International Journal of Mental Health Nursing

Physical Injury and Workplace Assault in UK Mental Health Trusts: An Analysis of Formal Reports.

Journal:	*International Journal of Mental Health Nursing*
Manuscript ID:	IJMHN-2015-140
Manuscript Type:	Original Article
Keywords:	aggression, Violence, inpatient, staff injury
Abstract:	Workplace violence is a significant problem for health service personnel, with NHS workers subject to 68,683 physical assaults between 2013 and 2014. Almost 70% of assaults occur in the mental health sector and although serious non-fatal injury is rare, the individual and economic impact can be substantial. We analysed mandatory incident reports from a national database to examine whether there were identifiable precursors to incidents leading to staff injury and whether staff characteristics were associated with injury. In line with previous description, we found injury occurred either as a direct result of patient assault or during physical interventions employed by staff to contain aggression. Importantly, we found little evidence from staff reports that patient's symptoms were driving aggression and we found less evidence of patient perspectives among reports. We make several recommendations regarding the reporting of these events that could inform policy and interventions aimed at minimising the likelihood of injury.

Physical Injury and Workplace Assault in UK Mental Health Trusts: An Analysis of Formal Reports.

Introduction

Workplace violence is a significant problem for health service personnel, with NHS workers subject to 68,683 physical assaults between 2013 and 2014. Almost 70% of these assaults occur in the mental health sector (NHS Protect, 2014) but are perpetrated by comparatively few patients with approximately 10-15% of inpatients displaying assaultive behaviour during the course of their hospital stays (Cornaggia et al., 2011). The impact of violent and aggressive incidents on staff-wellbeing and physical health has been noted (Nolan et al., 1999, Arnetz et al., 1996, Gerberich et al., 2004, Yang et al., 2012) and the experience of violence has also been shown to impact nurses perception of their work inducing fear of future violence and work neglect to avoid being exposed to violence or aggression in the future (Arnetz et al., 1996). In addition to the adverse impact on victims, staff injuries from violent attacks result in significant economic burden to mental health services in terms of staff sickness, litigation and damages payments to injured parties (Service, 2010).

Addressing the problem of widespread violence and aggression in inpatient settings, research has focused on the complex range of psychopathological, environmental and situational contributors to violent and aggressive incidents (Bowers et al., 2014). However, because of the relatively rare occurrence of serious non-fatal staff injuries it has been difficult to discern substantive differences between the aggressive incidents resulting in injuries and those that do not. Indeed, inflicting injury does not appear to be the intended outcome of the majority of conflict situations that arise between staff and patients (Duxbury and Whittington, 2005) and research in this area is lacking. For this reason, examining large datasets of violent incidents that result in injuries takes on greater importance. Rigorous examination of factors that contribute to the occurrence of injuries could inform policy and interventions aimed at minimising the likelihood of injury.

The aim of this study was to describe the precursor's to incidents leading to injury to staff working in NHS Mental Health Trusts in a large national database comprising mandatory reports. We analysed service provider's descriptions of incidents that resulted in work absences to determine

whether there were clear and consistent precipitants and consequences to such injuries from the perspective of both the staff and patients involved. As has previously been shown, there is value in examining staff characteristics associated with increased levels of conflict and containment (Whittington and Wykes, 1994) so we also attempted to determine whether there were any differences between staff characteristics i.e. job title, gender and nursing actions at the time of the injury and the type of injury sustained to ascertain the value of examining these aspects of assaultive incidents and the propensity for staff injury.

Methods

Sample

Data were drawn from a national database comprising injuries at work to NHS Mental Health Trust staff resulting in formal sick leave. The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR, formerly RIDDOR 1995) database which is maintained by the Health and Safety Executive (HSE) mandates employers to report serious workplace accidents and dangerous occurrences to the HSE via an online form (http://www.hse.gov.uk/riddor/report.htm). Formal sick leave is calculated as > 3 days prior to April 2012 and > 7 days thereafter due to a change in legislation and reporting requirements during the study period. The researchers worked with HSE staff to define a potential sample of about 500 incidents considered sufficient (based on early sight of some sample data) to yield a reliable basis for further analysis. The HSE provided the research team with a summary tabulation of unique RIDDOR reports due to physical assault made from the nhs.uk domain within the past 18 months. At that point, non-Mental Health Trusts and non-English Trusts were excluded from the list and the researchers chose every other Trust from an alphabetically ordered list leaving 25 organisations in total. This list, yielding 552 incident reports, was returned to the HSE who then drew the full sample and redacted free text with any personal identifying information. This final dataset was the basis for the analysis reported here and covers RIDDOR reports for physical assaults made during the period October 2011 to March 2013.

Instrument

The HSE defines a reportable incident as a non-fatal injury in the workplace resulting in over 7 day incapacitation (over 3 days prior to April 2012). Non-fatal injuries were defined as fractures, amputations, any crush injuries to the torso, head, brain or internal organs, scalping, serious burns, loss of consciousness and other injuries. Within mental health trusts, reports are typically made by managers in different roles and at different removes from the clinical practice area. Reports are ordinarily based on accounts made after an incident by witnesses or those involved and represent the initial notification upon which the Trust's (and/or HSE's) further investigations then follow. The report details information about the reporting organisation and characteristics of the injured party in fixed text items. The circumstances and consequences of the incident leading to injury are collected in free text items.

Coding Instructions and Analysis

Content analysis was conducted on free text descriptive entries relating to the injured person and the injury to determine trends and patterns in these data. During the first phase of analysis, data from over 100 incidents were analysed by two researchers (LR & LB) who independently generated potentially useful and applicable codes. These were shared with the wider research team agreeing a final coding strategy. There were two further reconciliatory meetings at intervals between the researchers to resolve differences in definitions for each category and subcategory and to review ambiguous text units. Each entry was then read repeatedly and assigned a category based on the coding strategy devised. Each free text entry which varied in length from one line to several paragraphs of text was considered the unit of analysis and coded twice based on the set of circumstances preceding the injury from either the staff or patients perspective.

