

## **Title page**

Examining the utility of the Violence Prevention Climate scale: in a metropolitan Australian general hospital

## **Abstract**

**Aim and objectives:** To evaluate and examine the utility of the violence prevention climate scale by generalist healthcare professionals.

**Background:** Workplace violence in general hospital settings remains a challenge for healthcare organisations. High rates of violence are still being reported toward healthcare workers, despite organisational violence prevention strategies being implemented. There is a major challenge to healthcare organisation in the measurement of the effectiveness of these interventions, traditionally completed via the reporting and monitoring of workplace violent incidents. A novel approach to measuring workplace violence is by studying hospital atmosphere or climate.

**Design:** A cross sectional survey using the STARD guidelines was used.

**Methods:** The violence prevention climate scale was completed by 194 healthcare staff working in the emergency department, medical/surgical wards, respiratory/infectious disease, spinal care, renal unit, corrections health, and rehabilitation and community services of a major Australian tertiary referral hospital. The violence prevention climate scale has previously been validated and used in mental health settings, but not general hospital settings. A content analysis of an open ended question on violence prevention management strategies was also conducted.

**Results:** Comprising of 14 items with two factors (patients and staff), the study revealed a 9 item staff factor scale that can be used in the general hospital setting, the patient factor did

not show adequate reliability. The content analysis revealed seven categories of staff identified violence prevention and management strategies.

**Conclusion:** The use of the 9 item scale across an organisation annually, or added to existing organisational workforce surveys, could prove to be practical way of measuring the social climate of violence in a general hospital setting.

**Relevance to clinical practice:** The results of which could guide clinical practice, workplace safety, policy and educational initiatives for the prevention and management of workplace violence.

**Key words:** workplace violence, healthcare, aggression, prevention, safety, quality

#### **What does this paper contribute to the wider global community?**

- Healthcare services have relied on ‘incident management’ capture systems to measure violence in hospitals, which are limited as they generally do not assess low level violent episodes.
- The study provides a short, clinical useful tool for health services to aid in measuring the effect of violence prevention management strategies. Recommendations are made for the use of the scale in hospital audits and or as part of annual staff satisfaction surveys are made.
- This violence prevention scale is a practical way of measuring the social climate of violence in a general hospital setting. The violence prevention scale results can guide clinical practice, workplace safety, policy and educational initiatives for the prevention and management of workplace violence

## **1. Introduction**

Workplace violence in health care settings, defined broadly as “incidents where staff are abused, threatened or assaulted in circumstances related to their work” (International Labour Office, 2002, p. 3) is a significant challenge to the safe delivery of health care services. Studies of workplace violence incidence in health care settings have reported 30% to 76% of staff experiencing some level of physical and verbal workplace violence in their career (Hallett, Huber, & Dickens, 2014).

### **1.1 Background**

Whilst non-mental health settings have received less attention to mental health services in the international literature, evidence has emerged suggesting that workplace violence in these settings is similarly high (Havaei, MacPhee, & Lee, 2019; Muir-Cochrane & James, 2020). A recent systematic review and meta-analysis which pooled data from 78 studies has estimated the global 12 month incidence of any workplace violence against healthcare workers at 62.4%, with physical assaults at 13.7%, and verbal abuse at 61.2%. (Liu et al., 2019). Of particular note was the highest incidence of any workplace violence being within Australasia (70.9%), against nurses (59.2%), and that general hospital setting incidence is comparable with that of psychiatric settings (66.2% v 67.1%) (Liu et al., 2019).

This global incidence identified in non-mental health settings has led authors to propose that general hospital organisations prioritise workplace violence assessment and prevention measures, commensurate with mitigating its deleterious effects (Lamont & Brunero, 2018; M. Li et al., 2020; Pariona-Cabrera, Cavanagh, & Bartram, 2020; Zhang, Zheng, Cai, Zheng, & Liu, 2020). Workplace violence has a significant impact on healthcare professionals safety and well-being, both physically and psychologically (Lanctôt & Guay,

2014; Shi et al., 2017; Zafar, Khan, Siddiqui, Jamali, & Razzak, 2016). Workplace violence is also reported to effect intention to leave (Y.-F. Li, Chao, & Shih, 2018), time to return to work post incident (Choi, Maas, Koehoorn, & McLeod, 2020), stress and burnout (Alameddine, Mourad, & Dimassi, 2015), decreased job satisfaction and productivity (Jaradat et al., 2016).

Consequently, Australian healthcare national standards now identify violence prevention and management as a key areas of compliance for general hospital organisations (Australian Commission on Safety and Quality in Health Care, 2017), in doing so meeting their legal obligation of a duty of care to employees. The dynamic nature of workplace violence, its antecedents, and diverse patient, staff, system and environmental risk factors adds complexity in organisational planning and review. General hospitals typically collect ‘incident’ data which captures staff reports of workplace violence. Whilst this is an important part of monitoring the number of violent events occurring in health care, ‘incident capture systems’ lack an ability to accurately gauge the intensity and severity of workplace violence, which is a known limitation of these systems (Westbrook et al., 2015). These systems also fail to record low level incidents which are viewed as too trivial to record, but may have a cumulative detrimental affect on the ward atmosphere or culture more broadly. Additional and complimentary data sources are thus required in examining the workplace violence landscape comprehensively.

Examining the atmosphere or social climate of violence in general hospital settings has been recommended by the World Health Organisation and local health service level, as the atmosphere of a health care setting is thought to effect treatment efficacy (Moos, 2017; World Health Organisation, 1953). Previous attempts at measuring the social climate of violence have occurred within forensic and general mental health services, with a gap in the literature in measuring general hospital settings (Hallett & Dickens, 2015; Hallett et al.,

2014). Measuring the social climate of violence from staff perspectives in general hospital settings is argued as one way to monitor the effectiveness of violence prevention programmes and guide clinical practice.

