Understanding patient-to-worker violence in hospitals: a qualitative analysis of documented incident reports

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Abstract

Aim—To explore catalysts to, and circumstances surrounding, patient-to-worker violent incidents
recorded by employees in a hospital system database.

Background—Violence by patients towards healthcare workers (Type II workplace violence) is
a significant occupational hazard in hospitals worldwide. Studies to date have failed to investigate
its root causes due to a lack of empirical research based on documented episodes of patient
violence.

Design—Qualitative content analysis.

Methods—Content analysis was conducted on the total sample of 214 Type II incidents documented in 2011 by employees of an American hospital system with a centralized reporting system.

Findings—The majority of incidents were reported by nurses (39·8%), security staff (15·9%) and nurse assistants (14·4%). Three distinct themes were identified from the analysis: Patient Behaviour, Patient Care and Situational Events. Specific causes of violence related to Patient Behaviour were cognitive impairment and demanding to leave. Catalysts related to patient care were the use of needles, patient pain/discomfort and physical transfers of patients. Situational factors included the use/presence of restraints; transitions in the care process; intervening to protect patients and/or staff; and redirecting patients.

Conclusions—Identifying catalysts and situations involved in patient violence in hospitals informs administrators about potential targets for intervention. Hospital staff can be trained to recognize these specific risk factors for patient violence and can be educated in how to best mitigate or prevent the most common forms of violent behaviour. A social–ecological model can be adapted to the hospital setting as a framework for prevention of patient violence towards staff.

Introduction

Violence by patients towards healthcare workers (Type II workplace violence, IPRC 2001) is a significant occupational hazard in general hospitals worldwide (Hahn *et al.* 2008). Substantial research has investigated the prevalence (Gerberich *et al.* 2004, Iennaco *et al.* 2013, Piquero *et al.* 2013) and nature (Hesketh *et al.* 2003, Hahn *et al.* 2012) of patient-to-worker violence, but few studies have identified its root causes. Previous research has focused on perceived reasons for patient violence among physicians (Carmi-Iluz *et al.* 2005, Cai *et al.* 2011), nurses (Zernike & Sharpe 1998, Winstanley & Whittington 2004, Duxbury & Whittington 2005, Chapman *et al.* 2009) and patients (Duxbury & Whittington 2005). However, there is a lack of empirical research based on documented episodes of patient violence in general hospitals. Analysis of recorded incidents can provide a better understanding of determinants of patient-to-worker violence. This is a critical first step towards the development of data-driven, effective interventions.

Background

Compared with workers in other industries, hospital workers have high rates of non-fatal workplace assault injuries (Peek-Asa *et al.* 1997, Janocha & Smith 2010), most of which result from violent acts by patients (Janocha & Smith 2010). Among hospital workers, the risk of violence from patients is greatest among nurses (Arnetz 1998, Winstanley & Whittington 2004, Hahn *et al.* 2012), mental health professionals and security staff (Arnetz *et al.* 2011a). Both physical and non-physical violence from patients has negative implications for worker health and safety (Gerberich *et al.* 2004, Fujishiro *et al.* 2011) and the quality of patient care (Arnetz & Arnetz 2001, Sofield & Salmond 2003, Roche *et al.*

2010). However, hospitals' efforts to reduce workplace violence are hampered by the lack of standardized surveillance of violent events and knowledge of why such violence occurs.

