

WHAT WORKS: CRIME REDUCTION SYSTEMATIC REVIEW SERIES

No 14. PERSONAL SECURITY ALARMS FOR THE PREVENTION OF ASSAULTS AGAINST HEALTHCARE STAFF: PROTOCOL FOR A SYSTEMATIC REVIEW

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ABSTRACT

Background

Personal security alarms may send a deterrent message to potential offenders, while also increasing personal confidence and decreasing fear of assaults.

Objectives

To conduct a systematic review of the effect of personal security alarms in reducing the incidence and or severity of assaults.

Search Strategy

We will search 23 electronic databases including: Cochrane Library, Ovid MEDLINE(R) Embase Classic + Embase (OvidSP); CINAHL Plus (EBSCO); PubMed; PsycINFO (OvidSP) PsycEXTRA; Applied Social Sciences Index and Abstracts (ProQuest) (1987 to current); ERIC; ProQuest Criminal Justice; Criminal Justice Abstracts (EBSCOhost); Psychology and Behavioural Science Collection (EBSCOhost); Social Policy and Practice (OvidSP) Sociological Abstracts; Dissertations and theses online (UK and Ireland). We will search the websites and publications for additional reports and other grey literature.

Selection Criteria

Study designs eligible for inclusion will be randomised controlled trials, interrupted time series and controlled before-after studies that assess the impact of personal security alarms on assaults. We will include studies of healthcare staff in all settings (i.e. including staff working in confined spaces such as hospitals; and including field personnel such as community health workers) and other settings where there is high risk of assault. We will exclude workplace violence between colleagues.

Data collection and analysis

We will screen studies for inclusion, extract data from full text reports, and assess the methodological quality of included studies. The primary outcome will be physical assaults (recorded or self-reported). Secondary outcomes will include time off work, depression; increased confidence or self-efficacy in violence prevention (recorded or self-reported). We will seek data from the included studies on mechanism, moderators, implementation and economics, including costs of providing the intervention. We will report study outcomes and calculate standardised results based on the information available in each study.

BACKGROUND

Violence against NHS staff

Violence against healthcare staff is a major problem. In a 2010 survey, between 5% and 8% of frontline NHS staff reported being physically assaulted by patients or other service users in the previous 12 months¹. Such assaults against NHS staff are increasing annually. During 2013-14 a total of 68,683 physical assaults were reported, resulting in 1,649 criminal sanctions. Nurses are four times more likely to experience assaults than any other worker, with student nurses and those in psychiatric and learning disability areas at highest risk.² One quarter of assaults are reported in acute wards and 69% in mental health and learning disability.

Impacts of violence on staff include pain, time away from work, depression and low self-esteem; impacts on the NHS include loss of personnel for significant amounts of time and resignations.³ Violence and abuse against staff present substantial costs to the NHS through additional staff training, security, staff absenteeism, poor staff retention, and legal fees. Direct financial costs of £69 million per annum have been attributed to physical and non-physical violence and aggression in the NHS.⁴ The cost of physical assaults during 2007-08 was estimated at £60 million.⁵

An increase in risk of assaults on NHS staff is suggested to be due to factors including: inadequate security, staff shortages, night-shift patterns, and the intensity of interactions with patients.⁶ Other contributory factors are: patient mental health, patients under the influence of alcohol or other drugs, waiting time and delays, problems understanding information, anxiety caused by practical issues (e.g. transport and parking), and an increase in expectations of standards of service which may not be met.^{1, 7}

Interventions

In preparing this research protocol, a rapid assessment of the literature was made using exploratory searches. It found many studies that have defined the problem of assaults against staff in the healthcare setting, and many studies that have estimated the prevalence of such attacks. However, there was a paucity of primary research into interventions to prevent violence. Our exploratory literature searches suggest that interventions to prevent violence against healthcare staff may be broadly classified as:

- Environmental (e.g. staffing numbers; CCTV; fixed emergency alarms; personal security alarms; security guards; police officers in A&E; making building access more secure for staff; ambient environments, proper lighting and calming décor; facilities for children, e.g. play area);
- Practices and policies (e.g. legislation such as the Criminal Justice and Immigration Act 2008; NHS PARS and SIRS; ‘zero tolerance’ approach policies);
- Staff skills (e.g. NHS conflict resolution training; verbal techniques; prevention and recognition strategies; staff attitudes, knowledge and skills).⁸

