

Aggressive Incidents by Incarcerated People With Psychiatric Illness and Their Relationship With Psychiatric Symptoms

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Aim: A prospective design was used to investigate the relationship of current psychiatric symptoms of incarcerated people with serious mental illness (SMI) and aggressive behavior on a penitentiary ward for crisis intervention.

Methods: One hundred sixty detainees with SMI, detained in a high-security penitentiary psychiatric facility, were screened every 2 weeks with the Brief Psychiatric Rating Scale-Extended (BPRS-E) by trained clinicians, to ensure that the data on psychiatric symptoms were up-to-date. Aggressive behavior was registered with the Staff Observation Aggression Scale-Revised. A binary logistic regression analysis was performed to examine the relationships between factor scores of the BPRS-E and aggressive behavior.

Results: Significant relationships between the BPRS-E factor hostility, antisocial traits, and aggressive incidents were found, but not between the positive symptoms or manic factor scores and aggressive incidents.

Discussion: Symptoms of SMI measured with the BPRS-E did not help to explain the occurrence of aggressive behavior. This is not in line with what is commonly found. The implication is that it can be expected that this population will display aggressive behavior but that symptoms do not help in predicting when this will occur. In addition, hostility and antisocial traits were related to aggressive behavior. For this specific population, an interactional approach might be more effective in the management of aggression than treatment of symptoms of SMI.

KEY WORDS:

Aggression; BPRS-E; prison; psychiatric symptoms; severe mental illness; SOAS-R; violence

In numerous studies, the consequences of violence within a prison or clinical setting have been examined. These studies show that inpatient violence negatively affects ward climate and staff safety (Kerley et al., 2009; van Leeuwen & Harte, 2017; Whittington & Richter, 2006), has adverse effects on treatment effectiveness

(Arnetz & Arnetz, 2001), may lead to victimization of both patients and staff (Boudoukha et al., 2011; Haney, 2012; Kupers, 1996), and may trigger future violence in the witnessing of victimized patients (Černý et al., 2018; Freestone et al., 2017; Sariaslan et al., 2016).

The prevalence of serious mental illness (SMI) among incarcerated detainees is between 3.6% and 5.5% (Fazel & Seewald, 2012). SMI is a risk factor for aggressive incidents (Felson et al., 2012) and increases the risk of prison violence (Fazel et al., 2016; Walters & Crawford, 2014). Aggressive incidents are defined as any verbal, nonverbal, or physical behavior that is threatening to others, or property, or physical behavior that actually does harm to others or property (Nijman et al., 1999).

Baseline measurements of aggressive behavior in prison are lacking, and estimates vary widely depending on methodology, sample, and environmental factors (van Beek et al., 2011). The extent to which prison violence is more precisely caused by detainees with SMI is not clear because

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systematic research is lacking. Estimates are that 43%–55% of detainees with SMI living at prison mental health wards show physical aggression (Krebs et al., 2020; Nijman & Geurkink, 2004; van Beek et al., 2011).

Detainees with SMI score relatively high on characteristics that are known to be risk factors for aggressive behavior. For instance, they have lower educational and economical statuses, more often a history of childhood abuse, and more often comorbid conduct disorder and antisocial traits than those without criminal records (Bo et al., 2011; Cullen et al., 2011; Dean et al., 2020). Among detainees with SMI, Black and minority groups are overrepresented (Denzel et al., 2016). It is known that ethnic and cultural characteristics might influence the expression of SMI, which leads to different symptom profiles. Minority groups also tend to have more severe symptoms (Denzel et al., 2018).

Detainees with SMI are a group of psychiatric patients with complex psychopathology that complicate close relationships with mental health care and compliance to treatment (Bo et al., 2011; Denzel et al., 2018; Hodgins, 2020). These problems may have contributed to behaviors that ultimately cause this group of people to end up receiving psychiatric treatment in prison instead of in a psychiatric institution (Patchan et al., 2018). Indeed, dysfunctional treatment histories are more common in offending people with SMI, than people with SMI without criminal records (Van Dongen et al., 2015).

