

in India among 200 emergency HCWs (physicians, nurses, paramedics, technicians, drivers, and support staff), reported that 48% had experienced verbal abuse and 20% physical violence. Most episodes were attributed to patients' relatives or bystanders. The high underreporting rate of physical violence (86%) was attributed to perceptions of low severity or the belief that reporting would be ineffective. Nurses and paramedics, who are more visible and accessible to the public, were disproportionately targeted.

Study design, sample characteristics, and main prevalence findings are summarized in Table 1, while the full extraction with additional variables is available in **Supplementary Table 4**. The overall study selection process is illustrated in Fig. 3; a graphical synthesis of verbal and physical WPV is shown in Fig. 4; and an extended comparison of prevalence patterns is provided in **Supplementary Fig. 1**.

3.3 Underreporting of workplace violence

Four studies [51–54], examined the underreporting of WPV among HCWs in EDs, ICUs, and EMS. Most focused on nurses and paramedics. Reporting rates varied widely across contexts, reflecting persistent cultural, organizational, and systemic barriers. The study selection process for Q2 is shown in Fig. 5.

In the United States, Scallan *et al.* [51] evaluated a Quick Response (QR) code-based reporting tool in a suburban academic ED. Before the intervention, only two WPV incidents were reported by 112 emergency nurses over two months, compared with 59 reports afterward, an increase of 1080%. Despite this improvement, qualitative feedback revealed persistent reluctance to report, driven by perceptions that "nothing would change" and lack of time. Nearly half (47%) of post-intervention reports were submitted anonymously. Supporting measures such as badge stickers, infographics, and leadership engagement were instrumental in promoting a more open reporting culture.

Parke *et al.* [52], in a cross-national survey of 629 ICU nurses in Australia and New Zealand, investigated underreporting of bullying, discrimination, and sexual harassment (BDSH). Over the preceding 12 months, 57.1% of nurses

had experienced bullying, 32.6% discrimination, and 12.9% sexual harassment. Yet only 23.7%, 22.4%, and 24.7% of these incidents were formally reported, respectively. The most common reason for non-reporting was the belief that no action would be taken. Perpetrators were frequently colleagues, with nurses identified as the most common aggressors.

In Canada, Mausz *et al.* [53] evaluated a point-of-event reporting system in Peel Regional Paramedic Services. Among 204 paramedics, 67% had experienced WPV in the preceding 18 months, and 83% reported at least some incidents. Availability and ease of access to the system, combined with the belief that reporting could lead to meaningful change, were key motivators. Conversely, underreporting was linked to perceptions of low severity, lack of peer or supervisor support, and the belief that "nothing would change".

Mugharbel *et al.* [54], in a cross-sectional study across three hospitals in Saudi Arabia, explored WPV among 130 nurses in EDs and outpatient clinics. While 51.5% had experienced WPV, only 49.2% formally submitted incident reports. About 46% relied on informal channels, and 4.6% did not report incidents at all. The absence of a structured reporting system was cited by 40% as a major barrier. Additional factors included fear-based coping strategies and a perceived lack of institutional response, highlighting structural weaknesses in organizational support.

Collectively, these findings demonstrate that underreporting remains pervasive even in the presence of targeted interventions. Across all four studies, recurrent themes included lack of trust in institutional responses, perceived futility of reporting, and logistical barriers such as time constraints and limited system accessibility. A concise overview of the included studies on underreporting is provided in Table 2, whereas detailed study designs and outcomes are available in **Supplementary Table 5**. Interventions and strategies to reduce underreporting are summarized in **Supplementary Table 6**. Recurring themes of distrust, futility, and structural barriers closely intersect with the motivational dimensions discussed in Section 3.4.