Key measures identified by NHS Protect to reduce violence in healthcare settings include⁹: conflict resolution training¹⁰; physical assault reporting system (PARS) and serious incidents reporting system (SIRS); measures to tackle nuisance behaviour; and guidance on the prevention and management of challenging behaviours in NHS settings. A 2003 report from the National Audit Office identified a variety of security measures in place across NHS trusts; panic alarm systems (in 85% of trusts); closed-circuit television (CCTV) (in 92% trusts); security staff (40%); police presence (20%) and other measures (17%) including restricted access, security screens in reception areas and mobile phones for lone workers.⁴

Personal security alarms to prevent assaults

Personal security alarms are used across NHS trusts. A Health & Safety Commission report¹¹ outlined three types of alarm system:

- ***Panic button systems*** are hardwired buttons placed in locations where there is a high risk of violence. Their activation triggers an alarm on a monitoring console. These may be useful in treatment and consulting rooms, where their location is known only to members of staff¹¹.
- ***Personal security alarms*** range from simple ‘shriek’ devices, designed to shock or disorientate an attacker to give time to get away, to a component in a monitored system. Some experts advise personal audible alarms are more suitable for outdoor use due to potential risk of escalating a situation indoors. One report considers alarm systems that rely on the use of whistles or screams are ineffective and dangerous in in-patient or psychiatric settings and coded, silent alarms triggering a response (as with a panic button) are more desirable in this setting, but that

personal security alarm or noise devices should be highly recommended for field personnel (e.g. community health workers).¹²

- **Complex personal alarm systems** include personal alarms linked to fixed detection systems e.g. by radio or infra-red. Components may include panic buttons (linked to switch board and/or police) and portable personal devices (linked to central system with location information).

Personal security alarms may send a deterrent message to potential offenders, while also improving staff confidence and decreasing fear. A further NICE report¹³ suggested that personal security and fixed alarms along with communication devices are a useful way of preventing violent behaviour and protecting staff where it occurs, but that there is a lack of research in this area.

How might personal security alarms reduce assaults?

The use of a passive (unmonitored) audible alarm is primarily intended to disarm and disorientate an offender giving the victim time to get away. To be effective it is suggested that the noise emitted is greater than 130 decibels (ideally around 138 decibels) and sounds continuously, to avoid similarity to other more frequently heard car alarms.¹⁴

Farrell et al conducted research into the use of monitored quick-response pendant alarms, linked to police control rooms, to reduce repeat victimization for domestic violence.¹⁵ Farrell highlighted a number of preventative effects that may arise from their use, which may apply to their use in other contexts:

1. Direct incapacitation – alarm activation prevents assault;
2. Indirect incapacitation – alarm activation leads to arrest of offender preventing further assaults during detention;
3. Specific deterrence – potential offenders are aware of personal alarm and as a result do not offend;
4. General deterrence – potential offenders aware of a scheme to equip staff with personal security alarms and therefore avoid offending as a result.

For this review we plan to search for studies in electronic databases and the grey literature relevant to NHS or healthcare settings. However, to estimate the effectiveness of personal

security alarms in healthcare settings, we will broaden our searching to include any evaluations in other high risk settings and relevant occupational settings.

The British Crime Survey identifies occupational groups as being at most risk. The 2013/14 Survey estimated the average risk of violence at work to be 1.2%. The Survey identified workers in protective service occupations (e.g. police officers) as being at 8 times the average risk for being assaulted or threatened at work, while healthcare professionals have a higher than average risk of 3.1%. These occupations have consistently been reported over a number of years as being at high risk. Other professions with a higher than average risk include transport and mobile machine drivers at 3.0%.¹⁶

We will therefore search for studies in *any* settings which may include both mobile and field personnel (e.g. paramedics and community health workers) and those working in confined spaces (e.g. hospitals, mental health units, and GP surgeries).

Aims

A systematic review will be conducted to evaluate the evidence underpinning the use of personal security alarms with the aim of reducing the incidence of assaults against healthcare and other high-risk staff. For each evaluation study identified, we will describe: participant characteristics, setting, recruitment methods, theoretical basis used in designing interventions, intervention implementation, delivery, and outcomes. Where well-designed controlled evaluations have been conducted, we will include estimates of the effect of interventions on the defined primary outcomes (e.g., reduced police-reported and self-reported assaults on staff) and secondary outcomes (e.g., days off work).

