



Published in final edited form as:

J Adv Nurs. 2026 May ; 82(5): 4786–4799. doi:10.1111/jan.70192.

Intervention and Strategies to Prevent Workplace Violence from Patients and Visitors Against Nurses: An Integrative Review

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Abstract

Aim: To synthesize the existing literature on effective interventions aligned with the 2015 U.S. Occupational Safety and Health Administration guidelines to address workplace violence against nurses.

Design: An integrative review.

Methods: PubMed, Embase, CINAHL, and PsycINFO databases were searched for articles published between 2010 and 2023. Articles addressing WPV interventions, and published in English, were included.

Results: 37 of 834 articles met the inclusion criteria. The review revealed several strategies to address workplace violence in healthcare settings, with staff training being the most common strategy. However, most interventions were researcher-designed, often excluding input from nurses or other stakeholders. Limited managerial support for nurses following the incidents was another prominent finding.

Conclusion: Although safety training programs are common, there are critical gaps in managerial support and nurse involvement in intervention development. Further research should focus on incorporating nurse contributions and strengthening managerial support to enhance prevention efforts.

Implications for the Profession and/or Patient Care: Addressing workplace violence in healthcare settings requires a comprehensive approach beyond safety training. Active nurses' participation in intervention design and enhanced managerial support are essential for creating effective solutions. Healthcare administrators should create environments that empower nurses to contribute to solutions.

Impact: This review highlights existing gaps in interventions and emphasizes the need for collaborative and nurse-centered approaches to address workplace violence.

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Author Contributions: Islam QASEM: Conceptualization; Methodology; Data Collection, Analysis, and Interpretation; Drafting and Critically Revising the Work for Intellectual Content; Final Approval of the Version to be Published.

Gordon L. GILLESPIE: Methodology; Data Collection, Analysis, and Interpretation; Critically Revising the Work for Intellectual Content; Final Approval of the Version to be Published.

Conflict: The authors declare they have no known conflicts of interest for the conduct or reporting of this integrative review.

Reporting Method: The reporting of this review was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

Patient or Public Contribution: No patient or public contribution.

Keywords

Workplace Violence; Workplace Aggression; Nurse; Interventions; Strategies

Introduction

Workplace violence (WPV) is a significant global occupational problem that challenges healthcare professionals. Annually, about 61.9% of health workers are exposed to WPV worldwide (Liu et al., 2019). Nurses are more likely to experience WPV than other staff working in other careers (Escribano et al., 2019) due to their direct contact with patients and their families. In the United States (U.S.), WPV incidents against nurses were around three times higher than in all other professions in 2018 (Dressner & Kissinger, 2018), which underscores the urgent need for workplace safety interventions in healthcare settings.

The International Labor Organization (ILO) defines WPV as any behavior, action, or intimidation in the work environment that leads to physical, psychological, sexual, or economic harm, including gender-based violence (ILO, 2020). In healthcare settings, patient-initiated WPV, known as client-on-worker violence, is the most prevalent type of WPV among the various types of WPV (American Nurses Association [ANA], 2024; National Institute for Occupational Safety and Health [NIOSH], n.d.). This type involves verbal abuse, intimidation, or physical assault (Liu et al., 2019) perpetrated mainly by patients, visitors, or their family members (Babiarczyk et al., 2020) during the provision of health services. This definition will inform this review's research question, purpose, search strategy, results, and conclusions.

Overcrowded work environments, ineffective management of violent incidents, and staff shortages are the most contributing factors to WPV from patients or visitors (ALBashtawy et al., 2015). Other factors involved a lack of practical communication skills, unmet patient needs (Najafi et al., 2018), fewer years of experience, and decreased quality of care (AbuAlRub & Al Khawaldeh, 2014). Long waiting periods and patient psychological disorders (i.e., aggression, anxiety, and drug or alcohol addiction) are other predisposing factors that significantly increase the risk of WPV incidents against nurses (Hamdan & Hamra, 2017; Lee et al., 2023).

The frequent experience of WPV is highly distressing to nurses and can lead to several adverse outcomes, such as reduced job satisfaction and ability to manage workload, increased job stress (Kwak et al., 2020), decreased quality of care, and decreased productivity (Chang et al., 2019; Gillespie & Berry, 2023) leading to burnout (Li et al., 2019). Nurses also may respond to such aggression by absenteeism, changing careers, and even leaving their careers (Li et al., 2019; Rosenthal et al., 2018). Other ramifications include poor quality of life (Kwak et al., 2020), demoralization, mental exhaustion,

depersonalization, posttraumatic stress disorder (Pourshaikhian et al., 2016), nightmares, insomnia, anxiety, depression, fear, and family disruption (Itzhaki et al., 2018).

The ongoing adverse effects of WPV on nurses highlight the necessity for preventive measures that can enhance workplace safety. In addition, the multifaceted nature and diverse manifestations of this problem require a holistic approach to prevent and resolve this issue (Yesilbas & Baykal, 2021). A multidimensional approach that collaborates with employees, managers, and policy contributors is necessary to develop solutions for reducing the incidence of WPV in nursing (Gillespie et al., 2019). These methods should be supported by policies and programs tailored to each specific situation, aimed at improving working conditions and promoting the professional status of nurses in every healthcare setting. Several integrative reviews have focused on identifying the prevalence and characteristics of WPV and its consequences on individuals and healthcare organizations (i.e., Pourshaikhian et al. 2016). In addition, several prominent individualized studies have provided various solutions to the problem (i.e., Chang et al., 2022). However, limited integrative reviews addressed the effective intervention or strategies that align with Occupational Safety and Health Administration (OSHA) guidelines to combat WPV against nurses.

OSHA WPV Prevention Framework

The U.S. OSHA proposed a set of guidelines to address and prevent WPV in healthcare and social service sector workers, which guides this current review (OSHA, 2015). These guidelines include five elements to address and prevent WPV. Management commitment and worker participation are critical components necessary for any other element to be effective. The worksite analysis and hazard identification element rely on worksite risk assessment to identify potential employee hazards and risks (OSHA, 2015). Worksite analysis can be conducted using data from several sources, such as employee surveys, patient surveys, job hazard analysis, and incident reports. Hazard prevention and control refers to strategies and actions taken to prevent or mitigate potential risks and hazards in the workplace, which are identified through worksite analysis and hazard identification (OSHA, 2015). These strategies may include substitution (e.g., evicting violent visitors), implementation of engineering controls (e.g., using physical barriers to restrict access to healthcare setting areas), and the use of administrative and work practice controls (e.g., risk assessment, reporting, behavioral emergency response teams). Safety and health training, the most frequent element used in healthcare settings, includes regular worker training on managing aggressive incidents, de-escalation strategies, adoption of WPV policies and procedures, and personal safety training. Finally, the recordkeeping and program evaluation element is vital to evaluate the effectiveness of WPV interventions, such as developing a consistent system for reporting incidents of WPV and regularly reviewing the reports (OSHA, 2015). OSHA's (2015) guidelines framework guided the research, aims, search process, and interpretation of studies in this review.