3.4 Barriers to disclosure of workplace violence

Five studies [28, 51, 55–57], examined factors underlying the non-disclosure of WPV among HCWs in EDs and EMS, highlighting the complex interplay of individual perceptions, organizational culture, and broader psychosocial determinants. A concise overview of these studies and their key findings is provided in Table 3, whereas detailed information on study design, populations, reporting barriers, and theoretical frameworks is available in **Supplementary Table 7**. **Supplementary Table 8** summarizes proposed interventions and organizational strategies, and the study selection process for Q3 is depicted in Fig. 6.

These studies spanned diverse professional contexts, primarily nurses and Emergency Medical Technicians (EMTs), and were conducted across Asia, the Middle East, North America, and Europe (Fig. 2). A recurrent theme was the belief that reporting WPV is futile or ineffective, often tied to perceptions of limited institutional support or lack of follow-up actions.

In China, a nationwide survey of 3363 nurses in Jiangsu Province found that personality traits such as low agreeableness and neuroticism were associated with a higher likelihood of reporting. In contrast, low organizational responsiveness, and normalization of WPV strongly predicted non-disclosure [28].

In Malaysia, a multicenter study of 557 HCWs applied the Theory of Planned Behavior (TPB) to explore predictors of reporting. Subjective norms (Adjusted Odds Ratio (AOR) = 2.16), perceived behavioral control (AOR = 3.98), and perceptions of intentionality (AOR = 11.11) significantly influenced reporting behaviors. However, overall reporting remained low (31.8%), particularly for psychological violence, and non-clinical staff were more likely to report incidents than clinical personnel [55].

Scallan *et al.* [51], in 2024 evaluated a quality improvement initiative in a U.S. ED designed to reduce reporting barriers. The introduction of an anonymous reporting system, supported by leadership engagement, increased reported incidents from 2 to 59, an increase of 1080%. Before the intervention, barriers included the belief that "nothing would change", low perceived severity, time constraints, and limited managerial support. Facilitators of reporting were anonymity and acknowledgment from supervisors.

In Denmark, Schøsler *et al.* [56] surveyed 584 prehospital HCWs and found that 25.7% had experienced physical violence and 47.7% psychological violence. Yet only 39.9% and 17% of these incidents, respectively, were formally reported. Non-disclosure was most often attributed to perceptions that the event was "not serious enough" (58%) or that reporting would be ineffective (37–50%). Participants also described adverse psychological consequences, including intentions to leave the profession, sleep disturbances, avoidance behaviors, and perceived deterioration in patient care (34.7%).

Whalen *et al.* [57], in 2024 conducted a qualitative study with U.S. emergency nurses to explore barriers and facilitators of WPV reporting. Both high and low reporters identified similar obstacles: normalization of violence, ambiguous protocols, cognitive rationalization of patient behavior (*e.g.*, intoxication or dementia), and a sense that reporting would not lead to systemic change. Facilitators included user-friendly reporting systems, direct involvement in incidents, managerial support, and a motivation to protect colleagues by holding aggressors accountable. Notably, thematic differences were minimal between high- and low-reporters.

Taken together, these findings highlight that non-disclosure is not merely an individual decision but reflects systemic, cultural, and organizational shortcomings. The convergence of psychological rationalizations, weak institutional support, and normalization of violence underscores the need for multi-level strategies. These interrelated dimensions are further elaborated in the Discussion section, where implications for practice and policy are considered.

3.5 Critical appraisal

The methodological quality of the included studies was generally high. Most cross-sectional and prevalence studies achieved strong scores on the JBI checklists, with clear inclusion criteria, well-defined study populations, valid

measurement tools, and appropriate statistical analyses. A recurring limitation was the lack of identification or control of potential confounding factors, which may reduce internal validity. Mixed-methods studies [41–52] scored positively on the MMAT (2018), demonstrating adequate integration of qualitative and quantitative components and coherent triangulation of findings. The qualitative study [57] was assessed with CASP and judged to be of high methodological quality, supported by transparent reporting and rigorous thematic analysis. However, its small sample size and single-center design limit transferability. No study was excluded based on appraisal outcomes. Findings from higher-quality studies were accorded greater interpretive weight in the synthesis, whereas results from lower-scoring studies were considered with caution, primarily to highlight contextual variability or emerging trends. Common methodological weaknesses across the evidence base included non-probability or convenience sampling, reliance on self-reported outcomes, limited adjustment for confounders, and small sample sizes. These issues may contribute to both under- and overestimation of WPV prevalence, reporting rates, and barriers to disclosure, and were explicitly accounted for in the interpretation of results.