Ten categories were derived for staff perspective and 13 for patients. A further series of categories were identified to explore the consequences of the incident for the injured party and the patient. Analysis of the resulting descriptive statistics using the defined categories supplemented by the quantitative data which is captured as part of the formal RIDDOR report provided frequencies and proportion for type of injury, characteristics of the injured party and the situational precursor in

which the physical injury occurred. To examine differences between these categories, chi-square tests were conducted excluding variables with fewer than the required cell count to analyse. An exercise in obtaining inter-rater agreement was undertaken using independent ratings by two observers (LR & ML) on a random sample of 30 cases. The situational precursor for the injured party was rated the same in 90% of cases and for the patient in 70% of cases. This aided in establishing a degree of stability for the measurement mode. These data were analysed using SPSS Version 21.

Results

There were a total of 552 cases describing 544 injuries and no reported fatalities during the study period. As observable in Table 1, the majority of the injured persons were female and worked as healthcare assistants or support workers. Seven incidents occurred in community settings where the patient was either receiving treatment in their own home or being escorted from a residential setting for recreation/healthcare purposes. The remainder (n = 537) occurred in inpatient settings.

Insert Table 1 here.

Health Care Assistants reported more injuries than other staff groups. There were also slightly greater proportions of females in both the staff nurse (n = 164, 56%) and healthcare worker groups (n = 106, 53%) reporting injuries than males but the difference was non-significant ($X^2_1 = 0.4$, p = .515). In terms of the type of injury sustained, females reported greater proportions of fractures than males (n = 40, 14% vs n = 20, 8%) while males had greater levels of contusions and bruising (n = 89, 37% vs n = 77, 27%) and lacerations and open wounds (n = 19, 8% vs n = 9, 3%; $X^2_6 = 22.8$, p < .001). There was a trend level difference in the situational precursor for the injured party preceding the injury between males and females ($X^2_5 = 10.8$, p = .055). Twice the number of females (n = 47, 23%) than males (n = 23, 12%) were involved in care-giving when they were injured. There was no difference in the patient circumstances leading to injury between the genders ($X^2_7 = 9.1$, p = .246).

There was wide variation in the number of injuries reported by each Trust (M = 22, SD = 20, Min = 3, Max = 99). There was a significant difference in the average number of injuries reported between Trusts that did not have high secure hospitals (n = 22, M = 22, SD = 10) and those that did (n

= 3, M = 57, SD = 39) with higher numbers of injuries reported in the latter (t = 4.34, p < .001). There were also significant differences in the type of injury reported between Trusts with and without high secure hospitals (X^2_6 = 27.3, p <.001). Trusts without high secure hospitals reported greater proportions of strains and sprains (n = 105, 30%) and fractures (n = 51, 15%). Almost half of the injuries reported by Trusts with high secure hospitals were attributable to contusions and bruising (n = 70, 43.2%). There were also differences in the situational precursor to injuries between types of Trust (X^2_5= 16.2, p =.005). There were similar proportions of injuries occurring during physical restraint in those with (n = 43, 25%) and without high secure hospitals (n = 104, 28%) but there was a lower proportion of unprovoked assaults in the latter (n = 50, 29% vs n = 50, 13%).

Insert Table 2 here.

In the complete sample, as observable in Table 2, greater than half (n = 301, 55.5%) of the injuries were contusions, bruising, strains and sprains with fewer concussion/internal injuries (n = 16, 2.9%), dislocation (n = 10, 1.8%), burns (n = 5, 0.9%) and amputation (n = 1, 0.2%). A sizeable portion reported fractures (n = 60, 11%), most occurring during the course of physical restraint (n = 16) or direct care-giving (n = 12). Assailants were typically patients; one incident described an assault on hospital grounds by an unknown perpetrator (removed prior to analysis) and there were no incidents describing co-workers or family members as perpetrators. Where information to identify the location where the incident took place was present (n = 160), these occurred in or around the patients bedroom (n = 31), corridor (n = 24), day room (n = 23) or at the nurses office (n = 13). There were only 7 cases of injuries where the assault occurred in the community. Two occurred during the course of routine nursing/care activities by lone workers. Injuries due to assaults in patient's homes were typically multiply-staffed indicating a known level of risk prior to conducting visits.

In cases where objects were used (n = 65) they typically comprised items readily available on the ward such as table tennis bats, snooker balls, walking aids, cups, hot drinks and makeshift weapons fashioned from ward furniture. This category included assaults where the staff member was deliberately pushed into objects with the intention of causing harm such as glass screens and metal

lockers. Injuries caused by staff falling into objects during physical restraint were not included here as intention to harm could not be verified. Nine cases in this category involved patients spitting directly at staff, including spitting in eyes and open mouths. No weapons were used in the majority of physical attacks and duration of attack could not be determined in about a third of cases (n = 112, 28%). Despite this, almost a half of the attacks involved just one strike (n = 168, 42%) and in a third (n = 117, 30%) the attack was repeated and sustained.

A substantial amount of injuries occurred during the course of physically restraining patients (n = 147, 27%). While a portion of these injuries may have occurred during patients resisting restraint, in almost half of cases the precise mechanism is unclear (n = 66, 45%). For the remainder, patients managed to bite (n = 10, 7%), kick (n = 21 14%) or punch (n = 13, 9%) during the restraint. Whether assaults were sustained or repeated during restraint could not be ascertained although given that a degree of resistance would have occurred to cause injury it may be prudent to assume this is the case. There was a trend towards greater proportions of healthcare assistants being injured during restraint (n = 90, 39%) when compared with registered mental health nurses (n = 46, 30%, $X^2_5 = 9.75$, p =.082). Males and females were similarly at risk of being injured during physical restraint (n = 76, 37% vs n = 71, 33%, $X^2_1 = 0.81$, p = .369). There was a significant age difference in the likelihood of sustaining injury during physical restraint. Younger staff (21 – 50, n = 71, 37%) were more likely to sustain injuries during physical restraint than older workers (>50, n = 13, 19%), the latter being more susceptible to injury arising from assault during other nursing activities ($X^2_5 = 16.2$, p = .007).

Insert Table 3 here.