## **2. THE STUDY**

### **2.1. Aims**

The primary objective of this study is to psychometrically evaluate and examine the utility of the violence prevention climate scale for the general hospital setting. A secondary objective was to understand the clinical experience and perspectives on violence prevention and management strategies as perceived by nursing, medical and allied health practitioners.

### **2.2. Design**

A cross-sectional de-identified survey method using the Violence Prevention Climate scale (Hallett, Huber, Sixsmith, & Dickens, 2018) across identified high risk for violence wards in a tertiary referral 450 bed hospital in Sydney, Australia was used.

### **2.3. Validity and rigour**

The violence prevention climate scale has been previously validated in forensic and general acute mental health settings and there is a lack of appropriately validated instruments for use outside of this setting (Dickens, Tabvuma, Hadfield, & Hallett, 2020; Hallett et al., 2018).

The violence prevention climate scale comprises of two factors with the ‘Staff Action’ factor containing nine items and a ‘Patient Action’ factor of 5 items. The scale consists of 14 items, with two subscales, staff actions and patient actions, answered on a 5 point likert scale from strongly agree to strongly disagree, with three reversed scored items (see table 2; items 7, 9, 13). The scale is considered easy to administer, can be completed by staff and patients,

and be used to measure the effectiveness of organisational violence prevention policy and procedures (Dickens et al., 2020; Hallett et al., 2018). The violence prevention climate scale was presented to a group of senior generalist healthcare staff (n=8) at the facility for face validity where the scale was to be used. After discussion around each of the items in the scale, consensus amongst these staff was reached that the scale would measure the climate of violence within their own clinical settings. The study followed the STARD guidelines for reporting quantitative studies (Supplementary File 1) (Bossuyt, JB., Bruns, Gatsonis, & Glasziou, 2015).

#### 2.4. Participants and Setting

A convenience sample of 194 healthcare staff returned surveys from an approximate sample of 500 (38% response rate), with participants comprising of nursing, medical and allied health staff. For the purposes of this study, the generalist setting refers to clinical settings that principally do not include mental health related areas and have been identified by the health district as 'high risk for violence' settings (NSW Health-Workplace Relations, 2017). These high risk settings included the emergency department, medical/surgical wards, respiratory/infectious disease, spinal care, renal unit, corrections health, rehabilitation and community services only.

#### 2.5. Data collection

The violence prevention climate scale was distributed in a paper version by the study authors to a sample of attendees from the above clinical areas at the start of a one day violence education programme, and via staff email to the above clinical areas. The following demographics were collected: gender, age range, role, length of experience and clinical

specialty. The following open question was also asked, “Please tell us about your experience of violence in healthcare and what you think can be done to prevent and manage violence?”.

## 2.6. Ethics approval

Ethics approval was granted by the local human research ethics committee.

## 2.7. Data analysis

The data was entered into a password secured database with SPSS™ version 26, being used to conduct the analysis. Descriptive statistics (frequencies, proportions, means, and dispersal) were used to describe the sample and the violence prevention climate scale responses. Principal components analysis was used to determine the factor structure of the data and to determine similarity to that reported in previous mental health-based literature. Internal reliability (Cronbach’s alpha [ $\alpha$ ]) was calculated to determine item-item relationship to a single underlying latent construct. Floor and ceiling effects were inspected to determine the potential of the tool for capturing change. An exploratory factor analysis (Principal Components Analysis; PCA) was conducted to evaluate the construct validity of the scale, specifically whether the two factor structure described in 2.3 above was replicated in this non-mental health sample.

Differences in scores between demographic groups were compared to ascertain the relevance of the items for different groups. Finally, where possible, differences between clinical specialty areas were compared as an indicator of whether the tool has potential to differentiate the measured construct across different environments. A content analysis was undertaken on the open ended question with categories generated and frequencies reported.





### 3. RESULTS

A total of n=194 health care staff returned surveys; five were excluded case wise due to missing violence prevention climate scale data. Sample characteristics are shown in Table 1. Distribution of most items (8/14) was normal with moderate negative skew present in items 1, 6, 11, 12, and 13 with a significant negative skew in item 8 (Table 2). Item means (Table 2) were mostly in excess of 3.06 indicating that average views verged towards the positive. The exceptions were items related to patient-patient bullying, deliberate annoyance and patient-to-staff respect which all elicited mean item totals <3.0 indicating a negative perspective (N.B., reverse scoring is accounted for).

Principal components analysis using varimax rotation revealed a three-factor solution (based on examination of the scree plot). The loading reported in table 2 identifies relationships between items and principal components in excess of +/- .32 which indicate that the principal component explains more than 10% of the variance in the variable (Barbara & Tabachnick, 2001). Factor 1 comprised eight items and accounted for 31.3% of variance in the data. The contributing items to factor 1 (1, 2, 4, 6, 8, 10, 13, 14) were all but one of the nine items found to comprise the Staff Actions factor in previous research conducted in a psychiatric setting (Dickens et al., 2020; Hallett et al., 2018). The ninth Staff Actions item (12) cross-loaded (i.e., greater than +/- .32) onto two components. Four items each cross loaded onto components two and three. Cross loading means that the item contributes to variance in more than one component and hinders interpretability of the analysis; these items were therefore removed. Accepted minimum number of items per component is three; as a result the single remaining item to load solely on component 2 was removed from further analyses. Next, we examined the internal reliability of the nine items comprising the original Staff Actions factor resulting in a Cronbach's  $\alpha = .86$ . Further examination using the SPSS™ 'scale if item deleted' option resulted in a statistic of  $\alpha = .87$  when item 12 was removed. Given the very

marginal improvement in consistency on item deletion, we retained item 12 and thus all further analyses were conducted on the 9-item Staff Actions factor which has been verified in a previous study. Distribution of data for this factor was very moderately negatively skewed (-0.51). There was a small ceiling effect given that 6/189 (3.2%) of individuals achieved the top possible score of 45 on the nine-item scale; there was no floor effect. Examination of internal consistency for the five-items equivalent to the Patient Actions factor in previous research revealed an unacceptable  $\alpha=.65$  which was not improved through item deletion. See Table 3 for a summary of the scales psychometric properties including: missing data, scale assumptions, targeting-including floor and ceiling effect, rating of scale scores, and reliability reports (including the Cronbach's  $\alpha$  for the whole scale of 0.78).