Aim

This integrative review aims to synthesize the existing literature on effective interventions or strategies aligned with OSHA (2015) guidelines to address and control WPV against nurses.

Methods

Design

Whittemore and Knafl's (2005) five-step methodology provided a structured approach to guide this integrative review. The steps included identifying the research problem (stated earlier), conducting a literature search, evaluating the data, and finally presenting the results. Additionally, this approach enhances rigor and minimizes bias in the analysis, synthesis, and conclusion process.

Literature Search

A comprehensive search strategy was developed and performed by a health sciences librarian. Databases used for the search were PubMed, Embase, CINAHL, and PsycINFO from 2010 to 2023. The starting point for the literature search was set at 2010 to align with significant regulatory updates in WPV prevention, including the OSHA (2015) guidelines, which marked a shift in WPV intervention strategies in healthcare settings. Key terms in the search included "workplace violence," "occupational violence," "nurses," "nursing personnel," "education," "training program," and "educational activity," among others (see Supplementary Document 1).

Inclusion and/or Exclusion Criteria

Articles that addressed OSHA (2015) guidelines' key elements, from any type (qualitative, quantitative, and mixed methods), targeted nurses as the main population, published in the English language and peer-reviewed journals, and addressed WPV interventions and strategies aligned with OSHA guidelines were included in the review. However, literature, scoping, integrative or systematic review articles, theses, conferences, eBook chapters, and articles discussing workplace bullying or incivility were excluded.

Search Outcome

Records were uploaded to and deduplicated through Rayyan (<https://www.rayyan.ai/>), a web-based platform used to conduct systematic reviews. After removing the duplicates, the search yielded 834 articles. The initial review process was conducted by two investigators who were blinded to the decisions of the other investigator until both had completed their review. A total of 786 papers were excluded using the title and abstract. Then, the two investigators independently screened the remaining 48 full-text papers against the inclusion/exclusion criteria, and following discussion, a consensus was reached to include 37 papers. The process of this literature review search is demonstrated by the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) (Page et al., 2021) (see Figure 1).

Quality Appraisal

The quality of the reviewed studies was assessed for the level and quality of evidence based on the Johns Hopkins Nursing Evidence-Based Practice Evidence Level and Quality Guide (Dang et al., 2022). This framework categorizes evidence into five levels, from Level I (randomized controlled trials and systematic reviews) to Level V (expert opinions and case

reports). Studies were further rated for quality as high (A), good (B), or low (C) based on criteria including study design, sample size, risk of bias, and generalizability.

One study met the criteria of level I (Chang et al., 2022), 11 studies met the criteria of level II (Al-Ali et al., 2016; Cabilan et al., 2023; Cai et al., 2023; Duncan et al., 2021; Gillespie et al., 2014; Hemati-Esmaili et al., 2018; Kalbali et al., 2018; Ming et al., 2019; Ramacciati et al., 2021; Sadatmahaleh et al., 2019; Sharifi et al., 2020), 14 studies met the criteria of level III (Al-Natour et al., 2023; Burkoski et al., 2019; Cabilan et al., 2022; Carr & Derouin, 2023; Cordenuzzi et al., 2017; Dadashzadeh et al., 2019; Dafny et al., 2022; Dafny & Muller, 2022; de Barbieri et al., 2022; Gillespie & Berry, 2023; Öztaş et al., 2023; Shea et al., 2018; Tosswill et al., 2023; Xu et al., 2022), and the last 11 articles were level V evidence (Brucoli, 2023; de la Fuente et al., 2019; Gillespie & Leming-Lee, 2019; Hendrickson, 2022; Lakatos et al., 2019; Senz et al., 2021; Stene et al., 2015; Story et al., 2020; Wong et al., 2015; Yost et al., 2022; Zicko et al., 2017). Almost all reviewed studies are considered good quality (B) due to some limitations regarding the study design, sampling procedures, and generalizability. However, only one study (Gillespie & Berry, 2023) is considered high-quality as it includes a generalizable study sample and recruited study participants by systematic random sampling.

Data Abstraction

Each study's data about authors' names, interventions, methods, and findings were extracted and summarized into an evidence table (see Supplementary Document 2). The table also includes the quality of the studies and the level of evidence. One researcher developed the summary table independently and reviewed it separately with a second investigator. Refinements were made as appropriate.

Data Synthesis

Data from the evidence table were synthesized and analyzed frequently. Any information related to strategies or interventions to prevent and control WPV aligned with OSHA (2015) guidelines was recorded. Then, data related to strategies or interventions that addressed WPV initiated by patients or visitors were arranged in patterns and themes based on OSHA's five key elements. This process was performed by the first author under supervision, and another investigator checked for accuracy. In this manner, we determined the interventions and strategies used to prevent and control WPV initiated by patients or visitors that addressed OSHA (2015) guidelines.

Findings

Characteristics of the Included Studies

Thirty-seven articles were included in this integrative review. The articles used various design methods to collect and analyze data, including qualitative (n=6), quantitative (n=19), and quality improvement methods (n=12). The articles were published between 2010 to 2023 and conducted in the U.S. (Brucoli, 2023; Carr & Derouin, 2023; de la Fuente et al., 2019; Duncan et al., 2021; Gillespie et al., 2014; Gillespie & Berry, 2023; Gillespie & Leming-Lee, 2019; Hendrickson, 2022; Lakatos et al., 2019; Stene et al., 2015; Story et

al., 2020; Zicko et al., 2017), Iran (Dadashzadeh et al., 2019; Hemati-Esmaeili et al., 2018; Kalbali et al., 2018; Sadatmahaleh et al., 2019; Sharifi et al., 2020), Jordan (Al-Ali et al., 2016; Al-Natour et al., 2023), Italy (Ramacciati et al., 2021), Turkey (Öztaş et al., 2023), China (Cai et al., 2023; Xu et al., 2022), Brazil (Cordenuzzi et al., 2017), Canada (Burkoski et al., 2019), Taiwan (Chang et al., 2022; Ming et al., 2019), and Australia (Cabilan et al., 2022, 2023; Dafny et al., 2022; Dafny & Muller, 2022; Senz et al., 2021; Shea et al., 2018; Tosswill et al., 2023). The studies mainly included nurses from several healthcare setting departments (e.g., ED, ICU). The mean age of participants in the included studies ranged from 25 to 43 years. Only three studies did not report age means (Gillespie & Leming-Lee, 2019; Hendrickson, 2022; Stene et al., 2015). Both men and women were included in most of the studies. However, one study involved only male participants (Dadashzadeh et al., 2019), and three studies did not specify gender (Gillespie & Leming-Lee, 2019; Hendrickson, 2022; Stene et al., 2015).