Where included studies provide details, we will extract information using the EMMIE framework¹⁷. The EMMIE acronym encapsulates the types of evidence studies might provide which could inform improved decision-making (Sidebottom et al, 2015) and includes effect, mechanisms, moderators, implementation and economic costs of intervention. The framework was designed to give consideration to a broader range of issues, in addition to the traditional effect of an intervention, to cover key information pertinent to crime prevention practitioners and policymakers.¹⁷ For each study we will describe the setting, theoretical basis for the intervention, characteristics, and outcomes. We will summarise costs of the programmes if economic data are available.

METHODS

Criteria for considering studies

We will consider all studies which include interventions that have undergone controlled evaluation.

Types of studies

We will include both experimental and observational studies: experimental study designs will be used to provide evidence of effectiveness, and may include controlled-before-after studies, controlled interrupted time series, controlled trials and randomised controlled trials. Observational study designs will be included to provide details of process, estimates of association with outcomes, uptake and acceptability, and may include cohort, cross-sectional, or case-control studies.

Types of population

Inclusion criteria:

- Healthcare staff in all settings (i.e. including staff working in confined spaces such as hospitals; and including field personnel such as community health workers);
- Other settings with high risk of assault.

Exclusion criteria:

- Workplace violence between colleagues

Types of interventions

Personal security alarms (to include mobile and fixed, monitored and passive personal alarms).

Types of outcome measures

Primary outcome measures

The primary outcome variable will be a reduction in physical assaults (recorded or self-reported). The period over which this variable relates will likely vary by study and so all periods will be included.

Secondary outcome measures

The secondary outcome variables will include other recorded or self-reported measures such as staff pain, time away from work, depression and low self-esteem; increased confidence or self-efficacy in violence prevention.

Other data

We will extract data from the included studies on mechanism, moderators, implementation and economics, including costs of providing the intervention.

Identification of eligible studies and data extraction

Our search methods will comprise four parts: first, we will search electronic bibliographic databases for published work (see below for electronic databases to be searched); secondly, we will search the grey literature for unpublished work; thirdly, we will search trials registers for ongoing and recently completed trials; finally, we will screen reference lists of published studies, and contact authors and specialist groups to enquire about unpublished studies. The sources to be searched have been chosen based on their coverage of the topic.

Electronic sources

In order to reduce publication and retrieval bias we have not restricted our search by language, date or publication status. We will search the following:

1. Cochrane Library (latest issue);
2. Ovid MEDLINE(R), Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid OLDMEDLINE(R) (1946 to present);
3. Global Health (OvidSP)
4. CINAHL Plus (EBSCO) (1937 to present);
5. PubMed (Present);
6. PsycINFO (OvidSP) (1806 to present);
7. ISI WOS: SCI-EXPANDED (1970) & CPCI-S (1990) to current;
8. PsycEXTRA (1908 to current);
9. Applied Social Sciences Index and Abstracts (ProQuest) (1987 to current);
10. Criminal Justice Abstracts (EBSCOhost) (current);
11. Social Policy and Practice (OvidSP) (current);
12. International bibliography of the social sciences (1951 to current);
13. Sociological Abstracts (1952 to current);

14. ProQuest theses and dissertations;
15. Northern Light (conference abstracts);
16. PROSPERO

Other sources

We will search the following websites and publications for additional reports and other grey literature:

1. Open Grey (<http://www.opengrey.eu/>)
2. National Criminal Justice Reference Service (<https://www.ncjrs.gov/>)
3. Campbell Systematic Reviews
(<http://www.campbellcollaboration.org/lib/?go=monograph>)
4. NICE (National Institute for Health and Care Excellence)
(<http://www.evidence.nhs.uk/>)
5. TRIP (<https://www.tripdatabase.com/index.html>)
6. National Police Library Catalogue
7. POLKA – Police Online Knowledge Area

We will also perform an internet search, using the Google search engine, to search for grey literature and organisations related to prevention of violence to health service staff. The Ovid MEDLINE(R) search strategy (Appendix 1) will be adapted as necessary to search all other listed sources including the internet search.

Screening and review process

All studies identified through the search process will be exported firstly to the EndNote bibliographic database for de-duplication. Once duplicate records have been removed the records will be imported into EPPI-Reviewer 4 software for screening and coding. This will allow the team to manage coding tasks, assess inter-rater reliability, and share the results (within the consortium and externally). Two review authors will independently examine the titles, abstracts, and keywords of electronic records for eligibility according to the inclusion criteria above. Results of this initial screening will be cross-referenced between the two review authors, and full-texts obtained for all potentially relevant reports of studies. Full-texts of potentially eligible studies will go through a secondary screening by each reviewer for final

inclusion in the review, with disagreements resolved by discussion with a third author. Reference lists of all eligible trials will be screened for further eligible studies.