Given the very moderate negative skew we used non-parametric tests for further analyses. There were no significant differences on Staff Actions for nurses (M[SD]=34.7[5.4]), medical (35.1 [3.5]) and allied health staff (33.2[7.1]; Kruskal-Wallis  $H=2.29$ ,  $df=2$ ,  $p=.32$ ). Age and the Staff Actions factor were not significantly correlated (Pearson's  $r=.04$ ,  $P=.68$  [ $n=111$ ]), and there were no difference between groups based on length of clinical experience (Kruskal Wallis  $H=2.01$ ,  $df=3$ ,  $p=.57$ ). In terms of clinical specialty in which participants worked, comparisons between four areas (respiratory, emergency, spinal and other) revealed significant between group variation (Chi-Square=32.09,  $df=3$ ,  $P<.001$ ). Post hoc analysis (Dunn's test with Bonferroni correction for multiple testing) revealed significant differences between the emergency department and spinal ( $P<.001$ ), emergency department and other ( $P<.05$ ), and a non-significant difference between emergency and respiratory ( $P=.08$ ) (see Table 4).

The content analysis of the responses ( $n=211$ ) from 66 individuals to the open ended question was reduced to seven categories (see Table 5). Driving most of the responses was the need for more staffing, having higher nurse to patient ratios and predominantly requesting

a greater security guard presence in ward areas. This was followed closely by the participants identifying the need for better communication; nurse to medical, nurse to nurse and how staff communicate using de-escalation techniques to patients. There were strong recommendations for more education in violence prevention, and creating ward areas or spaces where patients who exhibit violent behaviour can be better cared for, in ‘safe rooms’ for example. The embedding of zero tolerance policies was supported with suggestions around reducing patient waiting times as ways of further preventing and managing violence. More frequent mental health professional support was recommended, leaning toward having permanent mental health professionals based in services such as emergency departments.

#### **4. DISCUSSION**

In line with the primary objective of the study, the administration of the violence prevention climate scale (a tool originally developed to measure violence prevention climate in mental health settings) (Hallett et al., 2018) across a range of general hospital staff, resulted in affirmation that items relating to ‘Staff Actions’ (the things that staff do to prevent violence from occurring) relate to a single underlying latent construct. Items relating to ‘Patient Actions’ did not. With regard to Staff Actions, this 9-item subscale had some basic properties which make it a candidate for use in this setting. As well as good internal reliability, the tool had no floor effects and a minimal ceiling effect (Garin, 2014). This is important in terms of measurement since significant floor and ceiling effects leave raters with nowhere to go in the sense that even significant improvements or deterioration in their perception of the climate will not register on a scale if they have previously scored the highest possible (for improvement) or lowest possible (for deterioration) score on a prior iteration (Raykov & Marcoulides, 2011; Souza, Alexandre, & Guirardello, 2017).

Scores on the Staff Actions factor in previously published research in an Australian general mental health inpatient setting (N=200 M=37.1[5.4]) (Dickens et al., 2020) and a United Kingdom forensic mental health setting (N=281 M=36.9 [4.3]) (Hallett & Dickens, 2020) were greater than those reported in the current study (34.4[5.6]). Calculation of effect size between mental health and generalist settings (difference in mean scores divided by pooled standard deviation; Cohen (1988) suggests a moderate effect size ( $d=0.51$ ) indicating that mental health staff report stronger agreement that they perform actions which are perceived to be associated with a more positive violence prevention climate (Lakens, 2013). This suggests that there is room for improvement in terms of the development of staff skills relating to violence prevention in the general hospital setting (Arnetz et al., 2017; Lamont & Brunero, 2018).

There were no apparent systematic differences between groups of respondents (i.e., gender, clinical role, age); this is a positive since it implies that the tool is relevant to all and does not require amendment to make it so. There was a significant difference based on area of clinical specialty with emergency department based staff scoring more positively than colleagues in other settings (Copeland & Henry, 2017; Nikathil et al., 2018). Given the high prevalence of violence in emergency department settings, then these differences are to be expected since staff are more experienced in, and more prepared for, managing workplace violence (Emam, Alimohammadi, Sadrabad, & Hatamabadi, 2018; Hassankhani, Parizad, Gacki-Smith, Rahmani, & Mohammadi, 2018). This offers a level of support for the construct validity of the violence prevention climate scale. In the case of clinical specialty, demonstrable differences would add to rather than subtract from the potential utility of the tool since it is precisely its role to detect differences at an environmental level so that 'poorly performing' areas can be targeted for improvement (Shafran-Tikva, Zelker, Stern, & Chinitz, 2017). Clearly, replication of the current study is required with more robust collection of

participant and environmental data. One suggestion is that violence prevention climate scale data collection be incorporated into an annual audit with strong encouragement of widespread completion (Arnetz, Hamblin, Sudan, & Arnetz, 2018; Richardson, Grainger, Ardagh, & Morrison, 2018).