Participants were recruited predominantly through convenience sampling. Only one article used a randomized sample (Gillespie & Berry, 2023), two used a purposeful sample (Al-Natour et al., 2023; Dadashzadeh et al., 2019), and one used a snowball sample (Cabilan et al., 2022). Meanwhile, one study did not mention their sampling plan procedures (Cordenuzzi et al., 2017). Only two studies were guided by a theoretical framework (Chang et al., 2022; Gillespie & Berry, 2023). Thirty-one of the articles used surveys or standardized instruments to collect data. However, only one study used occupational health, security, and employee safety reporting systems to collect and compare data (Lakatos et al., 2019).

Six studies used different qualitative methods to collect data. Three studies used semi-structured focus groups (Burkoski et al., 2019; Cordenuzzi et al., 2017; Dafny & Muller, 2022), two used semi-structured interviews (Al-Natour et al., 2023; Dadashzadeh et al., 2019), and one used mail narrative responses to open-ended structured questions (Gillespie & Berry, 2023).

All studies reported at least one strategy aligned with key elements of the OSHA (2015) guidelines framework. After reviewing the articles, several interventions and strategies were found to mitigate and eliminate WPV in healthcare settings.

Management Commitment and Worker Participation

Administrative commitment and leadership engagement are consistently identified as essential in mitigating workplace violence (WPV) in healthcare settings. Such involvement is crucial for ensuring adequate resource allocation, visible safety measures, and enforcement of anti-violence policies (Al-Natour et al., 2023; Bruccoli, 2023; Burkoski et al., 2019; Cabilan et al., 2022; Carr & Derouin, 2023; Dafny & Muller, 2022; de Barbieri et al., 2022; Gillespie & Berry, 2023; Hemati-Esmaeili et al., 2018; Öztaş et al., 2023; Shea et al., 2018; Xu et al., 2022). Leadership engagement, primarily through the implementation of anti-WPV policies and structured follow-up procedures, enhanced staff trust and safety perceptions (Hendrickson, 2022; Gillespie et al., 2014). Security presence emerged as a core component of this leadership commitment to mitigate violent incidents and increase nurses' perception of safety (Al-Natour et al., 2023; Cabilan et al., 2022; Dafny & Muller, 2022; de Barbieri et al., 2022; Gillespie & Berry, 2023). Nurses described the presence of

trained security personnel as vital in deterring aggressive behaviors and facilitating timely interventions during escalating situations (Cabilan et al., 2022). In some cases, involving law enforcement was also necessary to remove highly aggressive individuals (Cabilan et al., 2022).

Post-incident psychological support was another key leadership-supported strategy shown to enhance recovery and resilience. Post-incident debriefings and access to mental health services were described as effective strategies to promote recovery and restore a sense of safety among nursing staff (Al-Natour et al., 2023; Bruccoli, 2023; Cabilan et al., 2022; Dafny & Muller, 2022; Gillespie & Berry, 2023; Shea et al., 2018). In a quality improvement study, Bruccoli (2023) reported a 35.5% increase in staff safety perception following the implementation of post-incident debriefings. Likewise, Shea et al. (2018) found that hospitals with mandatory WPV training had a 40% higher rate of post-incident debriefing adoption compared to those without formal training. However, several studies' results reported the absence of institutional emotional support systems, which forces staff to rely on personal coping mechanisms and increases the risk of long-term psychological distress (Gillespie & Berry, 2023; Öztaş et al., 2022; Xu et al., 2022).

Technological safety interventions, such as personal duress alarms, also represent a growing area of administrative investment intended to support real-time response during violent incidents. While these systems have been linked to increased staff confidence (Burkoski et al., 2019), their effectiveness may be compromised by issues related to training and usability (Carr & Derouin, 2023). In their study, Carr and Derouin (2023) found that the duress alarm system usage rates were low among nurses, and this was due to device design issues (e.g., bulky or uncomfortable badges), insufficient training, and unreliable security response times. Additionally, many staff members lacked adequate knowledge of how to operate the alarm. Finally, empowering staff through direct participation in prevention efforts also is essential for strengthening their commitment to workplace safety, enhancing engagement, and ensuring the sustainability of WPV interventions. Hemati-Esmaeili et al. (2018) took an innovative approach by involving nurses directly in prevention efforts and designed a new role for violence prevention nurses. This initiative empowered nurses to perform their duties in a safe environment, and the study results indicated that nurses' satisfaction with incident follow-ups improved significantly.

Worksite Analysis and Hazard Identification

Two research studies emphasized walkthrough assessment as a critical strategy for identifying and addressing hazards related to WPV in healthcare settings. In a quality improvement study, Gillespie and Leming-Lee (2019) applied a failure modes and effects analysis (FMEA) framework during a walkthrough assessment of an ED to evaluate weaknesses in the WPV reporting process. Through structured discussions with frontline healthcare workers, primarily nurses, they identified multiple failure modes and systematically assessed each one based on its severity, frequency of occurrence, and likelihood of detection. These three factors were used to calculate a risk priority number (RPN) for each failure mode, where higher scores indicate more significant risk and urgency for intervention. Notably, the failure to report incidents to leadership received the highest

RPN. The staff believed that reporting WPV incidents to leadership would not result in any real action, which was a sign of a lack of trust and poor administrative response. Similarly, Gillespie et al. (2014) integrated walkthrough assessments into a multi-component WPV intervention project implemented in six EDs (three intervention and three control groups) across different hospitals. Their intervention included environmental redesign, development and revision of institutional policies, and delivery of training programs focused on WPV prevention. These assessments enabled dynamic refinements to policies, training, and physical layout based on staff feedback and real-time observations. Employees were actively involved in the iterative development of prevention strategies, which fostered a sense of improved compliance.

