Violent Incidents in a Secure Service for Individuals with Learning Disabilities: Incident Types, Circumstances and Staff Responses

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Abstract

Background: The issue of violence in secure services has long been recognised both in the UK and worldwide. However, there is currently scarce literature available about violence within Learning Disability (LD) secure settings. **Methods**: Secondary data analysis was conducted on violent incidents, using information routinely collected by the staff over a one-year period. **Results:** Physical assaults were the most frequent type of incident, the distribution in terms of days or months was homogenous and incidents were concentrated in the corridors, lounges, and dining rooms of secure facilities. Antipsychotic medication was not regularly prescribed. Generalised linear modelling analyses revealed significant predictors that increased the chances of seclusion and physical restraint, such as being female or directing the violence towards staff. **Conclusions**: These findings can inform staff training on violence prevention, and suggest that increased ward-based supervision and enhanced use of psychological formulations may help in reducing violence within this service context.

Practitioner Points

1. LD secure services may benefit from assessments of special sensory needs and how these may relate to “busy locations” such as corridor or dining room.
2. LD secure services may benefit from Clinical Psychologists delivering ward based supervision and reflective groups.
3. LD secure services could benefit from consultation and training around violence in secure settings.

    Cautions

    1. This is a retrospective naturalistic study and no causal inferences can be drawn.
    2. The definitions of violence were based on staff professional judgement

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There are significant disparities in the description of levels of violence in secure services. In the United Kingdom (UK), almost half of the service users from a secure hospital were reported to have engaged in physical assaults over a 12 month period (Novaco & Taylor, 2015), and a review from five secure USA services found that 31% of service users engaged in at least one violent assault over a year (Broderick, Azizian, Kornbluh & Warburton, 2015). In contrast, a study of a secure hospital in Finland revealed that only 17% of the service users had been violent over a two-year period (Kuivalainen et al., 2013). Violence in secure services results in longer periods of detention for service users, increases the risk of both harm to and burnout among staff, impairs treatment effectiveness, increases distress among service users, and has important costs for the service in terms of staff members´ sick leave, compensation claims and employee turnover (Novaco & Taylor, 2015).

In secure services for individuals with LD in the UK it has been suggested that the prevalence of post-admission aggressive incidents ranges from 37% to 47% (Novaco & Taylor, 2004; Novaco &Taylor, 2008; Novaco & Taylor, 2015; Taylor & Novaco, 2013). Additionally, staff working in LD secure services may have an increased risk for client-inflicted injuries than staff working in non-LD inpatient wards (Bowers et al., 2011; Kiely & Pankhurst, 1998; Vanderslott, 1998). However, these figures should be treated with caution as different papers present significant variations in the definitions, methods of report and measurement of violent incidents (Bowers et al., 2011; Kiely & Pankhurst, 1998), making it difficult to reach clear conclusions. However, whatever the specific figure, high levels of violence and staff sick leave has the potential to reduce the sense of familiarity between staff members

and service users, subsequently affecting the therapeutic alliance (Turner & Clarke, 2009) and the standards of care for LD clients.

Factors of Violence in Forensic and Psychiatric Settings

Research in a forensic secure unit by Rutter, Gudjonsson and Rabe-Hesketh (2004) indicated that service users who had a greater tendency to engage in violence (>25 violent incidents over a period of 17 years) were more likely to be female, younger, and to be on a civil section. A higher risk for females' violent behaviour in forensic settings has been reported in several studies (Daffer, Mayern & Martin, 2003; Kuivalainen et al., 2013), with no specific explanations being offered. It has also been suggested that individuals who have been given a diagnosis of schizophrenia or personality disorder display greater levels of violence in secure hospitals than those without such diagnoses (Coid, Kahtan, Gault & Jarman, 1999; Rutter, Gudjonsson & Rabe-Hesketh, 2004; Rylan, 2006), and that Caucasian service users are the aggressor in more incidents than non-Caucasians (Dolan, Fullam, Logan & Davies, 2008).