3.6 Methodological quality of included studies

We summarized the appraisal outcomes by question using validated tools (Joanna Briggs Institute (JBI) for cross-sectional/prevalence studies, Mixed Methods Appraisal Tool (MMAT) for mixed-methods, Critical Appraisal Skills Programme (CASP) for qualitative designs, and Quality Improvement Minimum Quality Criteria Set (QI-MQCS) for quality-improvement studies). Table 4 (Ref. [38–50]) reports Q1 (prevalence), Table 5 (Ref. [51–54]) Q2 (underreporting), and Table 6 (Ref. [28, 51, 55–57]) Q3 (motivations for non-reporting). Overall, across 22 included studies, 11 were rated High quality and 11 Moderate, with no studies classified as Low quality; these patterns informed the interpretive weight of findings in the synthesis. (Full item-level details remain available in **Supplementary Table 2**.)

4. Discussion

4.1 Prevalence of workplace violence

This review aimed to assess the prevalence, underreporting, and barriers to disclosure of WPV in emergency and critical care during the COVID-19 pandemic and the post-pandemic era. Findings confirm that WPV remains alarmingly frequent, with verbal aggression consistently the most reported form across diverse countries [38–42]. Physical violence, although less common, still posed a substantial risk to HCWs in multiple regions [38, 42, 43]. These persistent high rates highlight WPV as a chronic occupational hazard in emergency settings, extending well beyond the pandemic's acute phase.

Comparisons with earlier evidence reinforce the systemic nature of the phenomenon. Pre-pandemic studies from the Middle East and South Asia likewise reported very high levels of WPV, confirming that the issue is entrenched rather than a

transient spike associated with COVID-19 [58–60].

Some studies specifically captured the pandemic's impact. McGuire *et al.* [42] showed a marked increase in violent incidents during COVID-19 compared with pre-pandemic levels, with rates closely correlated with local infection incidence. Pandemic-related stressors, such as overcrowding, restricted family access, and public frustration, were frequently identified as exacerbating factors [39, 45, 47].

Geographical disparities are evident. Elevated verbal abuse rates were consistently reported in Asian and Middle Eastern settings such as Pakistan, Iran, and Egypt [38, 39, 44, 59], while high prevalence was also documented in parts of Southeast Asia and Africa, including Nigeria, Sudan, Ethiopia, and Bangladesh, where limited resources and staff shortages were recurrent drivers [19, 40, 61–65]. Importantly, North American, and European data confirm that WPV is not confined to low-resource contexts, though the underlying determinants may differ, often involving patient expectations and organizational dynamics [42, 46, 50, 66].

Certain risk factors recur across settings. Younger age, limited clinical experience, understaffing, and night shifts were consistently associated with higher WPV exposure [38, 40, 41, 45, 46]. Nurses and paramedics appeared particularly vulnerable, likely due to their visibility and frequent patient interaction, as shown by survey data and incident reports [45, 46, 52, 67]. Several studies also noted that female HCWs, particularly nurses, were disproportionately targeted by both verbal and physical aggression [39, 45, 68, 69].

A concerning trend in the post-pandemic period is the rise of identity-based and complex forms of violence. Mausz *et al.* [50], and Doehring and colleagues [46] highlighted that a relevant proportion of incidents contained sexist, racist, or homophobic content, with similar patterns also emerging in South Africa and Brazil [43, 70]. These findings suggest that WPV increasingly intersects with broader societal tensions and discriminatory behaviors.