Classification of the Situational Precursor of Physical Injuries: Injured Party

There were 426 (78%) cases that were successfully classified by the injured party circumstances preceding the injury. Physical injuries were most frequently sustained during the course of physical restraint (n = 147, 27%), care-giving (n = 70, 13%) or happened during seemingly unprovoked assaults on staff (n = 100, 18%). Injuries occurring during physical restraint were most often preceded by aggression, either verbal or physical or explicit threats of violence (n = 57, 38%).

Events preceding unprovoked assaults could not be reliably determined in the majority of cases (n = 62, 62%) although a minority were preceded by signs of disturbance or aggression.

Physical Restraint

Although injuries sustained during physical restraint of a patient were the most frequently reported there were differences in the way restrictive interventions were employed and the terminology used to describe procedures. Physical restraint was described as placing the patient in holds, passive holds, restraint/restraining, physical intervention and supporting patients. Locally approved procedures were variously referred to as: PMVA, MAPPA, MAPA, MVA, PSTS, CR and C & R. The analysis identified some commonalities in descriptions of how injuries occurred in varied phases and forms of restraint. We attempted to discern the immediacy of response and the extent of planning, if any, prior to restraints that caused injuries. In most cases this was not possible, although there were clear cases of *reactive restraint* in response to imminent threats of violence, making injuries attributable to insufficient time, preparation and resourcing for the procedure.

In addition, a number of incidents were noted to have occurred in the early stages of restraint where *passive/precautionary* holds were used, primarily in response to aggression and threats of harm from the patient. Alternatively, there were cases where the intent to manually restrain had been communicated to the patient and then successful implementation was not achieved at first attempt. In other cases, following successful application of restraint, patients assured staff they had calmed and, on staff releasing holds, patients became aggressive or assaultive. During the course of restraint, it was assumed that injuries sustained were the result of patients resisting, reasoning that physical injury is unlikely to have occurred in a compliant subject. Evidence of this is seen in the numerous *inadvertent injuries* involving staff being knocked into objects suffering strained or pulled muscles. Conversely, several entries depict assaults from patients during restraint such as kicking out, hitting, biting or head-butting, most occurring where patient's limbs had not been secured successfully. Injuries sustained from physical restraint preceded by staff engaging emergency alarms indicated an immediate threat to safety of staff responding to an *emergency response*. Several cases described

injuries to staff responding to incidents from another location as they entered an unknown volatile situation.

Care-giving

Injuries occurring during routine nursing activities varied and differed by the degree of physical contact required to complete the activity. Close contact between nurse and patient, typically to assist with personal care or aid mobilisation, in these situations conceded a greater level of risk. These incidents appeared largely unforeseeable although some patients displayed levels of aggression before or during the intervention and timely, precautionary measures were not taken to prevent injury. In some instances, patients who were immobile in bed were restrained to provide personal care e.g. for dressing or managing incontinence. Nursing activities involving the administration of medication, discussing medication and encouraging concordance with medication also carried a degree of risk to nurse's safety. In some situations, conversations surrounding refusal of medication led to assault while some occurred following offers of PRN medication. Some assaults that appeared unprovoked occurred during the administration of medication, again without evidence of any dispute, several assaults occurred directly after patients had accepted medication.

Insert Figure 1 here.

Classification of the Situational Precursor of Physical Injuries: Patient

Fewer categories were derived for situational precursor from the patients perspective with just over half of reports providing this information (n = 295, 54.2%). Just over a quarter of injuries were preceded by some type of aggression by patients without any recorded preceding factors. Detectable patient motives for physical assault such as dissatisfaction with coercive measures and ward routines, curtailment of rights and suspension of privileges due to problem behaviour were evident for the remainder. Some incidents also arose from patients' dissatisfaction with demands not immediately met, sometimes stemming from rule-breaking and subsequent limit setting by staff around acceptable patient behaviour. Injuries during physical restraint were sustained either in preventing patients from absconding or when patients were resisting attempts to provide care e.g. in physical care, encouraging

to eat or drink, attempts to reassure, maintain safety and encourage or administer both regular and PRN medication. Regarding medication administration, no incidents occurred during physical restraint and just two arose from assault during the preparatory stage of enforced medication i.e. when the patient had been informed of the decision to enforce medication.

Agitation, Aggression, Threats of Violence and Malicious Attacks

Physical assaults were preceded by discernible levels of aggression in approximately a quarter of cases, roughly half of cases that could be effectively categorised. A substantially greater number of injuries occurred where physical assault was deemed the proximate cause judged from categorisation of incidents based on the situational precursor for the injured party than was discernible from the direct actions of the patients. Circumstances describing the situational precursor for patients included events preceding actual assault or injury. As observable in Table 3, physical aggression towards objects and others was present in a substantial portion of cases prior to injury. Some incidents indicated that aggression against objects commenced at the outset and subsequently escalated into hostility towards staff without the forewarning of non-physical forms of aggression.

Incidents where agitation was a contributory factor to assaults on staff were categorised when there was evidence of agitation or being unsettled in the absence of aggression. Most of these incidents seemed unprovoked. A sizeable number of cases involved patients with dementia or occurred in a learning disability facility where benign agitation had led to assault and injury. On the other hand, where aggression was evident, there were indications of attempts to manage the agitation directly prior to the attack including: attempts to re-direct, use of passive holds, de-escalation, use of low stimulus environments, increased observation levels and administering PRN. It was apparent that, in some cases, nurses were within arm's length of patients while trying to de-escalate tense situations. In these cases, proximity of staff to the patient at the time-of-assault is likely to have played a part.

However, proximity did not appear a factor in a number of incidents where patients were described as advancing, lunging, springing and lurching towards staff to assault them. Not all of these

attacks were characterised by greater distance between staff and patient as much as the apparent suddenness and unpredictability of the attack. Most had no forewarning of a threat and seemed largely unprovoked. At the other end of the spectrum, were a small number of malicious attacks which were defined as such if they were premeditated or where the patient had deliberately deceived staff by appearing to innocuously request assistance only to create a situation where they could assault the staff member. Assaults considered pre-meditated mainly involved use of weapons, either ward items or weapons improvised through damaging ward property.