These papers argue for the impact that dispositional influences (gender, ethnicity, psychiatric diagnosis etc.) can have on the risk of violence, rather than looking at systemic or environmental factors. This focus may be the result of an attribution bias (Esbec & Echeburua, 2010), and can lead to blame, stigmatisation, and classification of these service users as "challenging". In fact, these studies may underestimate the possible influence of psychological factors, such as previous traumatic experiences, that can have a profound impact on impulse control ability (Marshall et al., 2016) and could increase the risk of violence. Moreover, previous research has also shown that risk of violence can vary across situations (Andrew & West, 2011) and thus circumstantial influences should also be considered.

In this regard, it has been suggested that there might be a ‘time of day’ effect on the frequency of incidents (Garrison et al., 1990; McDougall, 2000; Whittington & Wykes, 1997). Hill et al. (2012), reported an increased level of incidents between 4.00-5.00 pm in a secure service, coinciding with the transition from daytime to evening staff. This temporal effect could be partially explained by the fact that these were the times with reduced structure and supervision (Hill et al., 2012). In addition, weekends have been associated with fewer incidents (Bowers et al., 2011) and this could be due to service users having more freedom and choices over their leisure time during weekends. This could reduce the feelings of powerlessness that living in an enclosed environment can generate and therefore diminish their levels of stress.

Moreover, Bowers et al. (2011) conducted a systematic literature review on violence within inpatient and secure services worldwide, which concluded that the lounge, corridors or day rooms were the locations with the higher levels of violence. The greater levels of noise or interactions in such locations could place high demands on service users with sensory needs and decrease their ability to manage other stimuli. This could increase the risk of violence in those locations and is of particular importance for service users with LD, who can be hypersensitive to touch or noise (Lillywhite & Haines, 2010). Nevertheless, this has been largely ignored in the LD literature where the understanding of violence is limited.

Factors Contributing to Violence in LD Secure Settings

In the last decade, there has been an attempt to shed light on the issue of violence within LD secure settings. Recently published literature has suggested that service users´ individual characteristics such as anger (Nicoll, Beail & Saxon, 2013; Novaco & Taylor, 2015; Willner, Jahoda & Larkin, 2013) or previous occurrence of violence were associated with an increase in violent incidents (Drieszzner, Marrozos &

Regenboog, 2013; Mcmillan, Hastings & Coldwell 2004). However, these studies have ignored the situational circumstances of the incidents, which are known to be associated with violence in mental health and forensic secure settings. Given that risk comprehension (Munro & Rumgay, 2000; O' Rourke, 1997) is paramount for effective risk management, the lack of understanding of how violence develops raises the question of how LD secure services respond to violence. This is a particularly relevant question for this client group, which is particularly vulnerable to bullying and victimisation (Lovel, Smith & Johnson, 2015).

Staff Responses

Violent behaviour of service users with LD is often treated with antipsychotic medication, despite the lack of evidence of its effectiveness in reducing aggression within this client group (Tsiouris, 2010; Tyrer et al., 2008). The National Institute of Health and Clinical Excellence (NICE, 2005) have questioned the ethics and legalities of using restrictive interventions in the care of people with LD. After the Winterbourne View hospital scandal (Department of Health, 2012), where several staff members were prosecuted for abusing and mistreating service users with LD, the Transforming Care guidelines (Department of Health, 2012) were developed to ensure that LD service users receive safe care.

Although violence may be more common in secure LD pathways than in other mental health secure pathways (Dickens, Picchioni & Long, 2013), at present, there are few published outcome papers from these settings (Hobson, Faulkner & Tamsin, 2015). Given that most current research refers to non-LD forensic settings (McMillan, Hastings & Codwell, 2004), increasing the available research in this area is of paramount importance.

Purpose of the Study

Our study was conducted with data from a NHS secure hospital that provides treatment for service users with LD in England. We aimed to explore the incident rates over the course of a year, its circumstances and staff responses.