In relation to 'Patient Actions' it seems that, as a group, this sample of non-mental health trained staff do not identify a consistent view related to the potential for patients themselves to contribute to the violence prevention climate (Hallett & Dickens, 2017). This is in contrast to studies of the violence prevention climate scale in mental health settings where there is some evidence that staff and patients samples both have more positive views of their own contribution than they do of that of the other (Hallett & Dickens, 2020). Therefore, failure to detect a coherent view of patients' actions among the staff-only sample reported here should not be taken as evidence that further investigation is unwarranted. Indeed, administration of the violence prevention climate scale to samples of patients in generalist settings should be conducted to discern whether there is a potential to identify and bolster their contributions (Babaei et al., 2018; Granek, Ben-David, Bar-Sela, Shapira, & Ariad, 2019). Ultimately, however, it may be that factors such as length of stay, immobility, impaired consciousness, reduced incidence of mental disorder, and, of course, of factors known in mental health settings to be associated with violence such as involuntary admission and active psychosis, means that scope for measurement of the patient contribution is less (Arnetz et al., 2018; Shafran-Tikva, Chinitz, Stern, & Feder-Bubis, 2017). Barriers to patient completion in non-mental health settings may also include; disease acuity, co-morbidities involving multiple specialists, being overwhelmed with information, exhaustion from attending diagnostic procedures or dealing with poor prognostic news (Jatic et al., 2019; Kumari et al., 2020).

Further, the differences in group's views of their relevant contribution is important since patients' perspectives on staff might be considered more objective: how are the activities of the staff perceived by those on the receiving end rather than as self-rated by the deliverers? Giving patients an opportunity to provide their lived experience of violence incidences as well as commenting on the clinical staffs management of the situation, would be a useful contribution to violence prevention strategies, which be best managed by an outsider to the ward where the incident occurred reduce staff bias (Ramacciati, Ceccagnoli, Addey, Lumini, & Rasero, 2018).

From this angle, collecting data from patients about staff is definitely warranted. The patient actions described in the violence prevention climate scale may be more common to mental health and, in some cases ('bullying') to forensic settings where history of aggression is common to the point of universality (Ramesh, Igoumenou, Montes, & Fazel, 2018). It may be that future developments require concentration specifically on the development of items that are more relevant to measuring patient-conducted violence prevention activities (Yagil & Dayan, 2020).

The secondary objective of the study sought to understand and locate staff perspectives on violence prevention initiatives within the organisation. The content analysis of the open ended question described issues of staffing, communications, wait times, education, zero tolerance and mental health support as strategies to improve violence prevention and management. For example in the respiratory/infectious disease speciality, potential contributors to a climate of violence may have been influenced by clinical presentations such as; acquired infections during substance withdrawal, higher acuity where increased interruptions, potentially painful interventions and requirements to remain on the ward for clinical observation and investigations that needed to occur (McCaughey, Purcell, Barnett, & Allan, 2016; Springer, Korthuis, & Del Rio, 2018).

The respiratory/infectious disease speciality for example, approached their issues of managing violence in collaboration with allied health, nursing and medical staff. A team culture of accountability and collaboration in violence prevention and creation of behaviour management plans is thought to have contributed to improvements to the climate of violence in the speciality which has also been reported elsewhere (Heckemann, Siegrist-Dreier, Thilo, & Hahn, 2020). Multidisciplinary education sessions and case scenario based simulation or table top exercises also occurred, enabling role clarity, understanding of organisational processes, appropriate escalation procedures, safety huddles and handovers (Cowan, Brunero, Luo, Bilton, & Lamont, 2018), as well as an opportunity to reflect and debrief on previous situations, which are all social processes that have been identified in other health settings (Heckemann et al., 2020). Patients in this speciality typically have chronic illness and become well known to ward staff and the environment and anecdotally report feeling a great sense of ownership of the ward environment which maybe leveraged by clinical staff to create a safer ward climate. The speciality have now proposed to use the violence prevention climate scale annually to monitor the ongoing improvements that have been developed as above.

The emergency department is another example of a high risk clinical area for violence (Kleissl-Muir, Raymond, & Rahman, 2018). The emergency department is often the initial point of care in a general hospital setting for patients experiencing dementia, delirium, substance use disorders and mental health related issues, and a key point of contact for after-hours access to care for these patients (Barratt et al., 2016; Perera et al., 2018; Pich, Kable, & Hazelton, 2017). Patients who present to emergency in need of services for these presentations have a unique set of needs, which are very different from those with physical illness, and can be challenging for emergency staff to diagnose and manage. The lack of access to and long wait times for specialist drug and alcohol, and mental health assessment in the emergency department is a recognised catalyst for violence (Spelten, Thomas, O'Meara,

van Vuuren, & McGillion, 2020). The incorporation of specific liaison drug and alcohol/mental health services into ED models of care, whether in the form of a liaison role (e.g. clinical nurse consultant, nurse practitioner) or a mental health multidisciplinary team, significantly decreases wait times and expedites patient referral (Wand et al., 2020). Drug and alcohol and mental health liaison services improve emergency department staff awareness, knowledge and resources to meet the needs and onward management of these patient (Perera et al., 2018). Input from mental health liaison nurses (Brunero, Ramjan, Salamonson, & Nicholls, 2018; McClimens, Kelly, Ismail, & Breckon, 2017) for example, could enable staff members in general specialties to identify early warning signs of violence as well as identifying environmental and physical elements that contribute to a climate of violence. The emergency department now includes the violence prevention climate scale as part of their ongoing evaluation of violence prevention initiatives in the unit, acting as a ‘barometer’ of the climate of violence within the department. The scale has been incorporated alongside other annual staff orientated surveys.