In a seminal paper on workplace violence research, Runyan (2001) stated that, 'Improving our understanding of the circumstances where violence against workers occurs will help us develop intervention strategies' (p. 169). Since then, despite substantial research on patient violence in hospitals, its root causes have not been identified. Two literature reviews on violence in the health sector (Gillespie *et al*. 2010, Pompeii *et al*. 2013) summarized the knowledge regarding risk factors. For patient/patient visitor perpetrators, risk factors included mental health disorders, drug and/or alcohol use, previous history of violence and possession of weapons. Risk factors for healthcare worker targets of violence were age, gender, marital status, hours worked, years of experience and previous workplace violence training. Notably, results regarding these factors were not consistent across studies (Gillespie *et al*. 2010, Pompeii *et al*. 2013). Situational risk factors included time of day, the presence of surveillance cameras (Gillespie *et al*. 2010), long wait times and short staffing (Pompeii *et al*. 2013). Knowledge of risk factors is of course critical to the development of effective violence interventions (CDC/NIOSH 2004). However, improved awareness of such general risk factors does not provide hospital administrators with sufficient intervention guidelines. Instead, there is a need to better understand the specific social and environmental context where the violence occurs (Runyan 2001).

Several models explaining patient aggression and violence have been developed, but most focused on psychiatric care (Whittington & Wykes 1994, Nijman *et al*. 1999, Duxbury & Whittington 2005). Numerous theories of interpersonal violence have been proposed (Anderson & Bushman 2002), but the empirical evidence for these theories in general hospital settings is limited. A patient-centred model of patient aggression towards healthcare staff in general hospitals suggests that the anxiety of being a patient hampers the patient's cognitive abilities, resulting in misinterpretation of situations and/or staff behaviour and eliciting an aggressive response (Winstanley 2005). In another model (Arnetz & Arnetz 2001), the patient–staff interaction was considered central to the development of violence, but the interaction was affected by the immediate (ward) work environment.

However, there is a lack of empirical research based on documented episodes of patient violence in general hospitals. Whittington *et al*. (1996) conducted content analysis of incident descriptions provided by general hospital staff and identified three main precursors to patient violence: the mental state of the patient; receiving care and treatment from staff; and delays in receiving care or treatment. That study was conducted in a single hospital in the UK and examined incidents based on recall from only a small percentage of hospital employees, limiting generalizability of its results. One study examined over 3000 reports of violent events that occurred in Australian healthcare facilities between 2000–2002. The most common contributing factors were identified as patient-related, staff-related and system- or security-related (Benveniste *et al*. 2005). However, the methods used in content analysis in that study were not reported. A recent study examined descriptions of assaults experienced by nurses in emergency rooms and found factors related to the workplace, the aggressor, the nurse and the assault situation (Gillespie *et al*. 2013). That study was based on the results of

a questionnaire with a response rate of less than 6% and may not be generalizable due to non-response bias.

In-depth analysis of recorded incidents could potentially provide critical insight into social and contextual determinants of patient-to-worker violence that are not captured in cross-sectional or epidemiological data. Knowledge of such determinants is critical to the development of data-driven, effective interventions.

The study

Aim

The aim of this study was to explore the causal dynamics and circumstances surrounding patient-to-worker violent incidents recorded over 1-year in an incident database in a multi-site hospital system.

Design

Qualitative content analysis was conducted, using an inductive approach. This approach is similar to grounded theory (Strauss & Corbin 1998), but assigns codes for main themes that are relevant to the research objectives, rather than using codes to develop theory. The purpose is to create meaning by developing summary themes from complex raw data (Thomas 2006).

Participants

The study was carried out in a large hospital system in the Midwest United States. The hospital system, comprised of seven hospitals with approximately 15,000 employees, is partnering with the research team in a federally funded project aimed at reducing workplace violence in hospitals (Arnetz *et al.* 2014). The seven hospitals include one paediatric hospital, one rehabilitation hospital and five specialty hospitals. Two hospitals are situated in suburban environments, five are urban.

Data collection

Incidents of adverse events on the job, including workplace violence, are reported electronically by employees to Occupational Health Services (OHS) using a central reporting system. This computerized reporting system is standardized throughout the hospital system and is accessible from any hospital computer. Employees report demographic information and select whether the incident falls under injury, illness, exposure and/or workplace violence, providing a description of the incident in a textbox. Date, time, work shift and incident location are also reported by the employee, as well as any events preceding the incident, injuries incurred and witnesses to the incident. Hospital system policy requires that employees report all adverse events, including incidents of workplace violence, within 72 hours of occurrence; there is no retaliation or risk of reprisal against employees who report incidents in good faith. This reporting system has been in place since 2003 and has been described previously (Arnetz *et al.* 2011a,b).