In line with the findings of previous research, our hypotheses were: 1) that incidents will be more likely to occur in corridors; 2) that incidents will be more common during weekdays, and 3) that antipsychotic medication will be often utilised by staff (>30% of the medication prescribed after an incident will be antipsychotic, irrespective of whether the service user has a diagnosis of psychosis as reported by Tsiouris et al., 2010). Moreover, the study will explore whether certain types of incident tended to occur in certain locations or on certain days of the week. The study will also explore the probabilities of being secluded or restraint after controlling for incident types, circumstances and service users' socio-demographic characteristics.

Method

Data

The current study is a secondary data analysis of information routinely collected by a secure service that provides inpatient specialist services for people with LD aged 18 and above who have forensic needs or behaviours that cannot currently be managed within a community setting. All of the service users to which the data pertains had been detained under civil (s.3) or criminal sections (s.35/37/41/47/49) of the England and Wales Mental Health Act 2007. In January 2015 there were 96 beds in the low secure unit (24 female and 72 male) and 52 beds in the medium secure unit (46 male and 6 female). During the last months of 2015, the low secure unit was reconfigured

to 91 beds (24 female and 67 male). Data were composed of records of violent incidents that occurred between 1st January and 31st December 2015.

Measures

The incident report system utilised by the service was the only instrument employed in this study. It allows members of staff to record details of the incidents such as day of the week, month, ward, incident type and staff responses.

Types of incident .The taxonomy of the incident report form originally divided the incidents into seven categories including: physical assault, verbal abuse, threats, harassment, psychological abuse, sexual assault and others. The category others comprised different types of incidents such as biting or spiting among others. For the purpose of analyses these were comprised into three categories: physical assaults, sexual assault and others and non-physical incidents. Non-physical incidents included verbal abuse, threats, harassment and psychological abuse. Violence was directed towards two different groups: staff members or service users.

Location. The incident report form contains a taxonomy, which divides the location of incidents into several categories including: lounge, dining room, corridor, and other locations. The category 'other locations' was created for the purpose of the analyses and comprised different areas such as the bedroom, outside area, kitchen, medication room or smoking area among others.

Staff responses. The taxonomy of the incident report form divides staff intervention responses into: physical restraint, de-escalation techniques, physical restraint in combination with de-escalation or blocks, and breakaways. Seclusion was recorded as a separate variable in the reporting form and constitutes another variable in the dataset (see table 2).

Medication. If medication was provided during the incidents staff members recorded the name of the drug. For the purpose of the analyses, they were divided into five subgroups: anxiolytics, antipsychotics, antihistamines, analgesics and anticholinergic.

Procedure

The service provided access to routinely collected data on violent incidents. This data was anonymised before being transferred to a high encryption storage system of the principal investigator (PI). The project received approval by the University Research Ethics Committee and the Research and Development committee of the NHS service.

Statistical Analyses

Descriptive analyses were conducted to study data characteristics and derive summary data about relevant demographic and clinical information. Considering the nesting nature of the data (each service user could have more than one incident record), a generalised linear mixed model with a random intercept appropriate for discrete outcomes (GLIMMIX in SAS 9.4) was specified a) to test the association between predictors (e.g. type of incidents with the locations where they occurred) and b) to predict the odds of being secluded or restrained after controlling for gender, ethnicity, sexual orientation, location, ward, victim of violence or type of incident.

Results

The sociodemographic characteristics of the service users are presented in table 1. A total of 196 service users were residing in the low and medium secure unit during the period of January 2015 to December 2015. Seventy percent (n=138) were involved in at least one violent incident and 30% (n=58) did not register incidents. Ninety service users had incidents only within the low security unit, 37 within the medium security unit, and 11 registered incidents in both units because were transferred between units

during the year. The total number of incidents register was 2125 (n=1199 in low secure unit and n=926 in medium secure unit). One hundred and one service users had at least one violent incident in the low secure unit (range of incidents per service user = 1 to 96, median = 17, mean = 22) and 48 service users had at least one violent incident in the medium secure unit (range of incidents per service user = 1 to 91, median = 18, mean = 25). Male service users were responsible for 64% of the total number of incidents in both units.