Data extraction

Two review authors will independently code and extract relevant data using a standardised data coding set (*to be prepared once studies are identified*). Corresponding authors of studies will be contacted directly if the required data are not reported in the published manuscript.

ANALYSIS

Descriptive analysis

We will describe all studies that meet the inclusion criteria, including:

1. Study design

- Study design; quality
- Data collection methods, modes, and techniques; validity of tools
- Statistical and other analyses

2. Participants

- Health care occupations
- High risk occupations

3. Components of intervention

- Country, city
- Setting
- Theoretical basis used in programme design; postulated mediators
- Inputs
- Comparator (if a controlled evaluation)

4. Outcomes

- Primary outcomes (e.g. reduction in physical assaults, recorded or self-reported)
- Secondary outcomes (e.g. time away from work)

Assessment of risk of bias in included studies

In a review of quality assessment tools for non-randomised studies six tools were identified that were considered to be useful for systematic reviews.¹⁸ For this review, we will use a modified framework of one of these tools from the 'Effective Public Health Practice Project'.¹⁹ We will assess the methodological quality of the study designs and describe each included study against the following criteria: Allocation to intervention/control; Confounders; Blinding; Data collection methods; Attrition; Fidelity; and Follow up.

Statistical analysis

Where estimates of effect are available we will use statistical software (Stata version 14) to conduct a meta-analysis. If the included studies are sufficiently similar (i.e. comparable participants, interventions, and outcomes) we will pool the results using a fixed or random-effects meta-analysis, with standardised mean differences (SMDs) for continuous outcomes and odd ratios for binary outcomes, and calculate 95% confidence intervals for each outcome. Heterogeneity among the study effect estimates will be assessed using a chi-squared test at a 5% significance level and the I^2 statistic, the percentage of between-study variability that is due to true differences between studies (heterogeneity) rather than due to sampling error. We will consider an I^2 value greater than 50% to reflect substantial heterogeneity. We will use a random-effects meta-analysis if there is evidence of heterogeneity. We will also conduct sensitivity analyses in order to investigate possible sources of heterogeneity due to study quality (adequate vs. inadequate allocation concealment; low vs. high attrition). In the absence of sufficient homogeneity, we will present tables of the quantitative results instead of pooling study results in a meta-analysis. Details of each programme will be presented in a table of study characteristics.

STAKEHOLDER INVOLVEMENT

Involvement of NHS staff has been an important part of the development of this protocol. Jason Pott, Lead Research Nurse in the Emergency Department of the Royal London Hospital, has provided advice to the investigative team in the protocol development (Appendix 2). In our experience, user input is particularly valuable in considering outcomes of interest to users, and identifying preferred methods of disseminating results to user groups.

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APPENDIX 1: SEARCH STRATEGY

Ovid MEDLINE(R), Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid OLDMEDLINE(R)

1. Aggression/
2. violence/ or workplace violence/
3. Verbal abuse.mp.
4. Physical abuse.mp.
5. Dangerous Behavior/

6. anger/ or frustration/ or hostility/
7. (language adj3 (menacing or discrimin* or insult* or abuse or threat*)).ab,ti.
8. (workplace adj3 (disturb* or violence)).ab,ti.
9. (violen* or aggress* or hostil* or fight* or abuse* or accident* or assault*).ab,ti.
10. ((physical or verbal) adj3 (attack* or threat* or abuse* or violence or aggression or insult*)).ab,ti.
11. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10
12. ((personal or fixed or portable or emergency) adj3 (alarm* or device*)).ti,ab.
13. ((staff or employee*) adj3 (safe* or protect* or secur*)).ti,ab.
14. risk management/ or safety management/ or security measures/
15. Rape/pc [Prevention & Control]
16. Sex Offenses/pc [Prevention & Control]
17. ((panic or alarm or help or SOS) adj3 (bell* or button*)).ti,ab.
18. ((warning or security or alert*) adj3 device*).ti,ab.
19. 12 or 13 or 14 or 15 or 16 or 17 or 18
20. 11 and 19

Notes:

[mp.=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]

APPENDIX 2: STAKEHOLDER INVOLVEMENT

Involvement of NHS staff has been an important part of the development of this protocol. Jason Pott, Lead Research Nurse in the Emergency Department of the Royal London Hospital, provided advice during its development. He told us that violence against staff is multifaceted and he believes a broad approach would be most effective in prevention.