Overall processes such as; team accountability, reporting all incidents despite severity, not accepting staff complacency in responding to violence, accepting zero tolerance principles, medical team’s engagement, support and willingness to discuss and share accountability, and improved verbal de-escalation skills were all thought to contribute to a positive violence prevention ward climate at the study site (Heckemann et al., 2020; Morphet, Griffiths, Beattie, Reyes, & Innes, 2018).

#### *4.1 Limitations*

There are a number of limitations to the current study. As noted above, the level of missing data regarding demographic and environmental variables limits the analyses somewhat. Because this was primarily a test of feasibility we did not include any other measures which



could be used to provide evidence for or against the external validity of the tool. Hence, while we can confidently assert that the staff actions factor is measuring *something*, we can be less confident about whether that something is the violence prevention climate. Note, however, that such validity has been demonstrated in previous studies in mental health settings (Hallett et al., 2018; Dickens et al., In Press). Short-term stability (test-retest reliability) and medium to longer term sensitivity (ability to detect change) were not tested here and will require further examination in future research. The open ended question may have been better served as being presented as two separate questions both ‘experience’ and ‘prevention and management’, which may have improved the content analysis. There was a significant proportion of participants that did not complete their gender and age in the demographics part of the scale (see table 1), whilst this does not effect the study outcomes, we were not able to provide and explanation for this.

#### *4.2 Relevance to clinical practice*

This study has provided evidence for the use of the nine Staff Action items of the violence prevention climate scale, could be used as part of annual specialty audits, or accompany organisation staff surveys to measure outcomes of violence prevention management initiatives, which we have named the VPC-9 (general medical). The tool would sit comfortably alongside the use of incident reporting data to provide a more comprehensive account of workplace violence in a general hospital. Further studies need to examine the use of the Patient Actions items in general hospital samples, as patient views of violence prevention in the general hospital setting is limited. Systematic literature reveiws, surveys and in-depth qualitative studies of patient’s views of violence prevention strategies may lead to a better understanding of the utility of the ‘Patient Action’ items that this tool could be utilised for. Further testing of the tool with additional measures to verify external validity, use

of a 7-point response scale as an attempt to minimise the small ceiling effect and employing item response theory is recommended to further test the measurement properties of the tool.

## **5. Conclusion**

Building awareness of the violence climate in our clinical environment from a patient and healthcare professional perspective may enable health professionals to facilitate a multidisciplinary approach to violence prevention and management. The violence prevention climate scale offers a way to measure outcomes of violence prevention management strategies in a general hospital settings.

## **Conflict of interest**

No conflict of interest has been declared by the author(s)

## References

- Alameddine, M., Mourad, Y., & Dimassi, H. (2015). A national study on nurses' exposure to occupational violence in Lebanon: Prevalence, consequences and associated factors. *PLoS one*, *10*(9), e0137105.
- Arnetz, J., Hamblin, L., Russell, J., Upfal, M., Luborsky, M., Janisse, J., & Essenmacher, L. (2017). Preventing patient-to-worker violence in hospitals: outcome of a randomized controlled intervention. *Journal of occupational and environmental medicine*, *59*(1), 18.
- Arnetz, J., Hamblin, L., Sudan, S., & Arnetz, B. (2018). Organizational determinants of workplace violence against hospital workers. *Journal of occupational and environmental medicine*, *60*(8), 693.
- Australian Commission on Safety and Quality in Health Care. (2017). The National Safety and Quality Health Service (NSQHS) Standards Retrieved from <https://www.safetyandquality.gov.au/our-work/assessment-to-the-nsqhs-standards/>
- Babaei, N., Rahmani, A., Avazeh, M., Mohajjelaghdam, A. R., Zamanzadeh, V., & Dadashzadeh, A. (2018). Determine and compare the viewpoints of nurses, patients and their relatives to workplace violence against nurses. *Journal of nursing management*, *26*(5), 563-570.
- Barbara, G., & Tabachnick, L. (2001). *Using Multivariate Statistics* (4th Edition ed.). Needham Heights: Allyn & Bacon.
- Barratt, H., Rojas-García, A., Clarke, K., Moore, A., Whittington, C., Stockton, S., . . . Raine, R. (2016). Epidemiology of mental health attendances at emergency departments: systematic review and meta-analysis. *PLoS one*, *11*(4), e0154449.
- Bossuyt, P., JB., R., Bruns, D., Gatsonis, C., & Glasziou, P. (2015). For the STARD Group. *STARD An Updated List of Essential Items for Reporting Diagnostic Accuracy Studies*.
- Brunero, S., Ramjan, L., Salamonson, Y., & Nicholls, D. (2018). A constructivist grounded theory of generalist health professionals and their mental health work. *International journal of mental health nursing*, *27*(6), 1816-1825.
- Choi, K., Maas, E. T., Koehoorn, M., & McLeod, C. B. (2020). Time to return to work following workplace violence among direct healthcare and social workers. *Occupational and Environmental Medicine*, *77*(3), 160-167.
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. (2nd Edition ed.). New York: Routledge.
- Copeland, D., & Henry, M. (2017). Workplace violence and perceptions of safety among emergency department staff members: Experiences, expectations, tolerance, reporting, and recommendations. *Journal of trauma nursing*, *24*(2), 65-77.
- Cowan, D., Brunero, S., Luo, X., Bilton, D., & Lamont, S. (2018). Developing a guideline for structured content and process in mental health nursing handover. *International journal of mental health nursing*, *27*(1), 429-439.
- Dickens, G. L., Tabvuma, T., Hadfield, K., & Hallett, N. (2020). Violence Prevention Climate in General Adult Inpatient Mental Health Units: Validation study of the VPC-14. *International journal of mental health nursing*, *29*(6), 1101-1111.
- Emam, G. H., Alimohammadi, H., Sadrabadi, A. Z., & Hatamabadi, H. (2018). Workplace violence against residents in emergency department and reasons for not reporting them; a cross sectional study. *Emergency*, *6*(1).
- Garin, O. (2014). Ceiling Effect. In A. C. Michalos (Ed.), *Encyclopedia of Quality of Life and Well-Being Research* (pp. 631-633). Dordrecht: Springer Netherlands.