The hospital system uses 'workplace conflict' as an umbrella term for workplace violence. This encompasses acts of physical assault, harassment, intimidation, threats and verbal aggression (CDC/NIOSH 2002, Arnetz *et al.* 2011b) that occur on their property or during the course of an employee's work-related activities on behalf of the hospital system. All incidents of workplace violence are categorized by OHS data analysts according to perpetrator type (I–IV), i.e. (I) criminal intent, (II) customer/client, (III) employee/former employee and (IV) non-employee with personal relationship with a worker (IPRC 2001). The current study focused on reported incidents of workplace violence where the perpetrator was a patient or patient visitor (Type II workplace violence).

Ethical considerations

Research Ethics Committee approval for this study was granted by the Human Investigation Committee of Wayne State University. Informed consent was not obtained from hospital employees as the data set was de-identified and researchers had no ability to link specific incident reports to individual employees.

Data analysis

Qualitative content analysis was conducted on the total sample of 214 Type II incidents reported by employees from the hospital system's seven hospitals in 2011. An OHS data analyst removed all personal identifiers before researchers received the data. Using a data-driven inductive approach (Boyatzis 1998), content analysis was used to examine the circumstances surrounding the violent incidents. Content analysis is typically used in an effort to organize written data into a more systematically structured format (Tong *et al.* 2007). The current study used conventional content analysis, where codes and code categories are derived from the data analysis, rather than preceding and guiding the analysis (Hsieh & Shannon 2005). One researcher read the incident descriptions and assigned codes for each of the identified common themes surrounding patient violence. As similar codes became apparent, they were aggregated into main themes. A second researcher employed the same method and coded the incidents independently. When the researchers met to discuss their findings, the initial consensus level exceeded 90%. Coders then jointly reviewed the discordant codings and discussed differences successively until consensus was reached; no incidents were excluded due to coding disagreement. A third researcher who was not involved in the coding read through the incident descriptions and confirmed the final themes and sub-themes.

Rigour

To maintain integrity using qualitative methods, the consolidated criteria for reporting qualitative research, COREQ (Tong *et al.* 2007), were used when planning and executing this study. Guba and Lincoln's (1989) criteria for judging qualitative rigour, i.e. credibility, transferability, dependability and confirmability, were followed. Credibility, analogous to internal validity, was achieved by thoroughness in data collection and analysis; the two researchers responsible for developing the coding scheme developed in-depth familiarity with the data. Transferability parallels external validity and means that the results can be communicated and made understandable. This was achieved by using relevant incidents as examples from various locations across the hospital system. Dependability is similar to

reliability and was achieved by a review of the data by a third author who was not involved in the coding. Finally, confirmability parallels the criterion of objectivity, reducing researcher bias and was achieved through researcher triangulation and the use of verbatim quotes to show how results were grounded in the material.

Findings

Approximately 90% of the 214 incidents concerned some form of physical violence directed towards hospital employees; 34% ($n = 72$) resulted in injuries requiring time away from work. The majority of incidents were reported by nurses (39·8%), security staff (15·9%) and nurse assistants (14·4%). Those reporting incidents were primarily female (66·7%), had a mean age of 41·4 years (range 20–72, SD 12·6 years) and had been employed for an average of 7·4 years (range 0–34, SD 7·9 years). Incidents were reported by each of the hospital system's seven hospitals, ranging from 8 at a suburban specialty hospital to 64 at an inner city acute care hospital. Over 30% were reported by acute care nursing units; 15% were reported by psychiatric units; 15% were from security staff; and 12% were from emergency departments. Remaining incidents were from intensive care, surgery and outpatient units.