Contribution of Symptoms to Aggression and Assault

These data revealed a number of injuries sustained by staff from assaults where patients were behaving unpredictably due to symptoms of illness. In the main, patients were responding to overtly psychotic thoughts, although a few occurred during a period of assessment for relapse of illness. Again, in most instances, assaults were preceded by the imposition of enhanced observations, re-direction to low stimulus areas and PRN administration. A portion of these cases were described as sudden, unpredictable and without warning and also described disturbance of the individual's mental health status indicating that both were related. Few reports directly stated that patients were acting on delusional beliefs, one report indicated that the patient was in a manic state and only one indicated the patient was intoxicated (presumably under the influence of alcohol) at time-of-assault.

Insert Figure 2 here.

Discussion

This is one of the few studies that have accessed data relating to serious, formally-reported workplace injuries resulting in sick leave in broad groups of UK mental health workers. Serious workplace injuries tend to be infrequent (Fottrell, 1980, Cooper and Mendonca, 1991, Gerberich et al., 2004) which is consistent with other studies. As mentioned, there is a lack of comparable data available nationally, however in the context of all assaults on NHS staff, the actual injury rate represents less than one percent of total assaults. Based on these data, an extremely rough approximation of the incidence of occupational injury arising from violent incidents in UK Mental

Health Trusts would be 700 nationally per annum. In contrast to the results of studies in other professions and from other countries, there were no reports of injury arising from violence perpetrated by co-workers (Hegney et al., 2006, Camerino et al., 2008).

In terms of describing the precursors to serious injury we noted a similar dichotomy to Carmel & Hunter (Carmel and Hunter, 1989) in that most injuries were sustained either from direct patient assault or from measures used to contain patient aggression namely, physical restraint. This finding is consistent with research showing that physical restraint confers a high degree of risk for staff injury (Stewart et al., 2009, Dowson et al., 1999, Lancaster et al., 2008, Southcott and Howard, 2007). Additionally, we found variation in the grounds for initiating restraint and the nomenclature used to describe the process suffice to deduce wide variation in the methods used to physically restrain patients. Comparable to the findings of other studies, we found a range of antecedents linked with the initiation of physical restraint including: absconding, medication refusal and self-harming behaviour (Gudjonsson et al., 2004, Ryan and Bowers, 2006, Southcott et al., 2002). Unsurprisingly, aggression and threats of violence are common precipitants to physical restraint as is seen in the present study. Indeed, the risk of staff injury is increased if physical restraint is preceded by assault (Lancaster et al., 2008). The variation we found in the mode of implementing physical restraint may be a reflection of a lack of standardisation of education and training practices throughout the UK (Lee, 2001, Wright et al., 2005) or be indicative of the view that physical restraint, as a term, does not fully portray the spectrum of possible interventions that can occur (Winship, 2006).

We did not find a single specific action in physical restraint that contributed to injury but rather several restraint strategies ranging by degrees of intensity e.g. passive holds, full restraint. Most reports did not systematically detail the specifics of the restraint such as number and role of staff or position, duration and location of restraint. Thus, discerning the particulars of staff-patient interaction that could be modified to reduce the risk of injury was challenging. Nonetheless, factors linked with injury were apparent in some cases and included failure to hold patients on first attempt, releasing holds too early, patients escaping from holds and restraining patients in a restrictive area. In some cases, injuries arose from attacks during restraint including punching, biting and head-butting

indicating failure to secure limbs enabling assault. On the other hand, we found some indication that nurses were at risk of assault due to their proximity to patients displaying aggression and, and not removing themselves from dangerous situations in a safe way (for example, turning their back on angry patients/ limit-setting and confronting patients already in a heightened state/attempting conflict mediation with patients who are clearly paranoid about staff). We considered the need for nurses to display control in these situation to be a plausible explanation as nurses reportedly feel they need to display confident, assertive body language in order to negotiate potentially harmful situations (Levin et al., 1998) which may, in fact, have the opposite effect.

In terms of staff characteristics that were linked with injury we found that healthcare workers were the largest group sustaining injuries during the course of their duties. This may possibly reflect the typical NHS workforce configuration with higher proportions of healthcare workers employed than qualified staff. Well-designed studies of the incidence of violent incidents against nurses have produced similar findings regarding type of worker most often injured (Arnetz, 1998, Cooper and Swanson, 2002, Gerberich et al., 2004) which are similarly explained by workforce organisation. On preliminary examination, we found no gender differences in reported injury rates although we found a higher rate of more severe injuries, such as fractures, sustained by females, while men tended to report less severe injuries such as contusion and sprains. We considered two, possibly coinciding explanations. Firstly, we found more female nurses were injured while undertaking direct care-giving activities which may be explained by an increased propensity among older-age clients towards violence (Arnetz, 1998) and we did find this type of violence less predictable. Secondly, regarding the type of injuries typically reported by males, this is possibly influenced by staff-gender mix in high-security hospitals as we found higher levels of these types of injuries in Trusts that governed these units. As these Trusts also employed a greater proportion of males than other mental health sites increased severity of contusion and bruising from unprovoked attacks or a lower threshold for reporting physical injury may provide possible explanations for these findings.

Incompleteness of incident descriptions on certain aspects of injury occurring both during restraint and routine nursing activities prevents additional speculation about possible ways to avoid

injury. We concede from our analysis that the implementation of both physical and non-physical interventions to manage aggressive patients seems varied. This is likely attributable to complex organisational differences and differences in education and training on management of violence, such as teaching methods, course content and instructor proficiency (Gerberich et al., 2004, Noak et al., 2002). To advance this work, we propose the inclusion of particulars regarding physical restraint (purpose, manpower, duration, position, outcome) in formal RIDDOR reports to allow more in-depth analysis to determine unsafe practices and improved methods of violence management. We also recommend that patient factors and perspective, evidently less frequently included, be included in reports of physical assault as these are likely to differ (Duxbury and Whittington, 2005) and offer additional means of understanding how injury occurs. These may have been omitted due to an inherent bias displayed by nurses in justifying their actions prior to injury in the process of formal reporting. Importantly, this would facilitate progress towards developing an empirical basis for formal and standardised education and training in the management of violence and aggression which is presently lacking. Our finding that community mental health workers appear to be at substantially reduced risk of assault and injury during the course of their work leads to the question of who this type of training should be delivered to, given that inpatient staff are much less safe in their working environments.