Taken together, the evidence underscores the structural entrenchment of WPV in emergency care. The consistently high prevalence across regions, care models, and time periods, both pre- and post-COVID, indicates that the pandemic acted as an amplifier rather than a trigger of this crisis. Recent theoretical syntheses support this interpretation, framing WPV as the product of interacting individual, organizational, environmental, and societal determinants [31].

Consequently, isolated interventions are unlikely to succeed. Integrated, multilevel strategies are needed, combining robust staff training, user-friendly reporting systems, leadership engagement, and culturally sensitive prevention approaches. Future research should aim to disentangle pandemic-specific dynamics from enduring systemic drivers and monitor the long-term evolution of WPV as health systems continue to adapt in the COVID-19 pandemic and post-pandemic era.

4.2 Underreporting of workplace violence and barriers to disclosure

Despite growing awareness, underreporting of WPV remains widespread in emergency and acute care. HCWs frequently refrain from reporting incidents, even after repeated or severe

T A B L E 4. Summary of methodological quality appraisal of included studies on the prevalence of WPV among healthcare workers in emergency and critical care settings (Q1).

Study (Author, year)	Tool	Total items	Score (%)	Category	Overall appraisal
Assil, 2022 [39]	JBI	7/8	88%	High	Include
Ikpae, 2023 [40]	JBI	7/8	88%	High	Include
Alnofaiey, 2022 [48]	JBI	7/8	88%	High	Include
Mausz, 2024 [50]	JBI	9/9	100%	High	Include
Janatolmakan, 2023 [38]	JBI	6/8	75%	Moderate	Include
Rui Liu, 2021 [47]	JBI	6/8	75%	Moderate	Include
Al-Sayaghi, 2023 [49]	JBI	6/8	75%	Moderate	Include
McGuire, 2022 [42]	JBI	6/8	75%	Moderate	Include
Nkadimeng, 2024 [43]	JBI	6/8	75%	Moderate	Include
Ahluwalia, 2024 [45]	JBI	6/8	75%	Moderate	Include
Kumar, 2023 [44]	JBI	6/8	75%	Moderate	Include
Doehring, 2024 [46]	JBI	6/8	75%	Moderate	Include
Kiymaz, 2023 [41]	MMAT	5/5	100%	High	Include

Abbreviations: JBI: Joanna Briggs Institute; MMAT: Mixed Methods Appraisal Tool.

T A B L E 5. Summary of methodological quality appraisal of included studies on underreporting of WPV among healthcare workers in emergency and critical care settings (Q2).

Study (Author, year)	Tool	Total items	Score (%)	Category	Overall appraisal
Parke, 2023 [52]	MMAT	5/5	100%	High	Include
Mausz, 2024 [53]	JBI	9/9	100%	High	Include
Mugharbel, 2023 [54]	JBI	6/8	75%	Moderate	Include
Scallan, 2024 [51]	QI-MQCS	16/16	100%	High	Include

Abbreviations: JBI: Joanna Briggs Institute; MMAT: Mixed Methods Appraisal Tool; QI-MQCS: Quality Improvement Minimum Quality Criteria Set.

T A B L E 6. Summary of methodological quality appraisal of included studies on motivational barriers to reporting WPV among healthcare workers in emergency and critical care settings (Q3).

Study (Author, year)	Tool	Total items	Score (%)	Category	Overall appraisal
Whalen, 2024 [57]	CASP	10/10	100%	High	Include
Schøsler, 2024 [56]	JBI	9/9	100%	High	Include
Minhat, 2023 [55]	JBI	6/8	75%	Moderate	Include
Cai, 2024 [28]	JBI	6/8	75%	Moderate	Include
Scallan, 2024 [51]	QI-MQCS	16/16	100%	High	Include

Abbreviations: JBI: Joanna Briggs Institute; CASP: Critical Appraisal Skills Programme; QI-MQCS: Quality Improvement Minimum Quality Criteria Set.

aggression. A central factor is limited trust in institutional responses, with reporting often perceived as futile and unlikely to result in meaningful change [51–53, 55]. This resignation is reinforced by organizational inertia and lack of transparent feedback.