In terms of demographics (Table 1), those service users with registered incidents were significantly younger than those without incidents ($p<.001$). In addition, the percentage of males with registered incidents was significantly smaller than those without registered incidents ($p<.05$). The vast majority of the service users in the entire sample were single white British, and self-identified as heterosexual.

Descriptive analyses between units (Table 2) indicated that those in the medium secure unit (MSU) were younger on average that those in the low secure unit (LSU), and the percentage of males in the MSU was higher than in the LSU.

Physical assault was the most prevalent type of incident in both units, and violence directed towards other service users was more prevalent in LSU, contrasting with the higher prevalence of violence towards staff observed in the MSU.

The distribution of incidents between units regarding the locations where they occurred was homogeneously distributed. The distribution in terms of days or months was also homogenous (Table 2).

In terms of staff responses to the incidents, prescription of medication occurred in 13% of cases (8% in MSU), where anxiolytics were the most commonly

prescribed compound (Table 3). Other types of intervention happened 64% of the time. De-escalation techniques and restraint combined was the most prevalent intervention in both units (48%). Physical restraint appeared to be more common in the MSU than LSU (Table 3).

When testing bivariate associations (irrespective of the unit), the associations between type of incidents and the locations where they occurred were statistically significant x^2=22.94, *p*=.0008. The odds of a non-physical incident or a physical assault occurring in corridors (*OR*=10.53 and *OR*=9.37) or dining room (*OR*=3.79 and *OR*=3.37) were significantly higher compared to the occurrence of sexual assaults and other in these locations. Finally, the associations between the different types of incident and the days of the week (Monday to Thursday vs Friday to Sunday) was not statistically significant x^2=1.16, *p*=.56.

Predictors of staff responding to an incident with seclusion after controlling for age, sexual orientation, ethnicity, target of violence, ward, location, and types of incident are presented in table 4. Results indicate that being female was associated with significantly increased odds of being secluded than being male ($p<0.01$). Similarly, directing violence toward staff was associated with a significant increase in the odds of being secluded as compared with directing violence to other service users ($p<0.01$). Incidents occurring in the medium secure unit were linked with four times greater odds of being secluded as compared to incidents that occurred in the low secure unit ($p<0.01$).

In terms of predictors of staff responding to an incident with physical restraint (Table 5), being a female resulted in three times greater probability of staff responding with a physical restraint than being male ($p<0.01$). In addition, being heterosexual was linked with reduced odds of physical restraint compared to service

users who did not disclose their sexual orientation ($p<0.05$). Violence directed towards staff was also associated with five times greater odds of being physically restrained than violence directed towards other service users ($p<0.01$). Incidents that occurred in the medium secure unit were associated with a greater probability of being physically restrained than incidents that occurred in the low secure unit ($p<.001$) and incidents that occurred in the corridor had a greater chance of being responded to with physical restraint than incidents occurring in any other location. Both physical assaults and non-physical incidents (verbal abuse, threats, harassment and psychological abuse) were associated with higher probabilities of receiving physical restraint ($ps<0.01$) than sexual assault and other types of incident. However, the magnitude of the increase of odds of being restrained was greater for the physical assault incidents than for the non-physical incidents.

Discussion

This report sought to answer three research questions. First, it aimed to analyse whether certain types of incident tended to occur in certain locations. Second, it attempted to explore whether certain types of incident tended to occur on certain days of the week. Third, the study tried to explore whether antipsychotic medication was the most commonly prescribed drug after a violent incident.

In this dataset, the majority of registered incidents were physical assaults, similar to figures reported in previous research in other LD secure settings (Novaco and Taylor 2015; Novaco and Taylor, 2013; Kiely and Pankhurst, 1998; Vanderslott, 1998). The number of incidents was higher in the low secure unit than in the medium secure unit although there were more service users in the low secure unit. The majority of incidents were directed towards staff (57%), which is in line with

previously reported findings (Hill et al., 2012; Kelsall, Dolan & Bailey, 1995).

Nevertheless, when looking at victims of violence between the units, violence directed towards other service users was more prevalent in the LSU whereas violence towards staff was more prevalent in the MSU. This suggests that the victim of violence could be influenced by an environmental factor such as the security of the unit, which has not been identified in previous research and should be further explored.