Limitations

Interpretation of this study's findings should be limited by the following. Although we utilised a national database that is subject to specific legislation and regulations, we recognise that reporting of serious incidents can be influenced by bias such as cultural norms within Trusts, organisational support, personal expectations and beliefs regarding obligations and attribution of blame (Gifford and Anderson, 2010, Sato et al., 2013). As a result, drawing conclusions about the representativeness of these data is somewhat problematic. Secondly, we do not have complete data on the distribution of staff and configuration of services that would have enabled us to draw stronger conclusions about the likelihood of different staff groups being injured, this information should be made available for further research. We are also uncertain whether these data are representative of

serious injuries in all healthcare professions as we found a lack of some professions and student nurses. A likely explanation is that the reporting process for students, at least, is governed externally to the NHS and there may be a similar system for other disciplines e.g. social workers, although we were unable to establish if this is the case. Finally, we assumed a classification system based on content analysis in which we established a degree of reliability; however validity can be difficult to establish. Further research is needed to determine the incidence and prevalence of serious violent incidents in epidemiological samples concentrating on prospectively collating information of the antecedents and consequences to allow conclusions regarding the clinical impact of risk avoidance, reduction and retention strategies.

References

ARNETZ, J. E. 1998. The Violent Incident Form (VIF): A practical instrument for the registration of violent incidents in the health care workplace. *Work & Stress,* 12**,** 17-28.

ARNETZ, J. E., ARNETZ, B. B. & PETTERSON, I.-L. 1996. Violence in the nursing profession: occupational and lifestyle risk factors in Swedish nurses. *Work & Stress,* 10**,** 119-127.

BOWERS, L., ALEXANDER, J., BILGIN, H., BOTHA, M., DACK, C., JAMES, K., JARRETT, M., JEFFERY, D., NIJMAN, H., OWITI, J. A., PAPADOPOULOS, C., ROSS, J., WRIGHT, S. & STEWART, D. 2014. Safewards: the empirical basis of the model and a critical appraisal. *Journal of Psychiatric and Mental Health Nursing,* 21**,** 354-364.

CAMERINO, D., ESTRYN-BEHAR, M., CONWAY, P. M., VAN DER HEIJDEN, B. I. J. M. & HASSELHORN, H.-M. 2008. Work-related factors and violence among nursing staff in the European NEXT study: a longitudinal cohort study. *International Journal of Nursing Studies,* 45**,** 35-50.

CARMEL, H. & HUNTER, M. 1989. Staff injuries from inpatient violence. *Hosp Community Psychiatry,* 40**,** 41-6.

COOPER, A. J. & MENDONCA, J. D. 1991. A prospective study of patient assaults on nurses in a provincial psychiatric hospital in Canada. *Acta Psychiatrica Scandinavica,* 84**,** 163-6.

COOPER, C. & SWANSON, N. 2002. Workplace violence in the health sector. *State of the art. Geneva: Organización Internacional de Trabajo, Organización Mundial de la Salud, Consejo Internacional de Enfermeras Internacional de Servicios Públicos*.

CORNAGGIA, C. M., BEGHI, M., PAVONE, F. & BARALE, F. 2011. Aggression in psychiatry wards: a systematic review. *Psychiatry Research,* 189**,** 10-20.

DOWSON, J. H., BUTLER, J. & WILLIAMS, O. 1999. Management of psychiatric in-patient violence in the Anglia region: Implications for record-keeping, staff training and victim support. *Psychiatric Bulletin,* 23**,** 486-489.

DUXBURY, J. & WHITTINGTON, R. 2005. Causes and management of patient aggression and violence: staff and patient perspectives. *J Adv Nurs,* 50**,** 469-78.

FOTTRELL, E. 1980. A study of violent behaviour among patients in psychiatric hospitals. *The British Journal of Psychiatry,* 136**,** 216-21.

GERBERICH, S. G., CHURCH, T. R., MCGOVERN, P. M., HANSEN, H. E., NACHREINER, N. M., GEISSER, M. S., RYAN, A. D., MONGIN, S. J. & WATT, G. D. 2004. An epidemiological study of the magnitude and consequences of work related violence: the Minnesota Nurses' Study. *Occupational and Environmental Medicine,* 61**,** 495-503.

GIFFORD, M. L. & ANDERSON, J. E. 2010. Barriers and motivating factors in reporting incidents of assault in mental health care. *Journal of the Americal Psychiatric Nurses Association,* 16**,** 288-98.

GUDJONSSON, G. H., RABE-HESKETH, S. & SZMUKLER, G. 2004. Management of psychiatric in-patient violence: patient ethnicity and use of medication, restraint and seclusion. *The British Journal of Psychiatry,* 184**,** 258-262.

HEGNEY, D., ELEY, R., PLANK, A., BUIKSTRA, E. & PARKER, V. 2006. Workplace violence in Queensland, Australia: The results of a comparative study. *International Journal of Nursing Practice,* 12**,** 220-231.

LANCASTER, G. A., WHITTINGTON, R., LANE, S., RILEY, D. & MEEHAN, C. 2008. Does the position of restraint of disturbed psychiatric patients have any association with staff and patient injuries? *Journal of Psychiatric and Mental Health Nursing,* 15**,** 306-12.

LEE, S. W., JANE SAYER, ANN-MARIE PARR, RICHARD GRAY, KEVIN GOURNAY, SOO 2001. Physical restraint training for nurses in English and Welsh psychiatric intensive care and regional secure units. *Journal of Mental Health,* 10**,** 151-162.

LEVIN, P. F., HEWITT, J. B. & MISNER, S. T. 1998. Insights of nurses about assault in hospital-based emergency departments. *Image Journal of Nursing Scholarship,* 30**,** 249-54.

NOAK, J., WRIGHT, S., SAYER, J., PARR, A.-M., GRAY, R., SOUTHERN, D. & GOURNAY, K. 2002. The content of management of violence policy documents in United Kingdom acute inpatient mental health services. *Journal of Advanced Nursing,* 37**,** 394-401.