In several contexts, only a very small fraction of incidents are formally reported, reflecting cultural normalization of violence and weak institutional support [67, 71–73]. Barriers include time constraints and limited access to reporting systems. Even when digital tools such as QR-code platforms [51] or point-of-event interfaces [53] are available, staff may lack time, privacy, or confidence to report, particularly during night shifts or in under-resourced units [55, 70, 71].

Professional hierarchies further reduce reporting, especially when perpetrators are colleagues or senior staff, fostering the belief that violence is "part of the job". This view has been documented in over 75% of participants in some studies [52, 66, 67, 70, 74].

It affects not only experienced clinicians but also students and early-career professionals. For example, among nursing students in Spain, only a small minority reported WPV during placements, mainly due to fear of reprisal and lack of support [74]. Similarly, in Italy, most HCWs had never received formal training on reporting, and awareness of protocols was very limited [73].

Underreporting is not confined to low-resource settings. Studies from the United States [67], Saudi Arabia [54, 58], Morocco [72], Malaysia [55], and Italy [66, 73] show similar patterns: fear-based coping, lack of supervisor support, unclear policies, and trivialization of violence. These converging findings confirm that underreporting is a systemic challenge requiring comprehensive, multilevel interventions. Promising strategies include leadership engagement, simplified reporting tools, feedback mechanisms, and cultural change initiatives [51, 52].

Scallan *et al.* [51] tested a multi-component approach combining a QR-code reporting system, awareness campaigns, and charge nurses as reporting champions. This intervention led to a dramatic increase in reporting over a short period, demonstrating how user-friendly systems and leadership support can reduce barriers. Still, nearly half of the reports were submitted anonymously, reflecting persistent mistrust.

Parke and colleagues [52] found that institutional policies and training against bullying and harassment are often weakened by poor enforcement and limited managerial support. They recommended peer supervision and workplace culture indicators in accreditation standards to strengthen trust and encourage speaking up.

In 2024, Mausz *et al.* [53] described a cultural shift after introducing the External Violence Incident Report (EVIR), integrated into electronic patient records. Supported by zero-tolerance policies, dashboards, and supervisor follow-up, reporting rates increased substantially, with most paramedics actively using the system. Nevertheless, some staff continued to perceive violence as an inevitable part of the job.

Moreover, Mugharbel *et al.* [54] noted that a considerable proportion of facilities lacked formal systems and called for mandatory digital platforms, training, and psychological support. Although effectiveness was not formally assessed,

their recommendations highlight the need for systemic reforms targeting infrastructure and culture.

Overall, persistent underreporting reflects a complex interplay of individual, cultural, and systemic factors. Recent theoretical syntheses frame WPV as the result of multilevel determinants, individual, organizational, environmental, and societal [31]. Addressing barriers requires integrated strategies that enhance leadership, infrastructure, and staff empowerment. This involves not only technological tools but also a cultural transformation that redefines violence as unacceptable and reporting as a protected, professional duty.

Beyond structural reforms, cultural transformation is essential to improve reporting behaviors. Multi-component initiatives combining training, reporting champions, and leadership engagement have been associated with higher reporting rates and reduced acceptance of violence as "part of the job" [30]. At the policy level, international frameworks identify cultural change as central to violence prevention, emphasizing social norms, leadership, multisectoral action, and capacity building to normalize reporting as a protected practice [16].

Overall, evidence shows that reducing underreporting requires sustained cultural change, not technological solutions alone. Building on this, the next section examines the individual and contextual factors, fear, stigma, and normalization of aggression, which continue to deter disclosure even when systems exist.

Despite growing awareness, non-disclosure of WPV remains pervasive in emergency and prehospital care. The five studies included in this review confirm its multifactorial nature, shaped by individual beliefs, organizational culture, and systemic shortcomings.