In addition to selection effects in studies, the relatively low prevalence of patterns of aggressive behavior in people with SMI is a factor that complicates the estimation of risk factors (Singh et al., 2011). Furthermore, individuals prone to aggressive behavior are not aggressive most of the time. Another complicating factor in predicting aggressive behavior is that most studies focus on the relationship between aggression and psychiatric diagnoses in general. For example, persons with a diagnosis of schizophrenia or bipolar disorder are at risk for behaving physically aggressive, especially when there is also a diagnosis of substance abuse (Fazel et al., 2010; Felson et al., 2012; Lamsma et al., 2020; Singh et al., 2012; Walters & Crawford, 2014). Aggression, however, also seems to be related to specific psychiatric symptoms (Singh et al., 2011). For example, paranoia and hallucinations are symptoms that are frequently mentioned as risk factors for aggressive behavior (Hodgins & Riaz, 2011; Silverstein et al., 2015). Although these symptoms are characteristic for the previously mentioned diagnoses, these symptoms are not continuously present.

Studies looking into the relationship between aggressive behavior and psychiatric symptoms have mostly used a retrospective design to relate aggressive behavior to symptoms that were assessed at the start or end of treatment, usually in a different time frame. However, symptoms may vary over time, whereas diagnoses are relatively stable because they express the prevalence of symptoms in a certain time frame,

for instance, 6 months. In addition, the diagnosis remains after the symptoms have waned for a significant period (Leucht et al., 2005; Nolan et al., 2003). A study in a situation of simultaneous presence of symptoms and aggressive behavior might provide more reliable information on dynamic risk factors. However, to do so, researchers would need to assess symptoms on a regular basis because symptoms can fluctuate and incidents may occur unexpectedly (Nolan et al., 2003).

In summary, as a group, detainees with SMI are at risk for displaying aggressive behavior during incarceration (Krebs et al., 2020; Nijman & Geurkink, 2004; van Beek et al., 2011). However, it is difficult to predict when aggression will occur and what the specific aspects are of SMI that contribute to that risk. Therefore, the goal of the current study is to provide more insight into the short-term dynamic risk factors for aggressive behavior in incarcerated people with SMI by investigating the relationship between acute psychiatric symptoms and aggressive incidents.

Methods

Setting

To study the relationship between psychiatric symptoms and aggressive behavior, we conducted our study in a Dutch penitentiary clinic for psychiatric crisis intervention, the Penitentiary Psychiatric Centre (PPC). The ethical guidelines for research with human subjects in the Dutch penitentiary system were followed. The research design, including these guidelines, was submitted for assessment to the Ministry of Justice that granted permission. The PPC is a specialized national facility for both remanded and convicted prisoners who experience severe psychiatric symptoms and display dangerous behavior to themselves or others. Detainees are admitted to the PPC when psychiatric symptoms and resulting behavior are too complex to manage in regular penitentiary institutes. In the PPC, detainees are referred to as patients. The PPC is a highly secured facility, with a minimum of three members of specialized staff on wards suited for 10 detainees. The average duration of stay is 11 weeks. The goal of hospitalization in the PPC is to stabilize dangerous behavior by diagnosing and treating psychiatric disorders. Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5) classifications were made during the stay by a specialized team of clinicians, based on observations and interviews. Structured interviews like the Structured Clinical Interview for DSM-5® Disorders (structured clinical interview for DSM-5) were not used, as patients in the PPC are generally not in the condition to participate in a prolonged conversation.

Participants

Patients of the PPC diagnosed with an SMI were approached to inform them about the study and ask for consent. Of the detainees who were approached ($N = 287$), 200 consented. Some people were excluded because they left the facility

before being assessed ($N = 27$). Other participants' data were excluded during data processing because of missing data ($N = 13$). This resulted in a total sample size of $N = 160$. Table 1 shows the characteristics of the participants.

The SMI diagnosis was made according to the definition of the U.S. National Advisory Mental Health Council: "The phrase severe mental illness (SMI) refers to people with psychological problems that are often so debilitating that their ability to engage in functional and occupational activities is severely impaired. Disorders with psychotic symptoms such as schizophrenia, schizoaffective disorder, manic depressive disorder, autism, as well as severe forms of other disorders such as major depression, panic disorder, and obsessive compulsive disorder can all be labeled as SMI."

All detainees were informed of their right to refuse participation in the study, without any consequences for their stay and treatment in the PPC, and were informed that they could withdraw themselves from the study at any time. Participants gave their informed consent after careful explanation of the study background and procedures. All participants as well as nonparticipants received care as usual.