NOLAN, P., DALLENDER, J., SOARES, J., THOMSEN, S. & ARNETZ, B. 1999. Violence in mental health care: the experiences of mental health nurses and psychiatrists. *Journal of Advanced Nursing,* 30**,** 934-941.

PROTECT, N. 2014. NHS Protect NHS Protect News NHS Business Services Authority.

RYAN, C. J. & BOWERS, L. 2006. An analysis of nurses' post-incident manual restraint reports. *Journal of Psychiatric and Mental Health Nursing,* 13**,** 527-532.

SATO, K., WAKABAYASHI, T., KIYOSHI-TEO, H. & FUKAHORI, H. 2013. Factors associated with nurses' reporting of patients' aggressive behavior: A cross-sectional survey. *International Journal of Nursing Studies,* 50**,** 1368-1376.

SERVICE, N. H. 2010. Cost of violence against NHS staff: A report summarising the economic cost to the NHS of violence against staff 2007/8. *In:* SERVICE, N. S. M. (ed.). NHS Counter Fraud Service.

SOUTHCOTT, J. & HOWARD, A. 2007. Effectiveness and safety of restraint and breakaway techniques in a psychiatric intensive care unit. *Nursing Standard,* 21**,** 35-41.

SOUTHCOTT, J., HOWARD, A. & COLLINS, E. 2002. Control and restraint training in acute mental health care. *Nursing Standard,* 16**,** 33-6.

STEWART, D., BOWERS, L., SIMPSON, A., RYAN, C. & TZIGGILI, M. 2009. Manual restraint of adult psychiatric inpatients: a literature review. *Journal of Psychiatric and Mental Health Nursing,* 16**,** 749-757.

WHITTINGTON, R. & WYKES, T. 1994. An observational study of associations between nurse behaviour and violence in psychiatric hospitals. *Journal of Psychiatric and Mental Health Nursing,* 1**,** 85-92.

WINSHIP, G. 2006. Further thoughts on the process of restraint. *Journal of Psychiatric and Mental Health Nursing,* 13**,** 55-60.

WRIGHT, S., SAYER, J., PARR, A.-M., GRAY, R., SOUTHERN, D. & GOURNAY, K. 2005. Breakaway and physical restraint techniques in acute psychiatric nursing: Results from a national survey of training and practice. *The Journal of Forensic Psychiatry & Psychology,* 16**,** 380-398.

YANG, L.-Q., SPECTOR, P. E., CHANG, C.-H., GALLANT-ROMAN, M. & POWELL, J. 2012. Psychosocial precursors and physical consequences of workplace violence towards nurses: A longitudinal examination with naturally occurring groups in hospital settings. *International Journal of Nursing Studies,* 49**,** 1091-1102.

Table 1: Sample Characteristics

	n	*%*
Staff Role		
Support Worker/Healthcare Assistant	293	53.9
Staff Nurse	179	32.9
Charge Nurse/Team Leader	16	2.9
Community Nurse	5	0.9
Psychiatrist	2	0.4
Unknown	49	9.0
Gender – Injured Party		
Male	245	45.0
Female	299	55.0
Gender – Patient		
Male	145	26.7
Female	47	8.6
Unknown	352	64.7
Age Range		
21-30	52	9.6
31-40	80	14.7
41-50	109	20.0
51-60	64	11.8
61-75	12	2.2
Unknown	227	41.7

Table 2 Injury Type and Body Part Affected

	Body Part Affected								
	Hand and Finger	Trunk	Lower Extremities	Head and Neck	Upper Extremities	Eye, Ear and Face	Several Sites	Unknown	Total
Injury Type	*n (%)*	*n (%)*	*n (%)*	*n (%)*	*n (%)*	*n (%)*	*n (%)*	*n (%)*	*n (%)*
Superficial Injuries	0 (0)	6 (7)	0 (0)	2 (2)	1 (2)	13 (14)	6 (7)	0 (0)	28
Laceration and open Wounds	5 (12)	0 (0)	1 (2)	5 (5)	5 (7)	9 (9)	3 (3)	0 (0)	28
Contusion and Bruising	4 (10)	25(27)	8 (18)	43 (39)	11 (17)	43 (46)	32 (35)	0 (0)	166
Strains and Sprains	11 (27)	33 (35)	25 (54)	22 (20)	26 (39)	2 (2)	15 (17)	1 (17)	135
Dislocation without Fracture	4 (10)	0 (0)	0 (0)	0 (0)	4 (6)	1 (1)	1 (1)	0 (0)	10
Fracture	12 (29)	12 (13)	3 (7)	3 (3)	14 (21)	9 (10)	5 (6)	2 (33)	60
Concussion and/or Internal Injuries	0 (0)	2 (2)	0 (0)	11 (10)	0 (0)	0 (0)	2 (2)	1 (17)	16
Multiple Injuries	0 (0)	0 (0)	0 (0)	2 (2)	0 (0)	1 (1)	14 (16)	0 (0)	17
Burns	0 (0)	1 (1)	1 (2)	0 (0)	0 (0)	3 (3)	0 (0)	0 (0)	5
Amputation	1 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1
Unknown	0 (0)	2 (2)	1 (2)	5 (5)	1 (2)	6 (7)	1 (1)	2 (33)	18
Other	4 (10)	12 (13)	7 (15)	16 (14)	4 (6)	6 (7)	11(12)	0 (0)	60
	41 (100)	93 (100)	46 (100)	109 (100)	66 (100)	93 (100)	90 (100)	6 (100)	544