Three distinct overall themes were identified that reflected the major causal dynamic regarding patient violence towards hospital staff: Patient Behaviour, Patient Care and Situational Events. Patient Behaviour referred to patients as the direct reason for violence and included two sub-themes: Cognitive Impairment and Demanding to Leave. Patient Care encompassed incidents that occurred in the course of providing care and/or working in close proximity with the patient. Patient Care had three sub-themes: Needles, Pain/Discomfort and Physical Transfers. Situational Events encompassed situations where patient freedom of mobility was infringed and included four sub-themes: Restraints, Transitions, Intervening and Redirecting. An overview of the themes, sub-themes and their respective definitions is provided in Table 1. Each theme and sub-theme is further described below with verbatim examples of text describing the violent event.

Patient behaviour

Patient Behaviour was the dominant theme, accounting for nearly 40% of all of the reported incidents of patient-to-worker violence. The aggressive behaviour in these incidents was initiated by the patient and analysis revealed two main sub-themes of catalysts, Cognitive Impairment and Demanding to Leave. Cognitive impairment implies that the patient's mental competency was in some way impacting their ability to interact normally with hospital staff. Examples noted in the incident descriptions were dementia, confusion, agitation, intoxication due to alcohol or drugs and children. This behaviour was often unpredictable and seemed to take the employee by surprise:

> Was comforting confused patient and he put his hand around my neck and tried to choke me. (Patient Care Associate)

> I was sitting at bedside of a confused patient. She had been laying down, got up quickly and punched me in the left side of the face. (Registered Nurse)

The second sub-theme, Demanding to Leave, concerned patients demanding and/or attempting to leave the hospital before being discharged:

> While trying to stop an ETOH [alcoholic] patient from leaving the ED [emergency department], the ED nurse was struck on the right cheek with a closed fist by the patient. When the patient was taken to the ground by security and ED staff along with the injured nurse, the patient bit the injured nurse on the right leg. (Security)

> Patient was at the nurses' station demanding discharge, abruptly started striking at me, hitting and scratching my face and neck. (Psychiatric Social Worker)

Patient care

The Patient Care theme encompassed incidents where hospital staff were providing patient care, which often entailed working in close proximity to the patient. Three sub-themes were identified from the analysis: Needles, Pain/Discomfort and Physical Transfers. The use of any type of needle, whether giving an injection or inserting an intravenous (IV) line, was a common cause of physical violence from patients:

> Patient needed lab work drawn and became very hostile, aggressive and violent with staff. He was verbally abusive with profanity and physically abusive by hitting, biting, scratching and pushing. Attempted to grab patient's arm to prevent him from hitting the ER [emergency room] tech who was drawing his blood and the patient hit me in the left side of my face…patient hit my eye, ear, cheek and head. Patient then tried to bite me, but could only get my clothing. (Registered Nurse)

> While attempting to draw blood the patient yanked her arm and attempted to bite the RN [Registered Nurse]. RN was stuck trying to prevent herself from harm. (Manager)

The Pain/Discomfort sub-theme concerned physical procedures that did not include the use of needles, but that caused direct pain or physical discomfort to the patient. Examples were intubation and positioning the patient for x-rays or other types of scans:

> Employee was hooking up tube feeding, patient got agitated and kicked employee in the face. (Patient Care Associate)

> I assisted the nurse with inserting a NG [nasogastric] tube into a patient's nose and the patient began fighting and kicking. I was bit and scratched on the forearm. (Patient Care Associate)

The third sub-theme, Physical Transfers, concerned incidents where staff physically assisted patients, such as moving between a wheelchair and an examination table or a bed:

> During transport…patient became agitated, jumped off stretcher, proceeded to strike employee. Employee tried to grab patient for her safety and she scratched employee and broke skin. Patient fell on floor, at this time nursing manager helped to transport. (Patient Transporter)

> Patient was being transferred to a stretcher for a procedure and the patient kicked employee in the side of his head with full force. After incident he has a headache. (Manager)

Situational events

The third main theme, Situational Events, concerned circumstances where patients were between points of care or their movement was infringed. Analysis revealed four sub-themes: Restraints, Transitions, Intervening and Redirecting.