Hazard Prevention and Control

Many strategies and procedures can be taken to prevent WPV and control the situation during the incident. The studies discussed different types of hazard prevention and control strategies, including substitution, implementation of engineering controls, and the use of administrative and work practice controls.

Substitution. Substitution involves replacing high-risk interactions with safer alternatives in real time to de-escalate violent situations. Nurses employed tactics such as avoiding aggressive patients or visitors (Cordenuzzi et al., 2017; Dadashzadeh et al., 2019) and relocating violent individuals from the conflict site to reduce harm (Al-Natour et al., 2023; Gillespie & Berry, 2023). In more acute scenarios, various forms of restraint were used: physical (to limit movement), chemical (e.g., antipsychotic drugs), and mechanical (e.g., handcuffs), with the intent of preventing and controlling assaults (Cabilan et al., 2022; Dafny et al., 2022; de Barbieri et al., 2022; Tosswill et al., 2023). While restraints can be effective in preventing harm, chemical restraint use is often limited by the need for physician authorization (Dafny & Muller, 2022). These approaches, although effective in emergencies, may raise ethical and clinical concerns regarding patient autonomy and the potential for overuse.

Implementation of Engineering Controls. Environmental modifications emerged as crucial strategies for WPV prevention. For example, Cabilan et al. (2022) recommended the use of low-stimulus de-escalation rooms to calm agitated patients and prevent escalation. Additional design features such as high-security doors, controlled access points, and safety corridors were also emphasized to facilitate better control of patient and visitor movement in high-risk areas (Cabilan et al., 2022; de Barbieri et al., 2022). Gillespie et al. (2014) included similar environmental interventions in their multifaceted program implemented across three EDs. The results demonstrated notable reductions in WPV incidents. Similarly, Sadatmahaleh et al. (2019) found that the installation of CCTV cameras and improved lighting enhanced surveillance and contributed to a measurable decline in WPV occurrences post-intervention.

The Use of Administrative and Work Practice Controls. Eight studies evaluated interventions that used different administrative tools to control and prevent WPV in healthcare settings. Senz et al. (2021) and Sharifi et al. (2020) found that using risk

assessment tools in the ED resulted in a decrease in WPV incidents, WPV-related security responses, and an increase in nurses' ability to respond to potentially violent patients proactively. In line with this evidence, Burkoski et al. (2019) explored nurses' experiences regarding the implementation of an electronic flagging system that automatically notified staff about behavioral risk indicators from patients' past incidents and clinical presentations. The nursing staff found this intervention effective for both the early identification of potentially violent patients and for efficient communication and timely security personnel response when WPV occurred or was anticipated. The electronic health record alerts provided a common cue to clinical teams, which enhanced situational awareness and improved response coordination (Burkoski et al., 2019). Similarly, Cabilan et al. (2023) developed a multifaceted digital intervention that included a structured risk assessment module integrated into the patient management system. The module helped nurses to support clinical decisions for detecting, recording, and tracking patients who were at risk of WPV. The intervention included e-learning modules that provided staff with tool usage guidance and reinforced the need for regular data entry. Nurses who participated in the intervention reported improved attitudes toward incident reporting, increased system confidence, and higher documentation quality and frequency post-intervention. In a more role-based approach, Hemati-Esmaeili et al. (2018) integrated the violence prevention nurse role in their intervention to evaluate the risk of violent behaviors by patients and their families and evaluate the frequency of WPV. This role was associated with a statistically significant reduction in verbal abuse incidents and nurses' fear of violence.

Another effective administrative strategy involved the implementation of Behavioral Emergency Response Teams (BERTs), which are specially trained, multidisciplinary teams designed to address behavioral health emergencies, including WPV. In a quality improvement study, Hendrickson (2022) introduced BERT as a core component of his comprehensive WPV prevention program. The BERT team, composed of clinicians and security staff, was designed to respond rapidly to behavioral emergencies, de-escalate potentially violent encounters, and support frontline staff in high-stress scenarios. Nurses reported that introducing BERT in the ED improved their perceptions of safety and contributed to a more supportive work environment. Brucoli (2023) also found that BERT activation managed violent patients effectively and facilitated post-event debriefings and staff education. In addition, the results indicated a significant reduction in reported incidents of WPV and an increase in staff perceptions of safety following the intervention (Brucoli, 2023). Similarly, Zicko et al. (2017) observed that introducing BERTs enhanced staff knowledge and confidence in managing psychiatric emergencies as well as reduced incidents requiring restraint or security intervention.

Safety and Health Training

Safety training programs on topics such as de-escalation techniques, WPV procedures, and crisis prevention were the most common interventions across the reviewed studies. Al-Ali et al. (2016) conducted a quasi-experimental study that included a five-session in-person training program for nurses on WPV prevention and management. The program significantly improved nurses' performance in handling WPV incidents but had less impact on attitudes toward legal and safety protocols. In a similar study targeting ED nurses, Kalbali et al.

(2018) introduced a hybrid model that combined a four-hour in-person anger management training with two months of virtual reinforcement. This more intensive approach led to a notable reduction in exposure to physical and sexual WPV. In another study, Hemati-Esmaili et al. (2018) found that the three-day educational seminar training paired with the introduction of a violence prevention nurse role positively affected the verbal abuse rates but not the physical violence rates. In contrast, Story et al. (2020) took a shorter, more general approach in their study by performing a two-hour WPV prevention training for nurses from different units. The researchers noted improved nurse confidence in managing WPV after the intervention. (Calow et al., 2016)

Simulation-based training was another prominent method that helped staff practice real-life conflict scenarios, which enhanced their preparedness and reduced aggression-related incidents. Ming et al. (2019) found beneficial results from the simulation-based WPV training targeted nurses at different nursing units. After a pretest was given to participants, a 3-hour literature-based simulation educational intervention program of real-world scenarios focused on coping with violent conflict situations was introduced, followed by a posttest after the intervention. Researchers noted that nurses' confidence in their ability to manage WPV incidents was increased after the educational intervention. Similarly, Duncan et al. (2021) showed that simulation-based de-escalation training significantly improved participants' capabilities in handling patient aggression. Cai et al. (2023) took a long-term approach by performing a 10-month training program grounded in situational prevention theory. The training involved classroom teaching and scene simulation for nurses from different hospital units. The results indicated a reduction in WPV incidence and severity at three-time points post-training (3-, 6-, and 9-months) compared to baseline. In addition, nurses reported an enhanced ability to anticipate and cope with WPV three- and nine-months post-training. In contrast, Wong et al. (2015) noted that the simulation-based training conducted for ED staff did not affect their attitudes toward management strategies.