- Granek, L., Ben-David, M., Bar-Sela, G., Shapira, S., & Ariad, S. (2019). "Please do not act violently towards the staff": Expressions and causes of anger, violence, and aggression in Israeli cancer patients and their families from the perspective of oncologists. *Transcultural psychiatry*, 56(5), 1011-1035.
- Hallett, N., & Dickens, G. L. (2015). De-escalation: A survey of clinical staff in a secure mental health inpatient service. *International journal of mental health nursing*, 24(4), 324-333.
- Hallett, N., & Dickens, G. L. (2017). De-escalation of aggressive behaviour in healthcare settings: Concept analysis. *International journal of nursing studies*, 75, 10-20.
- Hallett, N., & Dickens, G. L. (2020). The violence prevention climate of mental health wards: a cross-sectional study of staff and patient views. *Social psychiatry and psychiatric epidemiology*.
- Hallett, N., Huber, J., Sixsmith, J., & Dickens, G. L. (2018). Measuring the violence prevention climate: development and evaluation of the VPC-14. *International journal of nursing studies*, 88, 97-103.
- Hallett, N., Huber, J. W., & Dickens, G. L. (2014). Violence prevention in inpatient psychiatric settings: Systematic review of studies about the perceptions of care staff and patients. *Aggression and Violent Behavior*, 19(5), 502-514.
- Hassankhani, H., Parizad, N., Gacki-Smith, J., Rahmani, A., & Mohammadi, E. (2018). The consequences of violence against nurses working in the emergency department: A qualitative study. *International emergency nursing*, 39, 20-25.
- Havaei, F., MacPhee, M., & Lee, S. E. (2019). The effect of violence prevention strategies on perceptions of workplace safety: A study of medical-surgical and mental health nurses. *Journal of advanced nursing*, 75(8), 1657-1666.
- Heckemann, B., Siegrist-Dreier, S., Thilo, F. J., & Hahn, S. (2020). Team efficacy and leadership in managing aggressive situations in the general hospital setting: A qualitative descriptive analysis of focus groups with ward managers. *Journal of clinical nursing*, 29(5-6), 974-986.
- International Labour Office. (2002). Framework Guidelines for Addressing Workplace Violence in the Health Sector. Retrieved from [http://www.who.int/violence\\_injury\\_prevention/violence/activities/workplace/](http://www.who.int/violence_injury_prevention/violence/activities/workplace/)
- Jaradat, Y., Nielsen, M. B., Kristensen, P., Nijem, K., Bjertness, E., Stigum, H., & Bast-Pettersen, R. (2016). Workplace aggression, psychological distress, and job satisfaction among Palestinian nurses: A cross-sectional study. *Applied nursing research*, 32, 190-198.
- Jatic, Z., Erkocevic, H., Trifunovic, N., Tatarevic, E., Keco, A., Sporisevic, L., & Hasanovic, E. (2019). Frequency and forms of workplace violence in primary health care. *Medical Archives*, 73(1), 6.
- Kleissl-Muir, S., Raymond, A., & Rahman, M. A. (2018). Incidence and factors associated with substance abuse and patient-related violence in the emergency department: a literature review. *Australasian emergency care*, 21(4), 159-170.
- Kumari, A., Kaur, T., Ranjan, P., Chopra, S., Sarkar, S., & Baitha, U. (2020). Workplace violence against doctors: Characteristics, risk factors, and mitigation strategies. *Journal of postgraduate medicine*, 66(3), 149.
- Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: a practical primer for t-tests and ANOVAs. *Frontiers in psychology*, 4, 863-863. doi:10.3389/fpsyg.2013.00863