The Restraints sub-theme encompassed incidents where the patient was being held or where either physical or chemical restraints were applied:

> Patient…admitted with overdose, he was in 2 point restraints, became combative and verbally abusive to staff. While attempting to place patient in 4 point restraints patient thrashing and hitting at staff. RN #1 left thumb hyperextended, RN #2 left forearm was hit with patient's head, resulting in pain/contusion. PCA was punched in arm. (Registered Nurse)

Patients also became violent during transitions, which was the second sub-theme under Situational Events. These incidents mainly took place during the hospital admission process or in the postoperative or recovery room:

> I was in OR [operating room] #3 waiting for the patient to wake from anaesthesia. The patient woke and all of a sudden began violently kicking and pushing. In the process of restraining him from falling off the bed he started kicking me in the chest. (Registered Nurse)

Intervening, the third sub-theme, included attempts made by hospital staff to stop a patient from acting out or harming himself or others. The majority of these incidents were reported by security staff:

> Security officer was injured while attempting to control patient. Patient was disruptive and threatening medical staff. Security officer was kicked to the chest area by patient while attempting to place her in a wheelchair. (Security Team Leader)

The fourth and final sub-theme was Redirecting. This theme entailed staff actions to help patients back to their hospital room or their hospital bed:

> I was trying to keep the patient from leaving the room and going to the elevator by standing in front of her room door. She got mad and scratched my face. I grabbed her hands to keep her from scratching me again and then she bit my thumb. (Patient Care Associate)

Discussion

The aim of this study was to explore the causal dynamics and circumstances surrounding the total sample of patient-to-worker violent incidents recorded by hospital system employees over 1-year. The analysis revealed three overarching themes that pinpointed Patient Behaviour, Patient Care and Situational Events as catalysts for patients' violent behaviour directed towards staff. In a broad sense, these themes are similar to some of those reported in previous research. Whittington *et al.* (1996) also identified the mental state of the patient, corresponding to our Cognitive Impairment sub-theme to Patient Behaviour, as a main risk

factor for hospital patient violence. The same study reported the additional categories of 'receiving care and treatment' and 'delays in receiving care and treatment,' both of which correspond to our Patient Care theme. In a much larger study, Benveniste *et al.* (2005) also described three main themes related to patients, staff and security issues.

However, it is the sub-themes that emerged from this analysis that help shed light on the underlying reasons for patients' violent behaviour. Incidents that fell under the Cognitive Impairment and Demanding to Leave sub-themes indicated that patient characteristics were the direct catalysts for incidents. Underlying many of the patient behaviours was some degree of confusion or severe agitation. While staff may expect and even understand the violence in such cases as being 'part of the job' (McPhaul & Lipscomb 2004), many of the incidents falling into this category described patient behaviour that took staff by surprise. In the examples given here, one patient tried to choke the Patient Care Associate who was comforting her, while another punched a nurse who was sitting at the patient's bedside. These incidents suggest the need for increased awareness and sustained vigilance among staff working in close proximity with cognitively impaired patients.

The incidents describing patients who were demanding to leave the hospital did not always provide enough detail for us to understand the reasons for their behaviour. For example, one of the incidents described here took place in the ED and may have been sparked by frustration over a long wait time, a factor pinpointed in previous research (Whittington *et al.* 1996, Gillespie *et al.* 2013). Intoxication by alcohol and/or drugs, common among patients seeking ED care (Gillespie *et al.* 2013), may have also played a role. Importantly, these findings have identified patients demanding to leave the hospital as a specific risk factor for violence, which may or may not be influenced by cognitive impairment.