Behavior management training also demonstrated strong efficacy in preparing nurses for WPV. De la Fuente et al. (2019) implemented a four-hour behavior management training for nurses to protect themselves from injury and control patients' and visitors' aggressive behavior to decrease harm. Scores for nurses who received the training indicated increased confidence in managing patient/visitor aggression after the intervention compared with pre-intervention. Similarly, Yost et al. (2022) conducted a 60-minute behavior management training program that included evidence-based de-escalation techniques. After training, the results indicated increased staff confidence in managing aggressive situations and reduced WPV rates. Chang et al. (2022) expanded on this by implementing a 12-month training program. Researchers found that their multifaceted training intervention, which involved conflict management, communication, and problem-solving skills, significantly improved nurses' confidence and coping self-efficacy in managing WPV incidents. Lakatos et al. (2019) further contributed to the field by developing the S.A.F.E. Response program, which integrated behavior management training with de-escalation techniques, clinical responses to threats, and structured post-incident debriefing. Data from employee safety, security, and occupational health reporting systems were compared, and the results showed a significant 40% reduction in staff injuries related to WPV after the intervention.

Recordkeeping and Program Evaluation

Recordkeeping and program evaluation are crucial to assess the extent of the issue, appraise various strategies for managing risks, and recognize training requirements. Stene et al. (2015) introduced a simplified reporting tool in their quality improvement study to encourage real-time documentation and help staff and nursing leadership complete the formal WPV incident report later, outside of the actual WPV event. Alongside the tool, the researcher provided a training program on the nature of WPV behaviors, the reporting tool, and how to report WPV incidents. Following the creation and implementation of the reporting tool, each incident reported was addressed by a special committee. The purpose of the reporting tool creation was to establish a database for WPV incidents, which will help identify the problem's severity (Stene et al., 2015). After the intervention, physical and verbal violence was reduced during the year between the first and second surveys. Nurses' perceptions of WPV as part of their job were reduced, and the reporting of WPV incidents increased. Additionally, nurses' knowledge about WPV behaviors and which behaviors should be reported to the police was increased (Stene et al., 2015). Ramacciati et al. (2021) further supported these findings by introducing a smartphone-based application for reporting WPV among ED nurses. The application simplified the WPV reporting process and increased engagement in reporting WPV events. Although there was a modest but significant increase in reporting rates post-intervention, Ramacciati et al. (2021) concluded that technological solutions alone are insufficient to address underreporting.

Comparative Analysis of WPV Prevention Interventions

The review revealed a broad spectrum of interventions aligned with OSHA's (2015) guidelines. However, their differential effectiveness revealed important distinctions in how various strategies influence WPV outcomes and organizational safety culture. To begin with, administrative commitment and leadership engagement emerged as critical components in fostering a culture of safety within healthcare settings. Interventions that involved visible leadership support (i.e., security personnel), enforcement of anti-WPV policies, and the active inclusion of nurses in prevention planning were consistently associated with increased staff perceptions of safety and organizational trust (Al-Natour et al., 2023; Cabilan et al., 2022; Hemati-Esmaeili et al., 2018; Hendrickson, 2022; Gillespie et al., 2014). However, these efforts alone are often insufficient to reduce WPV incidents unless they are accompanied by concrete operational systems and follow-up mechanisms. One such complementary strategy involved the provision of psychological support, including post-incident debriefings and access to mental health services, which played a significant role in promoting staff recovery after WPV events (Al-Natour et al., 2023; Bruccoli, 2023; Cabilan et al., 2022; Dafny & Muller, 2022; Gillespie & Berry, 2023; Shea et al., 2018). However, the effectiveness of these psychological interventions was notably diminished in environments where coordinated administrative support, and structured emotional support systems were lacking (Bruccoli, 2023; Gillespie & Berry, 2023; Öztaş et al., 2022; Shea et al., 2018; Xu et al., 2022). In such cases, even when leadership initiatives were present, the absence of formal support mechanisms often left staff relying on personal coping strategies, limiting both recovery and trust in the system (Öztaş et al., 2022; Xu et al., 2022).

Another foundational strategy identified was worksite analysis, particularly through walkthrough assessments. These approaches did not directly prevent WPV but played a vital diagnostic role by identifying latent systemic risks effectively and enabling targeted interventions aligned with frontline realities (Gillespie et al., 2014). Such participatory analyses fostered staff engagement and provided data-driven direction for institutional reforms. Although worksite analysis alone may not reduce WPV incidents, its value lies in informing targeted, context-sensitive interventions that can enhance long-term system responsiveness.

In contrast, hazard prevention and control interventions, particularly administrative mechanisms such as BERTs and electronic flagging systems, demonstrated a more direct and measurable impact on WPV outcomes. Studies showed that the implementation of BERTs and automated alerts improved staff preparedness, confidence, and coordination during violent incidents (Hendrickson, 2022; Burkoski et al., 2019). Similarly, structured risk assessment tools, especially when integrated into patient management systems, enabled early identification of high-risk individuals and increased staff engagement in documentation and intervention processes (Cabilan et al., 2023). However, these approaches were limited by technical constraints and staff reluctance to engage with new digital tools; thus, these approaches should be reinforced by education and incentives to enhance greater adoption of these tools (Cabilan et al., 2023).

Engineering controls also made a notable contribution, with environmental modifications such as CCTV installation, improved lighting, and de-escalation rooms supporting WPV prevention and rapid intervention in high-risk zones (Cabilan et al., 2022; de Barbieri et al., 2022; Sadatmahaleleh et al., 2019). However, these modifications required high financial investment and site-specific customization. Substitution strategies (i.e., relocating violent patients, using physical and chemical restraints) provided immediate control in crisis scenarios but raised ethical concerns and were often constrained by clinical regulations requiring physician authorization (Dafny & Muller, 2022; de Barbieri et al., 2022; Gillespie & Berry, 2023).

In comparison, the implementation of technological safety measures such as personal duress alarms represents a more reactive form of intervention designed to enable immediate response once a violent incident is underway. While these systems have been associated with increased staff confidence (Burkoski et al., 2019), their real-world effectiveness has been inconsistent. Common challenges limiting the efficacy of these alarms include low rates of staff utilization, insufficient training on device operation, delayed or unreliable security responses, and poor design features (Carr & Derouin, 2023). In contrast to more integrated approaches like BERTs, duress alarms rely heavily on individual activation and functional infrastructure, which makes them vulnerable to failure without strong usability and organizational support.