Although violent incidents were homogeneously distributed across the four categories, the category "others" comprised a wide range of locations. Thus, by paying close attention to the results, it could be inferred that violent incidents were concentrated in three locations including the lounge, corridor, and dining room. All of these locations had greater number of incidents than the category others. These results are consistent with the findings of the literature review of Bowers et al. (2011) which concluded that day rooms, lounge, and corridors where the locations with highest rates of violence. Regarding the month, the distribution was homogeneous, which contrasts with previous research, which identified several seasonal effects of violence in secure and forensic settings (Coldwell & Naismith 1989; Dietz & Rada, 1982; Haider, 1997; Stockman & Heiber 1980; Weizmann-Henelius & Suutala 2000).

The results also showed that the rate of incidents was homogeneously distributed throughout the week, with no differences between weekdays and weekends. This is also inconsistent with previous literature (Bowers et al., 2011), that has reported a lower prevalence of incidents during weekends. It has been suggested that this difference could be due to a reduced interaction between staff and service users during the weekends (Abbot, 1978, Bowers et al., 2011) or to the greater

availability of choices during weekends (Hunter and Love, 1996). Since these studies refer to non-LD inpatient services, the organisational differences with LD secure services may account for the inconsistency of the results. In the service where the project was conducted, service users are encouraged to choose which activities are meaningful for them both during the week and during the weekend, which could partially explain the lack of disparity in the incidence of violence.

Physical assault was the most common type of incident across all the locations. The majority of service users detained in this secure service had comorbid psychiatric diagnoses such as personality disorders, autistic spectrum disorders or psychosis among others. These mental health difficulties often emerge in the context of traumatic experiences of neglect, abuse and violence (World Health Organisation, 2012) and this can help formulate why individuals with histories of trauma and adversity can respond with violence as a way of surviving difficult experiences (Johnstone et al., 2018). Additionally, most of these locations are likely to place sensory demands on service users, which may increase the risk of violence in an attempt to meet those special sensory needs (DH, 2007). Occupational therapists and Clinical Psychologists (CPs) working in LD secure services could help identify and meet these sensory needs by using the Sensory Integration theory (Shaaf & Miller, 2005) as well as provide training and supervision to other staff members. In addition, these locations are likely to have more people than the others, which could increase the chance of conflict and violence (Bowers et al., 2011).

The bivariate associations between type of incidents and the locations where they occurred showed that physical assault, verbal abuse, harassment, and psychological abuse were more likely to occur in the dining room and corridors than sexual assaults and other type of incidents. An explanation for this would be that

sexual assaults occurred in more secluded areas such as the kitchen (14% of incidents in the kitchen were sexual assaults). This is an important consideration for risk assessment procedures and it could be included in specialised risk training programs of LD secure services. Although how these associations happen is unclear, a useful starting point to reduce violence could be to develop systemic formulations oriented to understand the interactions between individuals and their immediate setting (i.e. specific locations or level of security).

The current paper also explored staff responses to violence and found that only 13% of incidents were responded to with medication and that out of those incidents where a service user was given medication the most frequently prescribed were anxiolytics, followed by antipsychotics. This study shows promising results, as our hypothesis that antipsychotic medication would be often prescribed (<30%) was not upheld. In contrast, results showed that antipsychotics were not generally prescribed in response to incidents. According to NICE (2014) guidelines, antipsychotic medication should be employed to treat symptoms of psychosis and no research has highlighted this as an effective strategy for managing incidents with LD service users (Tsiouris, 2010). In fact, the use of this medication was recognised by NHS England (2015) as problematic, in that it was highlighted that there was a pattern of over-prescription of antipsychotic drugs to LD service users.

Nevertheless, this should be interpreted cautiously as these results only refer to "Pro re nata use" (PRN, meaning used when needed, such as at times of acute distress) and did not take into account the regular use of antipsychotic medication. This is significant because if many service users without a diagnosis of psychosis were regularly prescribed such drugs, this could also be problematic. This is entirely possible, as the LD census of England, which explored treatment experience of

inpatient LD service users, reported that 52% of them were on regular prescription of antipsychotic drugs (HSCIC, 2015). Therefore, future research should aim to explore both PRN and regular prescribed medication in LD secure services.