Materials

Psychiatric Symptoms

The Brief Psychiatric Rating Scale (BPRS) is a widely used scale for assessing a variety of psychotic and affective symptoms over time (Velligan et al., 2005). The BPRS uses observation and interview information, can be administered in 20 minutes, and is sensitive to change (Burger et al., 2003; Kopelowicz et al., 2008; Leucht et al., 2005; Shafer, 2005). It is used in both inpatient and outpatient populations,

across various diagnoses, and in clinical pharmacological research (Ruggeri et al., 2005; Thomas et al., 2004). The BPRS, originally consisting of 16 items, was developed by Overall and Gorham in 1962 but was expanded in 1966 with two items (i.e., excitement and disorientation) resulting in the BPRS-18 (Overall & Gorham, 2004). The BPRS-18 has been extensively studied and was found to be a valid and reliable instrument (Dingemans et al., 1995). In 1986, Lukoff and colleagues added three items to detect relapse or prodromal signs and three items to include manic or bipolar symptoms, thereby introducing the BPRS-Extended version (BPRS-E; Lukoff et al., 1986; Velligan et al., 2005). The internal consistency, interrater, and test-retest reliability estimates for the BPRS-E are good, as are the internal reliability estimates at the item level (Kopelowicz et al., 2008; Leucht et al., 2005). With these additions, the BPRS-E is suitable to detect change within severely and persistently mentally ill patients (Burlingame et al., 2006). The psychometric properties of the BPRS-E seem not to have been negatively affected by the additional items (Velligan et al., 2005).

The BPRS-E is a semistructured interview consisting of 24 items. The first 14 items are based on interview and observation; and the last 10 items, on observation alone. Each item can be scored on a 7-point Likert-type scale. Item scores above 4 are considered to be pathological (Lukoff et al., 1986). The BPRS-E is routinely used to evaluate treatment in the PPC. For this study, however, additional training was provided. Interrater reliability between the five trained clinicians for this study was established at $r = 0.86$ at the start and was maintained by regular peer review sessions.

Symptoms of SMI were operationalized by the BPRS-E structure that was established in a sample of incarcerated

TABLE 1. Characteristics of 160 Incarcerated Psychiatric Patients

Sex	Male	131
	Female	29
Age in years	Mean	32.9
Lifetime diagnosis of substance use disorder	No substance abuse	10.6%
	Substance dependence	55.7%
	Unknown	33.8%
Previous institutional misconduct	Yes	41%
	No problems documented	59%
Violent offense	Yes	67.2%
	No	32.8%
Violence as cause for admission	Physical violence	10.6%
	Nonphysical violence	46.7%
Mental disorder, DSM-5	Psychotic disorder including schizophrenia	59.4%
	Schizoaffective disorder	5.6%
	Bipolar disorder	6.3%
	Other	24.8%

DSM-5 = Diagnostic and Statistical Manual of Mental Disorders (5th ed.)

people with SMI (van Beek et al., 2015). This structure comprises five factors and a single item: hostility. The five factors and their internal consistency (Cronbach's alpha) were as follows: *affect* ($\alpha = 0.78$), *psychosis* ($\alpha = 0.75$), *activation* ($\alpha = 0.73$), *resistance* ($\alpha = 0.59$), and *negative symptoms* ($\alpha = 0.51$; van Beek et al., 2015). The factor *affect* (four items) includes internally directed symptoms like depression, anxiety, and guilt. The factor *psychosis* (four items) includes positive symptoms of psychosis. *Activation* (six items) is the factor that includes manic symptoms. *Resistance* (five items) is a factor that describes withdrawal from treatment or passive aggressiveness, but not direct aggression. Aggression is described by the item *hostility*, which did not load on any factor and is included as a separate entity. *Negative symptoms* (four items) refers to the lack of initiative, activity, and will in psychosis (van Beek et al., 2015). Because it is impossible to know when an aggressive incident will take place, the symptoms were measured with the BPRS-E every 2 weeks. That way up-to-date information about the symptoms was always available to relate to an aggressive incident whenever it occurred.

Aggression

Aggressive incidents were operationalized as “any verbal, nonverbal or physical behavior that was threatening to others, or property, or physical behavior that actually did harm to others, or property” (Nijman et al., 1999, p. 200) and measured with the Staff Observation Aggression Scale–Revised (SOAS-R). The SOAS-R is an instrument for monitoring aggressive incidents in psychiatric wards. The situation in which aggression occurs, means of aggression, target, interventions to stop aggression, and consequences of aggression can be filled in on the form. The scale is quick to complete, and there is no need for prior training of the staff (Nijman et al., 1999). A review on the SOAS-R indicated fair to good interrater reliability for SOAS-R scores varying from an intraclass correlation of 0.96 between total SOAS-R scores from independent raters rating four incidents described on paper to an acceptable interrater reliability for the scale, with Cohen's *ds* being 0.61 and 0.74 (4, 7, 8) and a Pearson's *r* between independent raters of 0.87 based on studies conducted in clinical practice (Nijman et al., 2005).