Table 3: Situational Precursor to Injuries from Staff and Patients Perspectives

	Situational Precursor Injured Party										
	Care-giving	Observation	Denial of Request	Manual Restraint	Breakaway	Attempting to Direct	Prevention of Harm	Unprovoked	De-escalation	Insufficient Information	Total
Situational Precursor Patient	*n (%)*	*n (%)*	*n (%)*	*n (%)*	*n (%)*	*n (%)*	*n (%)*	*n (%)*	*n (%)*	*n (%)*	*n (%)*
Agitation	5 (7)	4 (15)	0 (0)	2 (1)	1 (33)	1 (2)	0 (0)	1 (1)	0 (0)	4 (3)	18
Verbal Aggression	2 (3)	2 (7)	1 (9)	9 (6)	1 (33)	5 (13)	4 (19)	4 (4)	0 (0)	4 (3)	32
Aggression towards Objects	2 (3)	1(4)	0 (0)	3 (2)	0 (0)	2 (5)	0 (0)	2 (2)	0 (0)	1 (1)	11
Physical Aggression	8 (11)	3 (11)	0 (0)	33 (22)	0 (0)	2 (5)	8 (38)	9 (9)	1 (17)	13 (11)	77
Perceived Injustice	2 (3)	1 (4)	7 (64)	5 (3)	0 (0)	2 (5)	2 (10)	1 (1)	0 (0)	0 (0)	20
Rule-breaking	1 (1)	0 (0)	2 (18)	4 (3)	0 (0)	13 (33)	1 (5)	1 (1)	0 (0)	0 (0)	22
Disturbed - symptoms	2 (3)	3 (11)	0 (0)	14 (10)	0 (0)	2 (5)	3 (14)	8 (8)	3 (50)	5 (4)	40
Absconding	0 (0)	0 (0)	0 (0)	6 (4)	0 (0)	2 (5)	0 (0)	2 (2)	0 (0)	0 (0)	10
Refusing Intervention	9 (13)	0 (0)	1 (9)	8 (6)	0 (0)	3 (8)	0 (0)	1 (1)	0 (0)	0 (0)	22
Malicious Attack – Intent to Deceive	6 (9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (3)	0 (0)	0 (0)	9
Malicious Attack - Premeditated	1 (1)	0 (0)	0 (0)	0 (0)		0 (0)	0 (0)	2 (2)	0 (0)	5 (4)	8
Threat of Violence	0 (0)	2 (7)	0 (0)	12 (8)	1 (33)	3 (8)	1 (5)	4 (4)	2 (33)	1 (1)	26
Insufficient Information	32 (46)	11 (41)	0 (0)	51 (35)	0 (0)	5 (13)	2 (10)	62 (62)	0 (0)	86 (72)	249
Total	70 (100)	27 (100)	11 (100)	147 (100)	66 (99)	40 (102)	21 (101)	100 (100)	6 (100)	119 (99)	544

Situational Precursor Staff		Case No.	Examples
Care-giving			
I.	Physical Care	200	*'member of staff was punched on the left shoulder by resident who was very aggressive whilst being taken off the hoist sling'*
		535	*'IP was on close observations with a patient who was being assisted with personal care due to incontinence. Patient became agitated and whilst being assisted IP's fingers were bent back on left hand causing ligament and fractures'*
II.	Enhanced Observation/Assessment	148	*'Inpatient was being assessed for a section which he objected to. He held nurse ** and punched him in the chest'*
		538	*'A patient *** Got very agitated and *** went to investigate and offer support…..reacted by charging towards her and pushing her to the ground fracturing her shoulder'*
		549	*'A patient was transferred to the Ward from *** Hospital. On arrival he presented with challenging behaviour and within minutes attacked a member of staff'*
III.	Administering Medication	107	*'When staff entered the room to administer medication the patient assaulted attending staff, including IP'*
		110	*'He was prompted to take his PRN medication, whilst this was being dispensed, with staff sat either side, he without warning attempted to punch IP who was sat on the chair to the left of the patient'*
Observation		475	*'*** was observing a service user on enhanced 2:1 observations, when a service user punched him in the face. The service user was extremely psychotic and unpredictable and is being nursed by 2 staff at all times'*
		125	*'Staff were undertaking routine observations of the patients in their rooms at night, a patient was heard to shout following staff having shone a light in his room (as part of the observation check)…approximately an hour later the patient came out of his room and assaulted the IP'*
Denial of Request		83	*'Patient *** was in the garden during fresh air break. He requested a 1:1 with *** . *** explained that she would not be able to do this whilst facilitating fresh air break. He then stabbed *** with what he later admitted was a pen. **** fell whilst trying to utilise PMVA holds and banged his head on the railing, causing a wound to the head. Alarms were pulled and *** was taken to the floor with approved PMVA holds and was then taken to seclusion. However, during the restraint, *** has also stabbed ***with the same pen. During the incident N/A ***, S/N *** and T/L *** were all assaulted by ***'*
Manual Restraint		151	*'The panic alarm went off downstairs…the staff upstairs came down to respond for assistance. As we came down…a male patient had managed to break free from staff who were holding him and he came straight at us. The upstairs *** was ahead thus she was immediately attacked by him'*
		175	*'Male patient was extremely aggressive requiring six members of staff…level of aggression displayed forced staff to fall into the wall and then onto the floor'*
Breakaway		20	*'*** patient was unsettled and attempted to bite IP's left breast. As IP used breakaway techniques patient pulled IP forward by her hair resulting on hair loss and pull to R shoulder'*
		194	*'In an incident with a service user staff had to withdraw into an office to protect themselves as the service users had utilised a piece of broken door as a weapon; whilst staff where entering the office the service user pushed oen [sic] one of the staff members with force applied to the staff member's back, causing pain and possible injury'*
		449	*'Whist moving away from an aggressive patient twisted knee and leg causing torn muscle'*
Attempting to Direct		7	*'A patient approached IP twice in thirty minutes to obtain a light for their own cigarette, under the health and safety guidance for the mental health inpatient acute ward. The IP lit the cigarette for her and encouraged her to use the designated area. The mental health patient became verbally abusive and threatening towards the IP, threatening to set them on fire. With that, the patient rushed towards the IP, stubbing her cigarette out on the IP'*
		82	*'Patient *** asked to leave a particular area due to an incident taking place. Following prompts Patient…verbally abusive and aggressive towards staff resulting in physical assault to several members of staff with a Table Tennis Bat. *** was bitten in several places and suffered psychological injuries'*
Prevention of Harm		144	*'A patient had become extremely paranoid towards another patient and began to assault him. Staff intervened and the injured party sustained a punch to the head'*
		352	*'A service user made an impulsive attempt to access the courtyard whilst other service users and *** were coming up the stairs. As he ran past *** attempted to stop him knocking another service user over and was knocked down. The service user then pulled her further down the stairs banging her head on the wall and twisting her wrist'*
Unprovoked		6	*'HCSW *** was working on the ward doing his usual duties when service user *** attacked him, knocking him to the floor and punching him. This was an unprovoked attack whilst*** was experiencing psychotic symptoms of mental illness. Staff attended to assist in removing *** and assisting *** and calling medical assistance'*
		123	*'A patient was walking past three nursing staff in the ward corridor, when he made an unprovoked assault on one of the staff, punching her on the left side of the jaw. He tried to punch her again but staff prevented further assault by restraining the patient using passive holds'*
De-escalation		45	*'Staff member was attempting to calm a mental health patient who had gained access to the ward kitchen. the patient was quite disturbed at this time and assaulted the Staff member by throwing by a jug of hot water at staff member who turned away as the water was thrown and sustained a second degree scald on his back'*
		457	*'Patient was requested to stay in his room as per care plan for low stimulus environment, the patient has been continuing to be verbally aggressive and threatening violence through the day, staff attended the doorway of the patients room, when the patient punched the staff in the face and then dragged his nails back across the staff members face, causing cuts to left side of face'*