In addition, de-escalation and restraint combined was the most common response employed by staff. This fits with the behavioural support framework and recommended guidelines (BPS, 2011; Doh,2007; NICE, 2015). In fact, results indicated that in response to physical incidents, the odds of using de-escalation instead of restraint were increased. Given that the NICE (2015) guidelines recommend implementing psychosocial methods in the management of violence and use restraint as a last resort, these results are promising. However, 16% of incidents were recorded as being responded to with only restraint. It is important to consider that the current research does not include a measure of the severity of the risk that each type of incident involves, which could be helpful in understanding the use of restraint. For instance, it could be argued that if incidents were of a high severity, not employing restraint as a first response could be more dangerous than employing it.

Although the benefits of avoiding physical intervention for service users is well established (Robertson, 2012), the evidence for the effectiveness of de-escalation techniques for violence management is still relatively inconclusive (Muralidharan, 2006) with very few high quality studies having been conducted on its effectiveness. Currently, there is not a widely accepted model of de-escalation and the core skill training set is scarcely documented (Spencer & Johnson, 2016; Robertson, 2012), which makes the implementation of those techniques challenging. Hence, it is important that LD secure services develop psychological formulations and positive behavioural support plans that help in understanding how to approach the de-

escalation in a person centred way. Additionally, further investigation into the effectiveness of de-escalation in secure settings is required.

After controlling for several covariates the generalised linear mixed models suggested females were more likely to be restrained and secluded than males. In order to understand this difference, qualitative research could look at staff's thought processes relating to the use of restraint across wards with different genders. Secondly, it showed that heterosexual service users were less likely to be subjected to physical restraint than those who preferred not to disclose their sexual orientation. Nevertheless being LGBT was not associated with increased risk of being restrained or secluded when compared with those who decided not to disclose their sexual orientation and thus further research is needed to shed some light into this.

Third, results also showed that violent incidents directed towards staff members were more likely to be handled with seclusion and/or restraint. A possible explanation is that staff members do not have effective alternatives to restraint that guarantee service users' and their own safety when they are involved in a violent incident (Muir-Cochrane, Baird & McCann, 2014). This is challenging, as staff can feel anxious and distressed after implementing restraint (Sequeira & Halstead, 2004). In fact, CQC reports of secure NHS services have suggested that staff are not always debriefed after incidents. CPs could increase ward-based supervision and reflective space opportunities that support in dealing with the difficult feelings that implementing restraint may provoke amongst staff. This could also be a good opportunity to understand the context in which the incidents were developed and the factors that contributed to it, which could in turn help in preventing future incidents.

The results suggest that these circumstantial and individual factors are predictive of staff responses. In order to provide good inpatient care, multidisciplinary understanding of violence is essential (Royal College of Psychiatrists, 2013). Given that treatment of violence emphasises the employment of the least restrictive intervention when possible (NICE, 2015; Royal College of Psychiatrists, 2013) this report provides an opportunity to stimulate research that identifies the types of incident, circumstances and service users who are more prone to receive restrictive interventions, which could in turn support in the reduction of such interventions. The results could also encourage further research to gather the views of the staff that employ restrictive interventions in order to obtain a comprehensive understanding of the factors that lead to restraint and its impact on staff. In addition, this report may be of interest for service users as it enhances the understanding of the care that they receive and they provide an opportunity for them to get involved in decisions about their treatment (NHS England, 2015).