A central barrier is perceived futility. HCWs often express little confidence that reporting will lead to consequences, echoing the belief that "nothing will change" [28, 51, 55–57]. This was observed in Sudan, Saudi Arabia, and Italy, where violence was viewed as inevitable and institutional follow-up as limited [62, 73, 75]. In some cases, staff who reported incidents described being dismissed or even reprimanded by supervisors [76].

Closely related is the normalization of violence, where aggression is internalized as an occupational hazard rather than a violation. In the U.S., Denmark, and other countries, incidents were dismissed as "not serious enough" or "part of the job", discouraging disclosure [56, 57, 59, 65, 74, 77]. Early socialization, including among nursing students, perpetuates this mindset [74].

Another major barrier is the lack of clear procedures and accessible systems. Many HCWs reported being unaware of reporting pathways or discouraged by bureaucratic obstacles [28, 55, 57]. In China, missing feedback and formal procedures reduced reporting [28], while similar obstacles were described in Egypt, Malaysia, and Ethiopia, including inadequate tools, time-consuming processes, and lack of support staff [55, 64, 78].

Evidence also shows that targeted interventions can mitigate barriers. Scallan and colleagues demonstrated a dramatic increase in reporting after a multi-component initiative with QR-code systems, awareness campaigns, and charge nurse engagement [51]. Furthermore, Whalen *et al.* [57] highlighted

that integrating tools into electronic health records, simplifying documentation, and ensuring feedback improved accountability and willingness to report.

Leadership engagement is a decisive factor. Nurses and EMTs are more likely to report when they feel supported by supervisors [51, 57], whereas weak managerial commitment and lack of follow-up exacerbate underreporting in settings such as Sudan, Indonesia, and Jordan [62, 77, 79]. Cai *et al.* [28] showed that organizational encouragement and non-punitive systems facilitated disclosure, while Minhat *et al.* [55] found that subjective norms and perceived behavioral control predicted reporting, underscoring the role of training and peer modeling. Schøsler *et al.* [56] also recommended psychological follow-up and standardized protocols for prehospital staff to counter perceptions that incidents are "not important enough" to report.

Fear of retaliation and stigma further deter disclosure. HCWs feared being perceived as weak, damaging team relations, or facing disciplinary repercussions [56, 57, 75]. These concerns were pronounced in hierarchical or male-dominated workplaces [69, 77, 80]. An Italian study described nurses being mocked for attempting to report, showing how peer culture can actively suppress disclosure [76].

Coping mechanisms also play a role: instead of reporting, many HCWs minimized or denied incidents, or used humor and silence [57, 76, 79]. While protective in the short term, these strategies fuel chronic distress, disengagement, and moral injury. Unreported incidents were frequently linked to exhaustion and intent to leave the profession [56, 62, 70, 78].

Sociodemographic factors also influence reporting: female nurses, early-career staff, and those in subordinate roles were less likely to report, especially when perpetrators were superiors [65, 75], while non-clinical staff showed higher reporting rates [55].

Across regions, recurring barriers, including normalization, fear, perceived inefficacy, lack of training, and institutional silence, demonstrate the global consistency of this problem. Even in high-resource systems such as the U.S. and Italy, non-disclosure persists when structural and cultural support is weak [42, 67, 73].

Cultural transformation can counteract both normalization and stigma. Initiatives combining leadership visibility, peer support, and sustained staff engagement have reduced stigma, encouraged open discussion, and promoted reporting as a core professional duty [30]. At the policy level, global frameworks stress that building cultures of respect and psychological safety is key to dismantling futility and fear, reframing reporting as a protected act [16].

Overall, underreporting should be understood not merely as an individual behavior but as a systemic failure. Addressing it requires more than technical reporting tools: it demands leadership engagement, psychological safety, staff education, institutional transparency, and, above all, a cultural transformation that redefines violence as unacceptable and reporting as a protected professional responsibility.