Training interventions were among the most widely implemented strategies that demonstrated the most consistent improvements in participants' de-escalation skills, situational confidence, and overall preparedness when they were scenario-specific, theory-driven, and reinforced over time (Duncan et al., 2021; Cai et al., 2023; Ming et al.,

2019). In contrast, brief or generic training sessions yielded limited influence on behavioral change or attitudes toward WPV reporting (Story et al., 2020; Wong et al., 2015). Lastly, while recordkeeping tools improved incident reporting and awareness (Stene et al., 2015; Ramacciati et al., 2021), they were most effective when embedded in systems that encouraged follow-up and continuous learning.

Jointly, the evidence indicates that the success of WPV interventions is closely tied to their structure, integration, and level of institutional support. Multi-component programs that combined administrative leadership, environmental controls, real-time response mechanisms, training, reporting systems, and diagnostic tools like worksite analysis were the most effective in reducing WPV incidents and fostering long-term cultural change (Gillespie et al., 2014). Conversely, standalone strategies, whether focused solely on policy, training, or technology, demonstrated limited efficacy when implemented in isolation. This comparative analysis affirms the need for a coordinated and context-sensitive approach to WPV prevention.

Discussion

Various interventions and strategies were used to address WPV in various settings, countries, and segments of the nursing population. The review findings revealed several strategies and interventions aligning with at least one key element of the OSHA guidelines.

Management Commitment and Worker Participation

The findings of this review consistently highlight the critical role of administrative commitment and leadership engagement in addressing WPV against nurses. This aligns with the previous research indicating that administrators' support can decrease the long-term adverse emotional impacts of WPV incidents on nurses' well-being (Han et al., 2021). However, the review also revealed inconsistencies in how such support is delivered across institutions. While some settings implemented structured post-incident protocols, others failed to respond adequately, with nurses' reports of neglect or even blame experienced by leadership following WPV incidents (Dafny et al., 2022; Vogel, 2016). These disparities underscore the urgent need to cultivate organizational cultures in which psychological safety and staff advocacy are prioritized (Christie, 2015). This inconsistency highlights a systemic gap in how leadership translates policy into practice. Future studies should investigate leadership training programs focused on trauma-informed care and evaluate their impact on both staff recovery and incident reporting.

A related and equally important factor is the role of security personnel in enhancing nurses' perceptions of safety. This review confirms that a consistent and visible security presence contributes to faster incident resolution and increased feelings of protection among nursing staff (Gillespie et al., 2019; Christie, 2015). However, the effectiveness of security personnel appears to vary widely depending on their training, visibility, and integration into clinical workflows. For example, Gillespie et al. (2012) found that while some ED nurses viewed security officers as helpful, others reported delayed responses, limited authority to intervene, and poor coordination between security and clinical teams. These findings suggest that the presence of security personnel alone is insufficient. Instead, hospitals must ensure

that security staff are trained in de-escalation, familiar with clinical environments, and fully integrated into WPV prevention protocols. Practical steps include establishing joint protocols between nursing and security leadership, providing routine training, and involving frontline clinicians in the evaluation of security practices.

Another key finding demonstrated by the review is the importance of involving nurses directly in WPV prevention planning. Interventions co-designed with nurses were more acceptable, sustainable, and contextually relevant (Hemati-Esmaeili et al., 2018). Despite this, current practices in developing WPV interventions predominantly rely on theoretical models, expert recommendations, or literature synthesis (Gillespie et al., 2019). While this approach is valuable, researchers may overlook the lived experiences of nurses who regularly face WPV and understand the practical realities of frontline care (Liu et al., 2019). Without integrating nurses' insights into WPV prevention efforts, interventions may be less likely to achieve long-term success. Therefore, future research should explore the impact of participatory WPV intervention models in terms of their effectiveness in improving safety culture, enhancing nurse morale, and ensuring timely incident resolution.

Worksite Analysis and Hazard Identification

Consistent with the previous literature, our review highlighted that walkthroughs can lead to the identification of WPV risks and a measurable reduction in WPV rates (Hamblin et al., 2017). However, the effectiveness of walkthroughs is highly dependent on their depth and quality. In some settings, they are reduced to superficial, checklist-driven tasks with limited staff engagement and follow-up, which undermines their potential. For walkthroughs to achieve meaningful outcomes, they must go beyond passive observation to promote open dialogue, foster psychological safety, and lead to timely, actionable interventions. Challenges to walkthrough implementation include time constraints and the absence of formal cost-benefit analyses, which limit organizational commitment to routine assessments (Hamblin et al., 2017). Despite these barriers, walkthroughs offer a proactive means to uncover latent hazards such as underreporting, breakdowns in protocol adherence, and environmental triggers of aggression (Gillespie et al., 2019). Recognizing their importance, The Joint Commission (2021) recommends that healthcare organizations conduct formal worksite analyses at least annually to identify WPV risks and tailor targeted prevention strategies systematically. When designed and executed with intention, walkthrough assessments can enhance institutional learning, build staff trust, and reinforce the sustainability of WPV prevention efforts.

Hazard Prevention and Control

This review highlights several WPV prevention strategies, each with distinct advantages and limitations. Aligning with previous literature, substitution strategies such as physical, chemical, and mechanical restraints are commonly employed to manage violent behavior when the safety of staff or patients is compromised (Vieta et al., 2017; Cunha et al., 2016). Although they are effective for immediate control, these interventions carry significant risks, including patient injury, agitation escalation, and ethical concerns (Chou et al., 2020; Arnetz et al., 2015). In addition, their use is often delayed (especially chemical restraints) due to physician authorization requirements; thus, preemptive orders have been suggested

to address this (Dafny & Muller, 2022). These findings underscore that while restraints may offer short-term control, they should remain a last-resort option, used only within a clearly defined clinical and ethical framework. A practical alternative includes creating safe, low-stimulation spaces, such as padded rooms free of objects, where patients can de-escalate without physical force (Gillespie & Berry, 2023).