- Lamont, S., & Brunero, S. (2018). The effect of a workplace violence training program for generalist nurses in the acute hospital setting: A quasi-experimental study. *Nurse education today*, 68, 45-52.
- Lanctôt, N., & Guay, S. (2014). The aftermath of workplace violence among healthcare workers: A systematic literature review of the consequences. *Aggression and Violent Behavior*, 19(5), 492-501.
- Li, M., Liu, J., Zheng, J., Liu, K., Wang, J., Miner Ross, A., . . . Chen, C. (2020). The relationship of workplace violence and nurse outcomes: gender difference study on a propensity score matched sample. *Journal of advanced nursing*, 76(2), 600-610.
- Li, Y.-F., Chao, M., & Shih, C.-T. (2018). Nurses' intention to resign and avoidance of emergency department violence: A moderated mediation model. *International emergency nursing*, 39, 55-61.
- Liu, J., Gan, Y., Jiang, H., Li, L., Dwyer, R., Lu, K., . . . Wang, C. (2019). Prevalence of workplace violence against healthcare workers: a systematic review and meta-analysis. *Occupational and Environmental Medicine*, 76(12), 927-937.
- McCaughey, E. J., Purcell, M., Barnett, S. C., & Allan, D. B. (2016). Spinal cord injury caused by stab wounds: incidence, natural history, and relevance for future research. *Journal of Neurotrauma*, 33(15), 1416-1421.
- McClimens, A., Kelly, S., Ismail, M., & Breckon, J. (2017). Evaluation of a mental health liaison team. Part 1: background and literature review. *Emergency Nurse*, 25(7).
- Moos, R. H. (2017). *Evaluating treatment environments: The quality of psychiatric and substance abuse programs*: Routledge.
- Morphet, J., Griffiths, D., Beattie, J., Reyes, D. V., & Innes, K. (2018). Prevention and management of occupational violence and aggression in healthcare: a scoping review. *Collegian*, 25(6), 621-632.
- Muir-Cochrane, E., & James, R. (2020). Safe and secure? The complexities of caring in hospitals. *Journal of clinical nursing*, 29(19-20), 3603-3604.  
doi:<https://doi.org/10.1111/jocn.15343>
- Nikathil, S., Olaussen, A., Symons, E., Gocentas, R., O'Reilly, G., & Mitra, B. (2018). Increasing workplace violence in an Australian adult emergency department. *Emergency Medicine Australasia*, 30(2), 181-186.
- NSW Health-Workplace Relations. (2017). Violence Prevention and Management Training Framework for NSW Health Organisations. Retrieved from [https://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2017\\_043.pdf](https://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2017_043.pdf)
- Pariona-Cabrera, P., Cavanagh, J., & Bartram, T. (2020). Workplace violence against nurses in health care and the role of human resource management: A systematic review of the literature. *Journal of advanced nursing*.
- Perera, J., Wand, T., Bein, K. J., Chalkley, D., Ivers, R., Steinbeck, K. S., . . . Dinh, M. M. (2018). Presentations to NSW emergency departments with self-harm, suicidal ideation, or intentional poisoning, 2010–2014. *Medical journal of Australia*, 208(8), 348-353.
- Pich, J. V., Kable, A., & Hazelton, M. (2017). Antecedents and precipitants of patient-related violence in the emergency department: Results from the Australian VENT Study (Violence in Emergency Nursing and Triage). *Australasian Emergency Nursing Journal*, 20(3), 107-113.
- Ramacciati, N., Ceccagnoli, A., Addey, B., Lumini, E., & Rasero, L. (2018). Violence towards emergency nurses: A narrative review of theories and frameworks. *International emergency nursing*, 39, 2-12.

- Ramesh, T., Igoumenou, A., Montes, M. V., & Fazel, S. (2018). Use of risk assessment instruments to predict violence in forensic psychiatric hospitals: a systematic review and meta-analysis. *European psychiatry*, 52, 47-53.
- Raykov, T., & Marcoulides, G. A. (2011). *Introduction to psychometric theory*. New York, NY, US: Routledge/Taylor & Francis Group.
- Richardson, S. K., Grainger, P. C., Ardagh, M. W., & Morrison, R. (2018). Violence and aggression in the emergency department is under-reported and under-appreciated. *NZ Med J*, 131(1476), 50-58.
- Shafran-Tikva, S., Chinitz, D., Stern, Z., & Feder-Bubis, P. (2017). Violence against physicians and nurses in a hospital: How does it happen? A mixed-methods study. *Israel journal of health policy research*, 6(1), 59.
- Shafran-Tikva, S., Zelker, R., Stern, Z., & Chinitz, D. (2017). Workplace violence in a tertiary care Israeli hospital-a systematic analysis of the types of violence, the perpetrators and hospital departments. *Israel journal of health policy research*, 6(1), 43.
- Shi, L., Wang, L., Jia, X., Li, Z., Mu, H., Liu, X., . . . Fan, L. (2017). Prevalence and correlates of symptoms of post-traumatic stress disorder among Chinese healthcare workers exposed to physical violence: a cross-sectional study. *BMJ open*, 7(7).
- Souza, A. C. d., Alexandre, N. M. C., & Guirardello, E. d. B. (2017). Psychometric properties in instruments evaluation of reliability and validity. *Epidemiologia e Serviços de Saúde*, 26, 649-659.
- Spelten, E., Thomas, B., O'Meara, P., van Vuuren, J., & McGillion, A. (2020). Violence against Emergency Department nurses; Can we identify the perpetrators? *PLoS one*, 15(4), e0230793.
- Springer, S. A., Korhuis, P. T., & Del Rio, C. (2018). Integrating Treatment at the Intersection of Opioid Use Disorder and Infectious Disease Epidemics in Medical Settings: A Call for Action After a National Academies of Sciences, Engineering, and Medicine Workshop. *Annals of Internal Medicine*, 169(5), 335-336.  
doi:10.7326/m18-1203 %m 30007032
- Wand, T., Collett, G., Cutten, A., Stack, A., Dinh, M., Bein, K., . . . White, K. (2020). Evaluating an emergency department-based mental health liaison nurse service: A multi-site translational research project. *Emergency Medicine Australasia*(July 18th).  
doi:doi:10.1111/1742-6723.13583
- Westbrook, J. I., Li, L., Lehnbo, E. C., Baysari, M. T., Braithwaite, J., Burke, R., . . . Day, R. O. (2015). What are incident reports telling us? A comparative study at two Australian hospitals of medication errors identified at audit, detected by staff and reported to an incident system. *International Journal for Quality in Health Care*, 27(1), 1-9.
- World Health Organisation. (1953). *The community mental health hospital: third report of the expert committee on mental health*. . Geneva: World Health Organisation
- Yagil, D., & Dayan, H. (2020). Justification of aggression against nurses: The effect of aggressor distress and nurse communication quality. *Journal of advanced nursing*, 76(2), 611-620.
- Zafar, W., Khan, U. R., Siddiqui, S. A., Jamali, S., & Razzak, J. A. (2016). Workplace violence and self-reported psychological health: coping with post-traumatic stress, mental distress, and burnout among physicians working in the emergency departments compared to other specialties in Pakistan. *The Journal of emergency medicine*, 50(1), 167-177. e161.