4.3 Gaps in the literature

Despite the substantial evidence synthesized in this review, important gaps remain in the global understanding of WPV in emergency and prehospital settings. The geographical distribution of studies is highly uneven: most investigations have been concentrated in a limited number of countries, particularly China, Iran, Pakistan, the United States, and Italy, while vast regions such as Sub-Saharan Africa, South America, and Eastern Europe remain underrepresented. This imbalance restricts the generalizability of findings and limits understanding of how sociocultural, structural, and policy-related factors shape WPV worldwide [15].

Disciplinary coverage is similarly narrow. The majority of studies focus almost exclusively on physicians and nurses, with limited attention to other professional groups such as paramedics, triage nurses, healthcare assistants, students, and administrative staff. This restricted scope risks underestimating the interprofessional dynamics and organizational complexities that influence both the prevalence and reporting of violent incidents [15].

As emphasized by Magnavita and colleagues the concentration of research efforts in specific regions and among a narrow set of healthcare professions leaves significant blind spots in the literature. Addressing these gaps requires more inclusive, multicentric, and interprofessional studies that encompass underrepresented regions and disciplines, thereby generating a truly global and multidisciplinary understanding of WPV in emergency care [15].

Building on these gaps, this review proposes several key recommendations to guide policy, clinical practice, and future research.

4.4 Key recommendations for clinical practice

Based on the evidence synthesized in this review, several priority actions are recommended to strengthen WPV prevention and management in emergency and critical care settings. Healthcare organizations should adopt comprehensive prevention policies aligned with WHO guidelines and embed WPV prevention within broader quality improvement and occupational health initiatives. This requires adequate staffing levels, visible security in high-risk areas, and the allocation of dedicated resources. Confidential, accessible, and standardized reporting systems should be fully integrated into daily workflows. Digital platforms, point-of-care tools, and mobile applications, supported by feedback mechanisms, can improve transparency, accountability, and staff trust. Regular training programs are essential to raise awareness of what constitutes reportable violence, clarify institutional procedures, and emphasize that reporting protects both individuals and teams. Training should also address de-escalation, emotional resilience, and psychological first aid to prepare staff working in high-risk environments. Fostering a culture of psychological safety is crucial. Reporting should be perceived as protected and professionally responsible, supported by leadership engagement, recognition of reporting behaviors, and consistent communication about institutional responses. Ultimately, WPV prevention strategies must combine leadership

commitment, staff education, robust reporting infrastructure, and cultural change. These measures are vital not only to safeguard HCWs but also to promote patient safety, staff retention, and healthcare system resilience.

For example, the United States has implemented nationwide strategies through the Occupational Safety and Health Administration (OSHA) guidelines, which emphasize organizational accountability, structured prevention programs, and standardized reporting mechanisms. Similarly, Denmark and other Nordic countries have promoted cultural change by introducing national violence prevention initiatives in EDs, combining mandatory staff training with secure and transparent reporting systems, resulting in improved reporting behaviors and reduced tolerance of violence.

Beyond clinical practice, the findings of this review have implications for policy, management, and training. At the policy level, the persistence of WPV and underreporting supports the adoption of mandatory reporting standards, zero-tolerance frameworks, and integration of WPV prevention into national occupational health strategies. In terms of health management, resource allocation (adequate staffing, security presence, psychological support) and the inclusion of WPV indicators in quality assurance and accreditation systems are critical. Finally, training programs should incorporate structured curricula on de-escalation, reporting procedures, simulation-based scenarios, and resilience-building, to normalize reporting as a protected professional responsibility.