The sub-themes related to Patient Care indicate that violence occurred when patients were subjected to treatments that involved pain or discomfort as well as when they were being assisted with physical transfers. In their cross-sectional survey, Hahn *et al.* (2012) also found that patient violence occurred most often when staff were working in close personal contact with patients. Patient fear may have been an underlying factor in all of these sub-themes. Winstanley (2005) also theorized that the anxiety of being a patient was a cause of violence directed towards staff. This may have been the case in the incidents involving needles or physically uncomfortable procedures, such as those described here. In a study of emergency nurses, violent patient behaviour was also linked to nursing practices such as inserting an intravenous line or indwelling catheter and administering injections (Gillespie *et al.* 2013). Similar to the incidents where patients were demanding to leave, several of these documented events suggested that they seemed to happen without warning, taking staff by surprise. Several of the incidents cited here resulted in potentially serious employee injuries, including needle sticks and bites.

In incidents falling into the four Situational Events sub-themes, violence occurred when patients were transitioning between points of care or when healthcare staff had to restrain, restrict or redirect patients for their own or others' safety. The Transitions sub-theme encompassed incidents that occurred during the actual admission process or when patients were being moved from one unit to another as part of their care process. Patients awaiting

admission may be anxious and/or experiencing pain, or frustrated over wait times, all of which might contribute to their violent behaviour. Violence from patients in the ED has also been reported while nurses were conducting triage assessments (Gillespie *et al.* 2013). Transitioning patients from surgery to recovery or from procedures to holding rooms was also a catalyst for violence and may have been explained by patient confusion, fear or pain. When patients were being redirected by staff or by security, as was often the case in the Intervening sub-theme, they were being prevented from causing harm to themselves or to others. Similar to the Demanding to Leave sub-theme, the actual catalyst for the violent behaviour was not always clear from the incident reports and many of the incidents may have concerned patients with cognitive impairment. Nevertheless, healthcare and security staff were injured, some of them seriously, by violent patient behaviour during this type of incident and staff need to be aware of the increased risk for violence in transitioning situations.

Incidents where patients had to be restrained, either by physical holding or the application of chemical or mechanical restraints, represent a complex mixture of events. In the example cited here, a patient with a drug overdose was admitted in two-point (arms immobilized) restraints. Due to extremely combative behaviour, staff attempted to apply four-point (arms and legs immobilized) restraints, resulting in more violent behaviour and injury to three staff members. In this case, although restraints were already in place, the violent behaviour (that may have instigated the initial application of restraints) worsened. In the USA, the Joint Commission, which is responsible for accreditation of hospitals, provides standards on restraint and seclusion for non-violent crisis intervention. The standards mandate that restraints be used in hospital settings only when they are clinically justified or when warranted by patient behaviour that threatens the physical safety of the patient, staff or others (The Joint Commission 2009). Research indicates that restraints are used on a daily basis, for example, in many hospital emergency departments and even more frequently in psychiatric emergency units. While their intention is to keep patients and staff safe from harm, injuries do occur (Zun 2003). Another restraint issue involves patients arriving to the hospital in police custody (Gillespie *et al.* 2013), which often entails removing handcuffs, which may have to be replaced with restraints applied by hospital staff if patients exhibit violent behaviour.

Implications for workplace violence prevention

These findings support previous cross-sectional research in mental health settings, suggesting that both individual ('internal') and situational/interactional ('external') factors explained violence towards staff from patients (Duxbury & Whittington 2005). The Patient Behaviour theme clearly suggests that individual patient characteristics were the direct catalysts for the violent events. But the other themes – Patient Care and Situational Events – indicate that patients became violent as a reaction to staff actions or behaviour. Previous research has suggested that individual patient, staff and ward/environmental factors contribute to patient violence (Arnetz & Arnetz 2001, Nijman 2002, Levin *et al.* 2003), but these studies did not identify the catalysts that led to the actual violence. Findings based on the examination of documented incidents in the current study offer insight into specific factors and situations that put hospital workers at increased risk for violent patient

behaviour. Knowledge of these specific risk factors is an important first step in the development of measures that can prevent work-place violence (CDC 2009) in hospital settings.