“The Emergency Department is a complex and stressed environment where patients are not in control and are ‘at the mercy of staff’. [Waiting] time is a major factor, in addition to intoxication and pain... there are a number of flash points which can trigger aggression.. Any intervention has to be considered to terms of its practical application within the ED.”

Jason estimates that physical assaults on staff occur weekly in the ED at Royal London and verbal assaults occur daily. There is a pervasive culture that this is the accepted norm and particularly in ED, while tolerance may be lower in inpatient and outpatient settings. It is a uniquely high stress/risk environment (the Royal London ED has 14-16 nurses for 450 patients per day, and up to 50 patients in the department at one time). Factors making assaults likely include high emotions and anxiety (for patients or relatives) and aggressive language is commonly used and accepted.

“The system that is implemented needs to be whole system...there needs to be agreement from all stakeholders on how all parties will uphold an approach. Inconsistency weakens all the members of the team and prevents the public from seeing the zero tolerance approach. Red-carding from A&E is almost unheard of, and those who are removed are rarely physically violent, but are chronic patients with complex needs which is more concerning.”

Jason commented on the range of interventions that have been proposed to reduce violence against NHS staff.

Environmental factors

CCTV – this is widely implemented and has its usefulness but requires monitoring and is often under resourced. There would be resistance from nursing staff to have these and they could not be used in cubicles where risk is highest, to protect patient privacy.

Fixed emergency alarms - in the past, personal security alarms have been issued to ED staff at the Royal London, but these were often forgotten, misplaced, and handover after each shift was inefficient. Fixed call alarms in cubicles might be a better solution (current ‘arrest’ alarms do not provide location information).

Security guards – are well utilised in the Royal London ED, they are effective and engage well with staff but are anxious about clinical issues and their role in restraint of patients this makes them cautious when considering removing patients. Security staff are only able really to act under instruction of the clinical staff which requires resources to manage.

Police officers – police presence in the ED was an effective policy but cannot be resourced. Some clinical staff feel poorly supported by the police in real situations.

Building access - Most EDs have worked hard to lock down departments and the new emergency department at Royal London has restricted access doors. This is an ongoing struggle and is impossible to police because patients often arrive with other people and this needs to be tolerated.

Ambient environments, lighting and calming décor - Décor is challenging and if hospitals are managed through a PFI then the Trust does not have control of the decoration. Lighting is always well lit, possibly aggressively so.

Practices and policies

NHS Security Incident Reporting System (SIRS) – is an electronic tool to report security incidents on the premises to *NHS Protect*, to aid in detecting and preventing crime in a national, regional and sector specific context.

Jason told us there is a strong feeling that violence and aggression in Emergency Department remains under-reported. Verbal aggression is almost never reported to the police; and where reported there is often a resistance to arrest anyone, or at least there is inconsistent treatment of offenders. There have been accounts of police reluctance to take patients who may have mental/physical health issues. There is also some reluctance from ED staff to report anything but the most serious cases to the police, due to the resources required to report and give statements (i.e. to maintain patient care in a busy ward they cannot afford staff to be away from patients for 40 minutes to report an incident). Incidents may be reported but are often not escalated to the police. Reporting needs to be supported at different managerial levels, allowing for whether a patient's ill health is a contributory factor.

'Zero tolerance' policies – Policies are only partially implemented (i.e. physical aggression, but not verbal aggression). The zero tolerance message does not seem to deliver on the 'shop floor', it seems to be a 'headline' policy and doesn't deter those individuals who are most likely to offend against NHS staff. There is also poor implementation and support for the policy: the core 'quality' indicators, upon which EDs are judged, include things such as admission/discharge times, times for triage from ambulance, patient satisfaction; while violence against staff is not included.

Staff skills

The NHS provides compulsory one day *Conflict Resolution* training to all front-line staff. The training includes components of self-defence, personal awareness, conflict avoidance techniques, 'proportional force' and reinforcement that staff should not expect to be hit. It costs around £250 to send a nurse on the one day course. In addition all ED staff have 'de-escalation' and breakaway training.