Procedure

Patients received treatment as usual, including biweekly assessments with the BPRS-E by a trained clinician, starting within 1 week after arrival. Consequently, recent assessment data were available for all participants to relate to aggressive incidents should they occur. One of the five trained clinicians approached the patient to ask for consent to use the assessments. Consenting participants' assessment results were collected throughout treatment up until a maximum of 10 assessments, because the duration of stay exceeded that amount only in very few cases.

Aggressive incidents were registered with the SOAS-R by a staff member who was either involved in the incident or was a direct witness, within 3 days of the incident. The researcher inquired about incidents with staff on the wards and collected completed SOAS-R forms several times a week, ensuring that all aggressive incidents were listed. To relate the aggressive incidents to symptoms that were actually present at the time of the incident, we followed the design Nolan et al. (2005) used in a different setting. Each BPRS assessment was treated as a new case. Aggression was coded as a binary variable; either aggression had occurred within 1 week before to 1 week after the BPRS assessment, or it had not.

Statistical Analysis

Data were analyzed using IBM SPSS Statistics software, Version 24. We analyzed distribution, extreme values, and linearity. Because we used multiple measurements within the same subjects, we performed a Durbin–Watson statistic to test for autocorrelation, which indicated that some autocorrelation was present. A Breusch–Pagan test indicated that heteroscedasticity was also present. Variance inflation factors were within the range of 1.15 and 1.67. Values above 2.5 indicate considerable collinearity (Johnston et al., 2018). We chose to use a binary logistic analysis using an AR1 matrix to correct for autocorrelation, the Satterthwaite method for unbalanced data sets, and a robust covariance estimation. We used six predictors (the five factors and the item hostility), with the binary aggression variable as the dependent variable. The variables antisocial personality traits, conduct disorder at a young age, medication adherence, and lifetime diagnosis of substance use disorder were used as covariates

Results

Descriptive Results for Aggression and SMI

Over a period of 2 years, 414 aggressive incidents were listed averaging 11.8 incidents per bed per year. This formula for prevalence is often used in literature and was calculated to offer a measure that can be compared with other findings (Nijman et al., 2005). The mean number of incidents per patient during their stay was 2.6. In 46% of the incidents, physical aggression with hands, fists, or other parts of the body was used. In 20% of the incidents, the aggression involved throwing a table, chair, television sets, or other objects. In 8% of the aggressive incidents, an object was used as a weapon and 4% of the incidents were attempted strangulation. The other incidents concerned severe verbal aggression. All 414 aggressive incidents were committed by 88 people, indicating that 72 detainees were not involved in any aggressive incidents. Figure 1 illustrates the distribution of aggressive incidents per patient. Figure 2 illustrates the distribution of incidents over time. It appears that most incidents

Graph 1 distribution of aggressive incidents

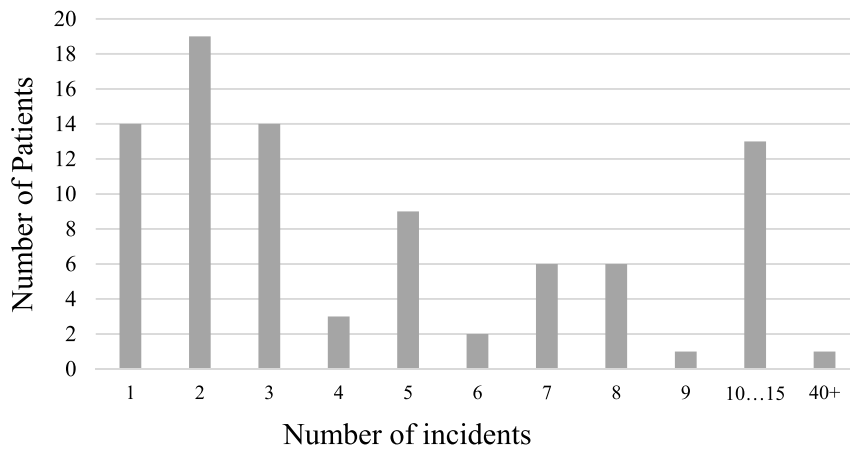


FIGURE 1. Distribution of aggressive incidents.

occurred in the first 2 weeks after admission. In 73% of the incidents, staff were the victims of the aggression.