A model for prevention of patient-to-worker violence in hospitals

Based on the findings in the current study, we suggest an adaptation of the four-level Social–Ecological Model advocated by the Centers for Disease Control and Prevention (CDC) as a framework for societal violence prevention (Dahlberg & Krug 2002, CDC 2009). The proposed model for prevention of workplace violence in hospitals can be illustrated as a series of concentric circles (Figure 1). This model suggests that catalysts to patient violence may stem from individual factors in patients and/or healthcare workers; factors influencing the relationship between patients and healthcare workers in the process of patient care; factors in the immediate work environment; and factors in the larger organization, in this case the hospital or hospital system. In developing efforts to prevent workplace violence, the identification of risk factors at each of these levels will facilitate the establishment of level-specific interventions (CDC 2009). The sub-themes that emerged from this study pinpointed Cognitive Impairment and Demanding to Leave as individual-level (patient) factors; Needles, Pain/Discomfort and Physical Transfers as relationship-level factors; and Restraints, Transitions, Intervening and Redirecting as work environment or situational events that resulted in violence towards staff. Each of these sub-themes presents possible areas in which to develop violence intervention and prevention strategies. As illustrated in the model, the individual, relationship and work environment factors are embedded in the larger organization. The organizational factors influencing this study included the hospital system's policies regarding workplace violence and patient and worker safety; continuous monitoring of violent events; and the centralized, accessible reporting system for documenting violent incidents. Violent events may also be the result of a combination of factors, thus requiring intervention on multiple levels. For example, a violent act with employee injury might result from an interaction between a cognitively impaired patient (individual-level) and a nurse in a highly stressful, fast-paced unit (work environment). A close examination of the documented incident might suggest the need for interventions related to patient–employee communication, a review of work unit procedures, as well as a close examination of workload and staffing levels. Systematic study of incident descriptions provides us with indications of where and on which levels interventions may be most useful.

Strengths and limitations

A major advantage of the current study over previous research was the use of actual incidents recorded over a year at multiple worksites across several hospitals. Moreover, we examined the total sample of patient-to-worker incidents that were documented by hospital system employees. An additional strength was report uniformity due to the use of standardized online forms. Despite using the total sample of reported incidents, results of this study may be limited by underreporting, which is a recognized problem in workplace violence research (Iennaco *et al.* 2013, Sato *et al.* 2013). Results may have also been influenced by bias on the part of those documenting violent events. For example, the hospital system requires employees to report any incident resulting in injury. This might suggest that only the most serious incidents get documented. However, only 34% of the

incidents in this 2011 sample resulted in a lost time claim, indicating that employees were using the reporting system to document even less severe incidents. The incident reports are subjective, representing only one perspective, usually that of the target of violence (although on occasion, reports were filed by a third party). Moreover, the hospital staff who documented these incidents seemed to focus on describing the cause of the injury rather than the cause of the violent behaviour, which staff may or may not have understood. Recall bias should be limited because employees are required to complete incident reports in 72 hours of the actual event. However, a 24-hour limit would further diminish recall bias. Bias may have also played a role in the researchers' interpretation of the documented incidents, although validation was carried out through a third researcher not involved in the coding. Finally, all reports were collected from only one hospital system and the results of this study may not be generalizable to all hospitals.