APPENDIX 3: RESULTS OF SCOPING SEARCH

SHORT TITLE	STUDY TYPE	INTERVENTION	OUTCOME		OUTCOME MEASURE
			Violence	Attitudes, perception, knowledge, self efficacy	
Staff Training					
Irvine (2007)	RCT,CRT	<i>Internet-based interactive training</i>		X	self reported <i>interviews and video situations testing</i>
Irvine (2012)	RCT,CRT	<i>Internet training</i>		X	self reported
Beech (2003)	QE	<i>3 day learning unit for student nurses on the "prevention and management of aggression"</i>		X	self reported
Beech (2008)	QE	<i>Aggression prevention and management training programme</i>		X	self reported
Deans (2004)	QE	<i>One day training programme for ED nurses</i>		X	
Doyle (2001)	QE	<i>Comparing training techniques: poster session format (PSF) with the traditional film discussion format (FDF) on post-test scores using the Violence in the Workplace Knowledge Test (VWKT)</i>		X	self reported <i>Violence in the Workplace Knowledge Test</i>
Martin (1995)	QE	<i>Aggression Management Program</i>	X		recorded violence
McConville (2006)	QE	<i>Evaluate the effectiveness of video clip materials for enhancing nursing student's self-efficacy</i>		X	self reported
Middleby-Clements (2007)	QE	<i>Aggression minimization training compared to same training with zero tolerance approach to aggression minimization zero tolerance policy</i>		X	self reported
Nau (2010)	QE	<i>Aggression management training programme for nursing students</i>		X	performance score <i>De-escalating Aggressive Behaviour Scale (DABS)</i>
Needham (2005)	QE	<i>Effect of a training course on nursing students' attitudes toward, perceptions of, and confidence in managing patient aggression</i>		X	self reported
Pereira (2014)	QE	<i>Two elective courses on Prevention and Assistance to violence victims (10hrs and 30hrs)</i>		X	self reported
Hills (2008)	other	<i>Aggression management training</i>			
Nachreiner (2005)	other	<i>nurses that reported being trained in occupation violence (including 7 training topics) Minnesota Nurses Study</i>	X		self reported
Oostrom (2008)	other	<i>aggression management training program</i>		X	self reported

SHORT TITLE	STUDY TYPE	INTERVENTION	OUTCOME		OUTCOME MEASURE
			Violence	Attitudes, perception, knowledge, self efficacy	
Reviews Anderson (2010) Flannery (2000) Henson (2010) Holmes (2006) Kynoch (2011)	review review review review review	<i>Interventions grouped as environmental, practices and policies, or skills</i> <i>Effectiveness of ASAP (Assaulted Staff Action Program - a Critical Incident Stress Management approach) in reducing frequency of assault</i> <i>Analysis to utilize techniques of situational crime prevention to develop an effective and easily applicable crime prevention strategy for hospital EDs</i> Zero tolerance policy			
Other Arnetz (2000) Casteel (2009) Eroglu (2013) Gillespie (2012) Gillespie (2014) Glasson (1991) Hermoso (2012) Kling (2011) Lyons (1996) Nachreiner (2005) Peek-Asa (2002) Rankins (1999) Saleh (2015) Yang (2012)	RCT,CRT QE other other QE other QE QE other QE other QE other other other other	<u>Reporting</u> <u>Violence in healthcare legislation</u> <i>California Hospital Safety and Security Act in 1995</i> <u>Prospective study, effects of crowding on violence in ED</u> <u>Security systems/officers</u> <u>Work Place Violence intervention</u> study <u>Drama therapy</u> <u>Risk assessment tools - Alerlt system - a violence risk assessment system</u> <u>Survey on reduction of security staff</u> <u>Zero tolerance policy</u> <u>Violence in healthcare legislation - California implemented the Hospital Security Act (AB508) in 199. hospital reported violence levels in surveys before and after legislative change</u> <u>Security systems/officers - metal detectors, cameras, limited access, and a manned security booth at the ED entrance</u> <u>Security systems/officers - Crime Prevention through Environmental Design (CPTED) approach (including natural surveillance, natural access control, territorial concern, and management & maintenance)</u> <u>Management - Organizational violence prevention climate as perceived by nurses predicts nurses' physical violence exposure</u>	X X X X X X X X X	X X X X X X X	self reported recorded violence Recorded self reported Self-reported self reported recorded violence Self-reported self reported recorded violence <i>number weapons confiscated and assaults reported</i>