Environmental modifications also emerged as effective preventive measures. Design features such as de-escalation rooms, CCTV, controlled access points, and improved lighting have been shown to reduce WPV by increasing surveillance and limiting sensory overload for high-risk patients (Braitberg et al., 2018; Morphet et al., 2018). However, such infrastructure improvements can be cost-prohibitive, especially in resource-limited settings (Blando et al., 2015). Future research should prioritize identifying cost-effective environmental modifications that can be feasibly adopted in low-resource environments.

Consistent with existing literature, administrative and work practice controls, such as risk assessment tools, were also widely reported as effective strategies for WPV prevention. These tools were used to identify patients at high risk of aggression and enable early de-escalation and proactive safety planning (Calow et al., 2016; Daniel, 2015; Sammut et al., 2023). In addition, their use was associated with a reduction in both restraint application and WPV-related injuries, while enhancing nurse preparedness and the overall quality of care (Daniel, 2015). However, the effectiveness of these tools relies heavily on the adequacy of staff training and consistency in use (Cabilan et al., 2023). To enhance utility, future research should focus on the development of electronic risk assessment systems that are user-friendly, embedded into electronic health records, and capable of generating real-time alerts.

In line with the literature, BERTs were found to be a promising strategy designed to respond rapidly to behavioral crises and have been shown to improve staff safety, reduce the need for restraints and security involvement, and enhance staff satisfaction and confidence in managing behavioral symptoms (Lopez, 2019; Rajwani et al., 2022). In contrast, Kim et al. (2024) found that while signage for high-risk patients reduced WPV incidents, the addition of proactive BERT huddles (pre-incident planning meetings) did not significantly improve outcomes beyond what was achieved through standard administrative measures. These discrepancies suggest that while BERTs can enhance preparedness, the value of their proactive components may vary depending on context and available resources. Future studies should examine how organizational factors such as leadership support, team structure, and integration with other WPV protocols influence the effectiveness of BERT implementation.

Safety and Health Training

Training nurses to manage WPV is widely recognized as a foundational component of any effective prevention strategy. The majority of studies included in this review reported positive outcomes, suggesting that training interventions increase nurses' confidence and ability to respond to violent incidents (Al-Ali et al., 2016; Cai et al., 2023; Chang et al., 2022; de la Fuente et al., 2019; Duncan et al., 2021; Hemati-Esmaeili et al., 2018; Kalbali et al., 2018; Lakatos et al., 2019; Ming et al., 2019; Sadatmahaleh et al., 2019; Story et al., 2020; Wong et al., 2015; Yost et al., 2022). These findings are consistent

with broader literature that affirms the role of training in enhancing nurses' skills to recognize, de-escalate, and respond appropriately to WPV (Portela Dos Santos et al., 2022). However, despite the overall positive trends, inconsistencies were noted in the reported effectiveness of different training formats and durations. For instance, while some simulation-based and multi-session interventions demonstrated substantial improvements in nurses' confidence and de-escalation skills (Duncan et al., 2021; Cai et al., 2023), others, particularly those of shorter duration or generic content, showed limited impact on behavior change or long-term outcomes (Story et al., 2020; Wong et al., 2015). These disparities may be attributed to variations in content relevance, instructional design, delivery methods, and participant engagement. Moreover, several studies relied on self-reported outcomes measured immediately after training, which raises questions about the sustainability of learning over time. A further complicating factor is the limited use of validated assessment tools and the absence of control groups in many training evaluations, which weakens the evidence base.

In practice, while theoretical and skills-based instruction can raise awareness and promote preparedness, nurses often report barriers to applying these skills, such as time constraints, competing clinical priorities, and organizational culture (Goodman et al., 2020). These conditions may lead some nurses to perceive training as a procedural requirement rather than a valuable, practice-enhancing resource, especially when institutional leadership fails to reinforce WPV prevention priorities. Therefore, WPV training must be integrated into routine workflows and tailored to reflect the realities of high-stress clinical environments to improve real-world applicability. Interactive, scenario-based methods that mirror actual clinical situations and foster reflection and dialogue are more likely to be internalized and applied. Moreover, while the studies in the review support short-term benefits, there remains a lack of longitudinal data examining whether nurses' knowledge, confidence, and behavioral changes persist over time. Future long-term follow-up research that assesses sustained impact on staff behavior, incident reporting, and patient outcomes is needed.

Recordkeeping and Program Evaluation

The review results highlighted the importance of establishing a standardized reporting system to accurately measure the frequency, nature, and severity of WPV incidents. While several studies emphasize the value of reporting in identifying trends and guiding institutional responses (Stene et al., 2015; Al-Turki et al., 2016), empirical evidence suggests that such systems are often underutilized in practice. For example, Cai et al. (2024) reported a prominently low WPV reporting rate of only 16.1% among nurses, despite institutional mandates. Similarly, Elsharkawy et al. (2025) found that nurses often refrained from reporting due to emotional distress, normalization of WPV, and the absence of meaningful managerial follow-up. Nurses' lack of knowledge about reporting procedures, concerns about time consumption, or fear of reprisal further exacerbate underreporting (Gillespie & Leming-Lee, 2019; Elsharkawy et al., 2025). These findings highlight that the success of reporting systems is not solely dependent on their technical features but also on broader institutional dynamics and staff perceptions. On the other hand, evidence suggests that digital tools, such as mobile or integrated electronic health record (EHR) systems, can streamline the reporting process and improve compliance, particularly when

they are designed with usability and time-efficiency in mind (Ramacciati et al., 2021). Thus, allocating financial resources is crucial for managers to adopt an innovative reporting system in their facilities. In addition, leadership must actively promote a non-punitive reporting culture, provide timely feedback, and demonstrate that reports are met with substantial action to encourage WPV reporting.

Limitations

This review has several limitations that should be considered when interpreting the findings. A key limitation is the lack of long-term follow-up data in many of the included studies, which restricts our understanding of the sustainability and enduring effectiveness of the reported interventions. Additionally, methodological heterogeneity, such as differences in study design, outcome measures, and tools used to assess WPV, complicated cross-study comparisons and limited the ability to draw consistent conclusions.

Another notable limitation is related to the search strategy. Although it was developed in collaboration with a health sciences librarian and included Medical Subject Headings (MeSH) and controlled vocabulary terms to maximize comprehensiveness, the search did not explicitly include terms such as “strategies.” While intervention-related terms like “training,” “education,” and “program” were used and yielded relevant results, the absence of the word “strategy” could have led to the omission of some pertinent studies. This highlights the importance of continuously refining search terms in future systematic reviews to ensure broader coverage of the literature. The review also was limited to English-language publications, which may have excluded relevant studies from non-English-speaking countries and potentially reduced the global generalizability of the findings. Although the included studies were conducted across a range of geographic settings, this language restriction may have introduced bias. Furthermore, the review relied solely on database searches, which may have resulted in the exclusion of gray literature, such as unpublished studies or organizational reports that might contain valuable data on WPV interventions. Despite these limitations, this review offers a comprehensive synthesis of WPV interventions aligned with OSHA’s (2015) framework. It contributes valuable insights to inform policy, practice, and future research in diverse healthcare settings.