Zhang, J., Zheng, J., Cai, Y., Zheng, K., & Liu, X. (2020). Nurses' experiences and support needs following workplace violence: A qualitative systematic review. *Journal of clinical nursing*.

Tables 1-5.

**Table 1: Sample characteristics (N=189 except where stated \*)**

Age	
Mean (SD) years	38.0 (11.9)*
Length of clinical experience (Years)	
<1	28 (14.8)
1-5	59 (31.2)
6-10	33 (17.5)
11+	69 (36.5)
Gender	
Male	21 (11.1)
Female	36 (19.0)
Not stated	132 (69.8)
Clinical role	
Nurse	140 (74.1)
Medical	15 (7.9)
Allied Health	34 (18.0)
Clinical specialty	
Respiratory/infectious disease ward	41 (21.7)
Renal ward	15 (7.9)
Surgical/medical ward	9 (4.8)
Spinal ward	47 (24.9)
Community	2 (1.1)
Corrections health ward	3 (1.6)
Rehabilitation ward	2 (1.1)
Emergency department	70 (37.0)

\*Based on responses of 111/189 participants who disclosed age



**Table 2. Violence prevention climate scale items by factor loading/mean (SD) N=189**

Item#		Loading		Mean (SD)
2. The staff here are experienced in preventing aggression	.77	-	-	3.55 (1.02)
8. Staff on this ward show the patients respect	.76	-	-	4.30 (0.79)
4. Staff on the ward are good at talking down aggressive patients	.75	-	-	3.59 (0.88)
10. Staff know when to intervene when a patient is becoming aggressive	.74	-	-	3.81 (0.93)
1. Staff are good at listening to patients	.72	-	-	4.22 (0.75)
14. Negotiation with aggressive patients in used effectively by staff	.72	-	-	3.39 (0.88)
13. The staff are rude to patients	.66	-	-	4.10 (0.89)*
6. Staff here have a good knowledge of the patients	.64	-	-	4.00 (0.81)
12. There is usually a member of staff around for patients to talk to	.50		-.39	3.49 (1.09)
11. Patients are nice to each other	-	.65	-	3.35 (0.79)
9. Patients bully other patients	-	.64	.59	3.06 (1.05)*
7. Patients annoy other patients on purpose	-	.66	.49	2.52 (0.94)*
5. Patients on the ward are good at controlling their inner feelings	-	.63	-.46	2.53 (1.02)
3. Patients on this ward show the staff respect	-	.59	-.49	2.90 (0.99)

\* N.B Item reverse scored so e.g., Item 13 score > 3 is disagreement with the statement

**Table 3: Summary of results of psychometric evaluation of violence prevention climate scale**

Psychometric property	Total (%)
<i>Missing data (%)</i>	
Initial	70/2716 (2.6%)
Respondents with missing data	5/194 (2.6%)
Respondents with >10% missing data (Total missing items 70) and excluded	5/194 (2.6%, <i>Mdn</i> =5 , range=5)
Respondents with full VPC scale data included	189/194 (2646 data points)
<i>Scale assumptions</i>	
Item scores: <i>M</i> ( <i>SD</i> , range) [Item]	3.5 (0.6, 2.5 [7] to 4.3 [8])
Item <i>SD</i> range [Item]	0.75 [1] – 1.09 [12]
<i>Targeting</i>	
<i>M</i> Total Score ( <i>SD</i> )	48.8 (6.6)
Possible score range	14 – 70
Observed score range	25 - 69
<i>Rating scale score (of 2982)<sup>a</sup></i>	
Strongly agree	459 (17.3%)
Agree	990 (37.4%)
Neither	689 (26.0%)
Disagree	392 (14.8%)
Strongly disagree	116 (4.4%)
<i>Reliability</i>	
Cronbach's $\alpha$ (whole scale)	0.78
Improvement if [item] removed	0.80 [7] 0.82 [9] 0.83 [5] 0.85 [3] 0.86 [11] 0.87 [12]
'Staff actions' factor [1,2,4,6,8,10,12,13,14]	0.86
Improvement if [item] removed	0.87 [12]
'Patient actions' factor [3,5,7,9,11]	0.65
Improvement if [item] removed	None
<b><i>Remove patient actions items (inadequate internal reliability)</i></b>	
Staff Actions Factor only	
Correlations significant	36/36 (100.0%)
Mean ( <i>SD</i> , range) item-item correlation	0.42 (0.12, 0.18 [1x10] - 0.66 [2x4])
Floor/ Ceiling effect	0/3.2

<sup>a</sup> Items 7,9,13 are worded such that agreement denotes poor violence prevention climate and are reverse scored; '5' is always the most desirable and '1' the least desirable rating

***Table 4: Mean Staff Actions Factor score by clinical specialty (N=189)***

Clinical Specialty	Staff Actions Factor Mean [SD]
Corrections health ward	37.7 (3.8)
Emergency department	37.1 (4.7)
Community	36.0 (1.4)
Surgical/medical ward	35.3 (5.5)
Respiratory/infectious disease	33.5 (6.1)
Renal ward	33.3 (5.1)
Spinal ward	31.7 (4.7)
Rehabilitation ward	25.5 (10.6)
All specialities	34.4 (5.6)

*Table 5: Categorised open ended responses to ‘Please tell us your experience of violence in healthcare and what you think can be done to prevent and manage violence’*

Categories	Frequency n (%)
Increase security and nursing staff	65 (31)
Communication between staff and with patient	60 (28)
Education-improving knowledge, skills, and confidence	23 (11)
Environmental changes-safe assessment and care spaces	22 (10)
Zero Tolerance policy implementation	17 (8)
Mental Health professional support	14 (7)
Reducing waiting times	10 (5)
Total	211