The current study has some limitations. Firstly, it was a retrospective naturalistic study and thus causal inferences could not be drawn. Second, the data were staff-based constructions of reality as staff members used their professional judgement and their own definitions of violence, which introduced a potential bias. The incident reporting form used does not provide with a standard definition of violent incidents nor is this available in the current literature (Anderson & West, 2011). This is well represented by categories used in the incident recording form such as psychological and verbal abuse, which seem to overlap. In fact, while this study included psychological abuse or threats as incidents, other studies include self-harm. This incongruence is important because self-harm has been showed to be highly prevalent in the LD population (Health and Social Care Information Centre, 2015)

and further research should aim to propose operational definitions of violent incidents. Furthermore, NICE (2015) guidelines recommend that information regarding violence is collected and synthesised in collaboration with service users and future studies should attempt to do so. Additionally, the incident report system does not provide information about percentage of bed occupancy through time or details about incidents by ward gender distribution. This could have hindered the understanding of why certain incidents are more prevalent in certain units or why males were responsible for more incidents. Thirdly, in the association analyses of types of incident and location and days of the week and types of incident, several cells did not have registered incidents, which may have increased the chances of type I error, so further studies should attempt to replicate these results. Lastly, the data did not contain information about the severity of the incidents, which would support in the understanding of the use of physical restraint. However, this paper also has several strengths. While much past research has focused on service users as violent individuals (Andrew & West, 2011), this study approached violence as a situational problem influenced by multiple factors. This is the first study to explore both environmental factors of violence and staff responses to it within an LD secure setting and of establishing individual and circumstantial predictors of staff responses to violence.

Overall, the results of the current paper have suggested that physical assaults were the most common incidents and that the lounge, corridor, and dining room were the locations where these assaults occurred more frequently. In addition, the report found evidence that women might be at increased risk of being restrained, which could be explored in subsequent research. The results of this report provide an opportunity for LD services to inform their violent prevention specialist trainings and

to help them implement approaches aimed to reduce the use of restrictive techniques (Bowers et al., 2015). They also provide opportunities to debrief staff after violent incidents and create spaces for supervision and formulation on the wards. This could be an underlying mechanism for reducing violence as staff with more training and understanding of violence can better prevent it (Daffern, Howers & Ogloff, 2007).

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Tables

Table 1

Socio-demographic characteristics of the service users

	Service users with registered incidents	Service users without registered incidents	T-test or Chi-square
	n=122	n=58	
Age, Mean (SD)	34.6 (10.9)[a]	42 (12.6)	4.04***
Sex male, n (%)	95 (78)[a]	53 (91)	4.91*
Ethnicity British, n (%)	109 (89)	53 (93)	.60
Sexual Orientation, n (%)			
Heterosexual	81 (66)	39 (67)	3.02
LGBT	25 (21)	7 (12)	
Prefer not to answer	16 (13)	12 (21)	
Marital Status, Single, n (%)	116 (95)	53 (91)	.94

[a]Note: n=122, 16 service users with registered incidents have missing data on demographics

Table 2

Characteristics of the incidents

Variable	Low Secure Unit	Medium Secure Unit	Total
Age, Mean (SD) [Range]	34.03 (10.60) [20 to 62][a]	28.03 (8.64) [20 to 61][b]	31.36 (10.22) [20 to 62][a]
Gender Male, n (%)	679 (57)[a]	618 (68)[b]	1297 (61)[c]
Types of Incidents, n (%)			
Physical assault	779 (65)	642 (69)	1421 (67)
Sexual assault & other	39 (3)	16 (2)	55 (2)
Non-physical incident	381 (32)	268 (29)	649 (31)
Victims of Violence, n (%)			
Violence to Service Users	556 (46)	315 (34)	871 (41)
Violence to Staff	640 (54)[d]	610 (66)[e]	1250 (59)
Location, n (%)			
Corridor	310 (28)	261 (30)	571 (29)
Lounge	341 (31)	187 (22)	528 (27)
Dining Room	188 (17)	202 (24)	390 (20)
Other	262 (24)[f]	210 (24)[g]	472 (24)
Days of the week, n (%)			
Monday	204 (17)	143 (15)	347 (16)
Tuesday	176 (15)	136 (15)	312 (15)
Wednesday	146 (12)	133 (14)	279 (13)
Thursday	209 (17)	116 (13)	325 (15)
Friday	171 (14)	133 (14)	304 (14)
Saturday	141 (12)	122 (13)	263 (12)
Sunday	152 (13)	143 (15)	295 (14)
Month, n (%)			
January	81 (7)	117 (13)	198 (9)
February	93 (8)	94 (10)	187 (9)
March	109 (9)	74 (8)	183 (9)
April	106 (9)	81 (9)	187 (9)
May	111 (9)	90 (10)	201 (10)
June	118 (10)	75 (8)	193 (9)
July	71 (6)	62 (7)	133 (6)
August	106 (9)	63 (7)	169 (8)
September	80 (7)	73 (8)	153 (7)
October	107 (9)	63 (7)	170 (8)
November	106 (9)	61 (7)	167 (8)
December	111 (9)	73 (8)	184 (9)