Conclusion

This review identified a range of interventions designed to prevent and manage WPV against nurses, with staff training, administrative support, and hazard prevention measures emerging as the most consistently implemented and reported strategies. The findings highlight that while training improves confidence and preparedness, its effectiveness depends on organizational support, integration into clinical workflows, and sustained follow-up. Moreover, the absence of managerial support and limited psychological care for nurses post-incident were recurrent gaps that indicate an urgent need for institutions to strengthen their post-WPV response systems. Another key finding was the limited involvement of frontline nurses in the development of interventions, which may limit their practical relevance and long-term success.

In clinical practice, these results suggest that WPV prevention efforts should adopt a multifaceted approach that includes robust leadership, nurse-led planning, environmental design, and real-time support systems. Reporting systems must be accessible, supported by leadership, and embedded in a culture of safety to be effective. For future research, there is a clear need for longitudinal studies assessing the sustainability and real-world impact of interventions. In addition, efforts should also be made to develop psychometrically sound instruments to assess WPV risk, prevalence, and reporting behavior. Finally, collaborative action among researchers, healthcare leaders, frontline staff, and policymakers is essential to design, implement, and evaluate context-specific strategies that can sustainably reduce WPV in healthcare environments worldwide.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments:

Gordon L. GILLESPIE was supported by the National Institute for Occupational Safety and Health through the University of Cincinnati Education and Research Center (No. T42OH008432). The authors wish to acknowledge Lynn Warner, M.L.S., Assistant Librarian, University of Cincinnati, for conducting the initial search and importing citations into Rayyan for the conduct of this integrative review, as well as Kermit Davis, PhD, and Elizabeth Bien, PhD, RN (ORCID: <https://orcid.org/0000-0003-1978-8996>), for their critique of this manuscript.

Funding Statement:

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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What does this paper contribute to the wider global clinical community?

- Emphasizes the need to provide more comprehensive managerial support for nurses after workplace violence incidents.
- Calls for global attention to involving nurses in workplace violence intervention design to ensure more sustainable safety strategies.

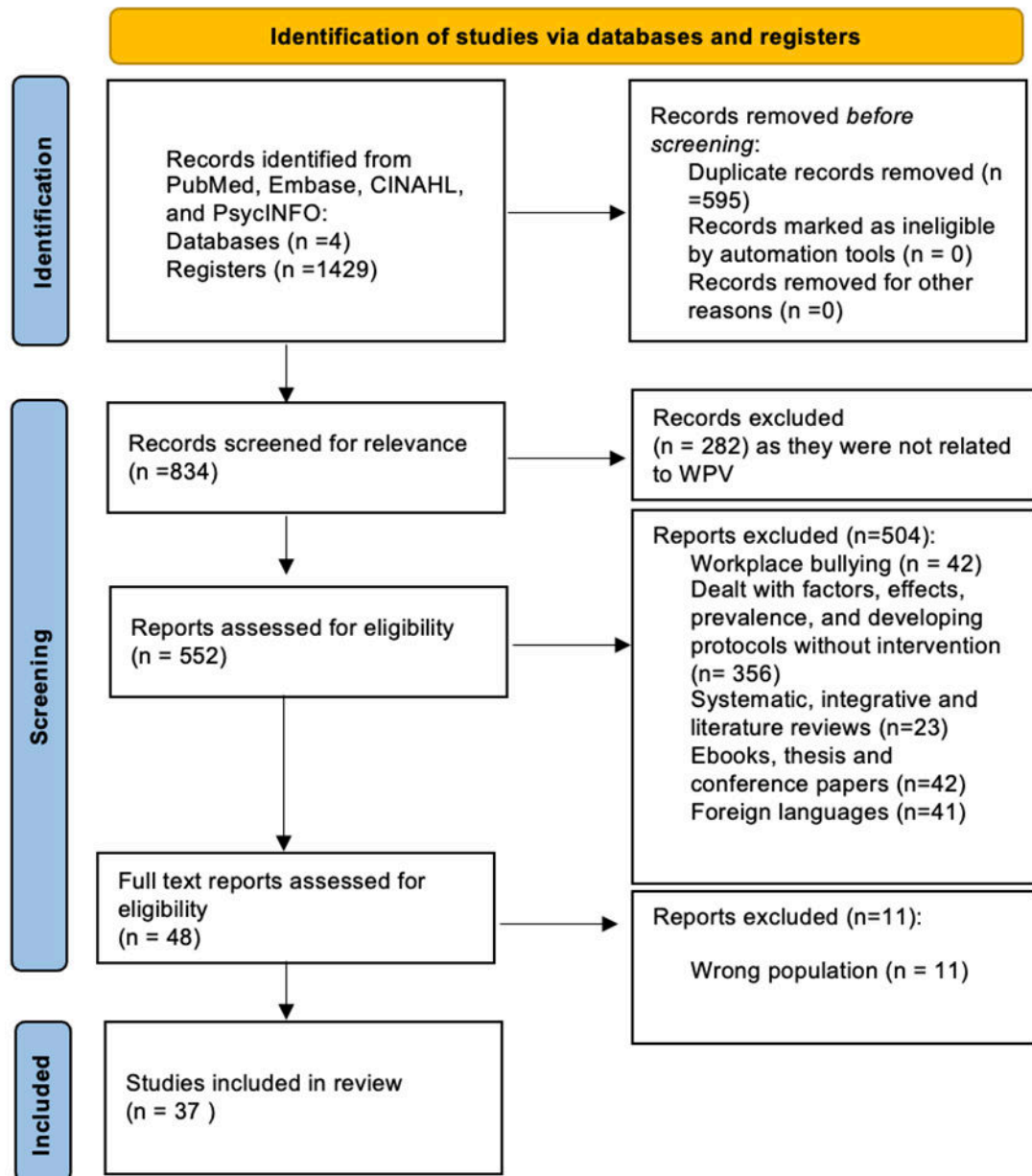


Figure 1. PRISMA diagram of screening and exclusion process.