4.5 Limitations

This systematic review presents several limitations that should be considered when interpreting its findings. First, although the review adhered to PRISMA guidelines and followed a registered PROSPERO protocol, inclusion was restricted to studies published in English or Italian. This language constraint may have introduced selection bias by excluding potentially relevant research conducted in other languages, particularly from regions where WPV is highly prevalent. Second, no meta-analysis was conducted due to substantial heterogeneity in study designs, populations, settings, and definitions of WPV. Instead, we adopted a narrative synthesis, which is appropriate for examining complex and multifactorial phenomena, though it remains inherently subject to interpretative variation. Additionally, some studies lacked disaggregated data by professional role, type of violence, or perpetrator, which constrained the depth of subgroup analysis. Third, although methodological quality was assessed using validated tools (JBI, MMAT, CASP), no study was excluded based on quality ratings. While this approach maximized inclusiveness, it may have introduced findings from studies with lower internal validity, potentially affecting the overall robustness of some conclusions. Fourth, the review focused exclusively on the post-COVID-19 period (March 2020–February 2025), ensuring a consistent temporal framework but limiting comparisons with pre-pandemic trends. Furthermore, several studies relied on retrospective self-reporting over extended recall periods, increasing the risk of recall bias and potential misestimation of both prevalence and reporting behaviors. It is also important to acknowledge the potential presence

of reporting bias in the included primary studies. Incidents of WPV may be systematically underreported due to fear of retaliation, lack of accessible reporting systems, cultural normalization of violence, or perceptions of the ineffectiveness of complaint procedures. As a result, the true prevalence of the phenomenon is likely to be higher than reported. Finally, publication bias cannot be ruled out. The focus on peer-reviewed literature may have excluded relevant grey literature or unpublished institutional data, particularly from low-resource settings where WPV may be more widespread but formal publication pathways less accessible.

Another limitation is that Embase and the Cochrane Library were not included in the search. However, their omission is unlikely to have affected the results, given the substantial overlap of Embase with the biomedical databases already searched and the limited relevance of Cochrane for observational and qualitative research on WPV.

In addition, our review excluded grey literature. While this decision was made to prioritize peer-reviewed evidence and ensure methodological rigor, it may have resulted in the omission of institutional reports or unpublished data that could provide additional perspectives on WPV.

Despite these limitations, the review offers a comprehensive synthesis of recent evidence on WPV in emergency care and underscores the urgent need for systemic and culturally responsive strategies to safeguard HCWs.

5. Conclusion

WPV remains one of the most pervasive and entrenched occupational hazards in emergency care, both during and after the COVID-19 pandemic. The pandemic amplified WPV through overcrowding, restricted access, resource shortages, and heightened public frustration, yet prevalence has remained persistently high in the COVID-19 pandemic and the post-pandemic era, underscoring the systemic and enduring nature of this phenomenon.

Despite institutional protocols and reporting systems, underreporting continues to undermine efforts to monitor, prevent, and manage WPV. This review highlights not only the alarming prevalence of verbal, physical, and identity-based aggression, but also the organizational and psychological barriers that hinder disclosure. Perceived futility, fear of retaliation, normalization of violence, and unclear procedures consistently weaken institutional responses and perpetuate silence.

Addressing WPV requires more than technological upgrades: it demands comprehensive, multidimensional strategies. Institutions must foster a culture of safety and accountability that empowers staff to report without fear, supported by leadership commitment, streamlined procedures, transparent feedback, and targeted training. These organizational measures should be coupled with structural reforms that promote psychological safety and enforce zero tolerance toward violence.

Future research must move beyond short-term evaluations to explore long-term trends, distinguishing pandemic-specific dynamics from enduring systemic patterns. Longitudinal designs and repeated measures are particularly needed to capture relapses in behaviors, adaptation of interventions, and delayed

impacts on organizational culture. Only sustained, system-wide efforts can effectively mitigate WPV and safeguard the safety, dignity, and resilience of frontline HCWs.

AVAILABILITY OF DATA AND MATERIALS

All data supporting the findings of this systematic review are derived from previously published studies, which are fully cited in the reference list. No new datasets were generated or analyzed.

AUTHOR CONTRIBUTIONS

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

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CONFLICT OF INTEREST

The authors declare no conflict of interest. Nicola Ramacciati is serving as one of the Editorial Board members of this journal. We declare that Nicola Ramacciati had no involvement in the peer review of this article and has no access to information regarding its peer review. Full responsibility for the editorial process for this article was delegated to RL.

SUPPLEMENTARY MATERIAL

Supplementary material associated with this article can be found, in the online version, at https://....

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