Note: There is missing data for these analyses.
[a]n=1117, [b]n=897, [c]n=2014, [d]n=1196, [e]n=925, [f]n=1101, [g]n=860

Table 3

Staff response to the incidents

Variable	Low Secure Unit	Medium Secure Unit	Total
Medication Given Type, n (%)			
Antypsychotics	10 (9)	26 (15)	36 (13)
Anxiolitics	92 (87)	112 (64)	204 (73)
Antihistamines	2 (2)	32 (18)	34 (12)
Analgesics	2 (2)[a]	2 (1)	4 (1)
Anticholinergics		2 (1)[b]	2 (.1)
Type of Intervention, n (%)			
Blocks & Breakaways	58 (9)	40 (6)	98 (7)
De-Escalation	207 (31)	175 (26)	382 (29)
Restraint	76 (12)	142 (21)	218 (16)
De-Escalation & Restraint	319 (48)[c]	312 (47)[d]	631 (48)

Note: There is missing data for these analyses.
[a]n=106, [b]n=174, [c]n=660, [d]n=669, [e]n=1329,

Table 4

Generalised linear mixed model of seclusion

Predictive Variables	Odds ratio	95% Confidence Intervals (CI)	p value
Age	0.971	[0.931,1.012]	0.167
Female	8.967	[3.580,22.458]	0.000**
Heterosexual	0.501	[0.156,1.608]	0.243
LGBT	0.506	[0.131,1.948]	0.319
Violence to Staff	6.359	[4.008,10.089]	0.000**
Medium Secure	4.159	[1.991,8.690]	0.00**
Ethnic Minority	1.640	[0.467,5.756]	0.436
Corridor	0.951	[0.622,1.455]	0.818
Dining Room	0.941	[0.555,1.595]	0.822
Lounge	1.030	[0.661,1.606]	0.892
Other locations	1.00	[1.000,1.000]	
Non-physical incidents[a]	1.527	[0.258, 9.047]	0.637
Physical assault	3.601	[0.630,20.561]	0.147
Sexual assault and others	1.00	[1.000,1.000]	

Note. *Significant at p <.05 **Significant at p<.01. [a] Non-physical incidents comprised harassment, psychological abuse, threats and verbal abuse

Table 5
Generalised linear mixed model of restraint

Predictive Variables	Odds ratio	95% Confidence Intervals (CI)	p value
Age	0.995	[0.975,1.015]	0.656
Female	3.361	[2.047,5.517]	0.000**
Heterosexual	0.5203	[0.281,0.961]	0.037*
LGBT	0.672	[0.335,1.346]	0.260
Violence to Staff	5.236	[3.995, 6.861]	0.000**
Medium Secure	2.352	[1.581,3.498]	0.000**
Ethnic Minority	1.147	[0.593,2.22]	0.679
Corridor	1.675	[1.177,2.384]	0.004**
Dining Room	1.403	[0.951,2.068]	0.087
Lounge	1.045	[0.735,1.484]	0.805
Other locations	1.00	[1.000,1.000]	
Non-physical incidents	4.034	[1.432, 11.364]	0.008
Physical assault	10.790	[3.878,39.019]	0.000**
Sexual assault and others	1.00	[1.000,1.000]	

Note *Significant at p <.05 ** Significant at p<.01. [a] Non-physical incidents comprised harassment, psychological abuse, threats and verbal abus