Conclusion

Qualitative content analysis of documented incidents of workplace violence can provide a better understanding of determinants of patient-to-worker violence by providing insight into the nature of specific risk situations. Hospital stakeholders have pinpointed such analysis as an important and necessary complement to quantitative risk factor identification, deeming it a critical component in the development of data-driven, effective interventions (Arnetz *et al*. 2014). Identifying dominant themes and sub-themes concerning patient violence towards hospital workers informs administrators about specific potential targets for intervention. Hospital staff can be trained to recognize these specific risk factors for patient violence and can be educated in how to best mitigate or prevent the most common forms of violent patient behaviour.

Implications for nursing

For nurses, violence prevention programmes should emphasize the increased risks of physical assault when working with patients who are cognitively impaired, demanding to leave, or in pain; and when using needles, restraints, performing physical transfers, or redirecting patients in the course of patient care.

Acknowledgements

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Why is this research needed?

- Hospital workers generally, and nurses in particular, are at increased risk for non-fatal workplace assault injuries compared with workers in other industries.

- Most violent acts directed towards hospital staff are perpetrated by patients, but there is a lack of empirical knowledge of the causal dynamics and circumstances surrounding patient-to-worker violence.

- In-depth analysis of documented incidents would provide insight into specific catalysts and situations involved in patient violence, thus identifying potential targets for data-driven intervention.

What are the key findings?

- Incidents of patient-to-worker violence can be characterized as stemming from Patient Behaviour, Patient Care, or Situational factors.

- Specific causes of violence related to Patient Behaviour and Patient Care included cognitive impairment; demanding to leave; the use of needles; patient pain/discomfort; and physical transfers of patients.

- Situational catalysts to violent events were the use/presence of restraints; transitions in the care process; intervening to protect patients and/or staff; and redirecting patients.

How should the findings be used to influence policy/practice/research/education?

- Identifying dominant themes concerning patient-to-worker violence informs hospital administrators about potential targets for intervention.

- Hospital staff should be trained to recognize specific risk factors for patient violence and can be educated in how to best mitigate or prevent the most common forms of violent patient behaviour.

- A social–ecological model can be adapted to the hospital setting as a framework for reducing and preventing patient violence towards healthcare workers.
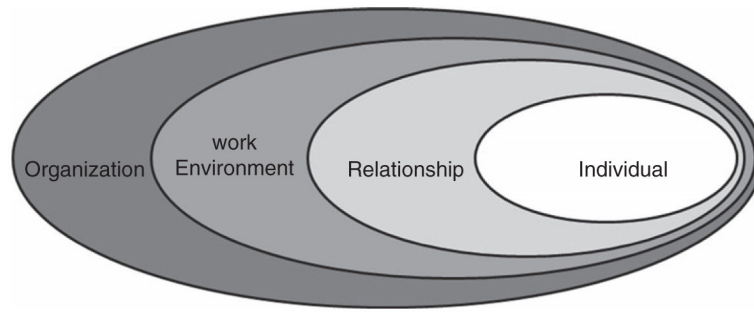
Figure 1.
Proposed model for prevention of workplace violence in hospitals, adapted from Dahlberg and Krug (2002).

Table 1

Overview of main themes and sub-themes with definitions.

Main themes	Sub-themes	Definitions
Patient behaviour		Patients acting out as the reason for the violence
	Cognitive impairment	Patient's mental competency affected, e.g. dementia, confusion, agitation, intoxication, children
	Demanding to leave	Patient demanding and/or attempting to leave the hospital before being discharged
Patient care	Needles	Staff providing patient care/working in close proximity with the patient Placing intravenous lines, giving injections
	Pain/ discomfort	Physical procedures causing direct pain/discomfort to patient, e.g. intubation, x-ray
	Physical transfers	Physically assisting patient, e.g. from bed to wheelchair, chair to examination table
Situational events		Situations infringing on patient freedom of mobility
	Restraints	Holding or physical/chemical restraints applied to patient
	Transitions	During hospital admission process; post-op/recovery
	Intervening	Attempts to stop a patient from acting out or harming others
	Redirecting	Helping a patient back into bed/back to hospital room.