Figure 1: Situational Precursors to Staff Injury from the Perspective of the Injured Party

Situational Precursor Patient	Case No.	Examples
Agitation	2	*'Service user's behaviour had been escalating. Staff used various methods to de-escalate … without any warning approached Staff Nurse and head butted and punched him twice in the head'*
	538	*'patient *** Got very aggitated [sic] and *** went to investigateand [sic] offer support to the patient … reacted by charging towards her and pushing her to the ground fracturing her shoulder'*
Verbal Aggression	292	*'Member of staff was attempting to carry out a mental state examination … Patient was intoxicated at the time, became verbally abusive and then hit the member of staff on their left shoulder'*
	464	*'staff nurse was standing arms length [sic] while client was demanding ,shouting to go shopping. Patient suddenly rushed at staff and kicked staff on the left groin'*
Aggression towards Objects	77	*'After a two to one session, the patient walked down the bedroom corridor kicking ward property. Staff asked patient to walk to the Intensive Nursing Suite … Patient verbally abused staff member *** and hit her in the face with her right fist.*
	261	*'Patient in a distressed state, started punching & kicking windows, walls and doors. continued to escalate in verbal and physical aggression. Due to risks of self and others patient was detained,restraint, and escorted to the low stimulus room'*
Physical Aggression	22	*'Patient had been physically aggressive towards staff on the ward. The psychiatric emergency team responded. The patient responded to staff and calmed down and staff released their holds….Patient then kicked out hitting IP in the ribs. IP attended A&E, xrays showed fracture of ribs'*
	158	*'A patient came out of her room and started to assault another patient. Ward staff grouped and then started to restrain the assailant to prevent injury. During the restraint the injured person suffered muscular pain in her shoulder'*
Perceived Injustice	148	*'Inpatient was being assessed for a section which he objected to. He held nurse ** and punched him in the chest'*
	340	*'made a request to use the computer room facility however, it was already in use by another patient. Because the patients request could not be met immediately….. patient reacting with considerable force attempting to hit a member of staff. In attempting to control his arm, staff sustained a dislocation of the left shoulder'*
Rule-breaking	414	*'Service User exposed himself to a female member of staff by the Nursing Office Door and when challenged asked him to leave the office a tirade of abuse followed towards female nurse'*
	518	*'A patient was smoking in the ladies lounge, HCA *** approached the patient and stated smoking was not permitted within the unit. patient refused to stop smoking and stated that HCA *** would have to come and get it off of him. HCA *** requested again that the patient give his cigarettes over, the patient refused and then punched HCA *** in the ribs'*
Disturbed - Symptoms	410	*'A patient was in conversation with ***. He appeared thought disordered and paranoid. Care Support Worker, ***, walked past en route to another area of the ward when the patient suddenly stood up and attacked him by throwing a punch to his face'*
	542	*'Employee is a staff nurse on Ward *** which is an acute ward. He was subjected to an unprovoked attack by an in-patient with a diagnosis of paranoid schizophrenia. The patient pushed him to the floor and then attempted to gouge his eyes'*
Absconding	88	*'A patient who was off the ward was being violent and was restrained by 3 staff in order to return him to the ward safely'*
Refusing Intervention	526	*'a team was called to attend the seclusion room while *** was being assessed by ***, Dr *** and another Section 12 Doctor….need to be medicated to minimise the potential of further distress and harm to others. When staff, ***, ***, ***, *** went into the seclusion room and informed *** of the plan to be medicated, *** became aggressive and violent in behaviour. *** attacked the staff members'*
Malicious Attack	48	*'IP was working at computer in ward office when patient came into the office and attacked him with 2 snookerballs in a sock'*
	400	*'Mr *** came to the hatch for his medication….saying that he had tummy pain. S/N (***) was asking him if he would like to have some pain relief....I then gave him his oral tablets as I placed the pot on the hatch *** raised up and grabbed at my glasses but I was able to move myslelf quickly away. He then began to shout and sear 'you f**king bitch I'll get you now!' Because the bottom half of the door was closed *** jumped over the door. I then activitated the full alarm as he was coming toward me. *** then began to punch me in the face, chest, I bought him to the ground using PSTS technique. He continued to punch and kick me, pull my hair but was unable to hold it and then attempted to bite me on the face. He also spat at me several times. At the same time saying 'Yes, I've got you now you f**king bitch this is for Friday you caused Friday you f**king bitch I've got you now'*
Threat of Violence	11	*'Patient became verbally abusive and threatening to wards IP, saying " I will set you on fire" Suddenly the patient charged to-wards the IP and stubbed out the cigarette on the IP, grabbing their hair and twisting the IP's neck'*
	65	*'….patient grabbed a cup that had been left on a table and smashed it. Patient threatened staff with the broken cup and injured person received cut to her right hand during the ensuing restraint'*

Figure 2 Situational Precursors to Staff Injury from the Perspective of the Injured Party