Table 2 shows the mean factor scores of the first and last assessment of the participants. In total, 682 assessments were made. The mean participants' length of stay was 11 weeks. During the fourth assessment, 86 participants were still admitted. Only 14 participants were still in the PPC at the 10th assessment. Table 2 illustrates that, during their stay, on average, the patients' scores decreased, mainly on the item hostility.

Relationship Between Symptoms of SMI and Aggression

A significant proportion of our subjects did not display any aggression during their stay ($n = 72$), and some displayed aggression at every measurement ($n = 8$). We were looking for differences in psychopathology between the moments that aggression was present or absent. Therefore, we analyzed

the relationship between the predictors and aggression of the patients that showed variation in the presence of aggressive conduct ($n = 80$, 294 measurements).

Scores on the *psychoses*, *affect*, *resistance*, *negative symptoms*, and *activation* factors as well as the item *hostility* factor were the variables that were incorporated in the model as predictors. *Institutional misconduct*, *antisocial personality traits*, *conduct disorder at a young age*, *medication adherence*, and *lifetime diagnosis of substance use disorder* were used as covariates. The presence or absence of aggressive incidents was the binary outcome variable.

The logistic regression model was statistically significant, $\chi^2(10, N = 294) = 658.10, p = 0.004$. The model correctly classified 32.7% of the aggressive incidents. Significant predictors were the item *hostility* and the covariate antisocial traits with semipartial correlations of 0.242 and 0.104, which are interpreted as small effect sizes. See Table 3 for the full model.

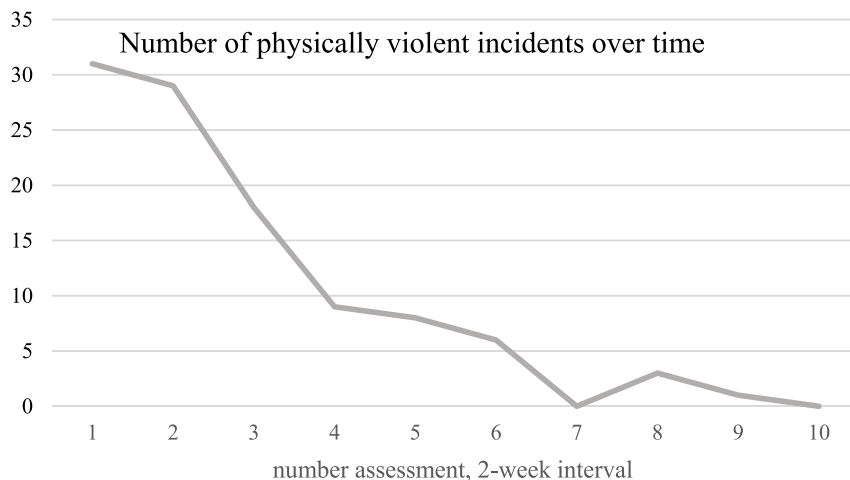


FIGURE 2. Number of physically violent incidents over time.

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TABLE 2. BPRS-E Mean Factor Scores Over Time

	Assessment 1	Last assessment ^a
Psychoses	2.4	2.3
Affect	1.8	1.7
Activation	3.3	3.2
Negative symptoms	1.4	1.3
Resistance	1.8	1.7
Hostility	2.9	2.1

BPRS-E = Brief Psychiatric Rating Scale-Extended.
^aAssessments were made every 2 weeks during the stay of each participant. The last assessment took place between 2 and 20 weeks after admission.

Subsequently, we modeled verbal aggression and physical aggression separately, using the same variables and covariates. The models were highly similar to the model presented in Table 3.

Discussion

Hostility, Antisocial Traits, and Aggressive Behavior

The aim of this study was to investigate the relationship between aggressive incidents and symptoms of SMI in a detained patient population. Our main finding was a significant positive relationship between the BPRS-E factor hostility and the presence of aggression. In other words, a higher score on the factor hostility was related to an increased risk of aggressive incidents. Although the effect size was small, our results suggest that hostility explains an important portion of the variance. This is not surprising, because the factor hostility entails signs of discontent, anger, stress, and conflict.

In addition, we found that antisocial personality traits were significantly related to aggressive incidents. However, we did not find any interaction effects, suggesting that the aforementioned symptoms are a risk factor for all patients, with or without antisocial personality traits. Our findings are in line with the systematic review by Witt et al. (2013), who found hostility and antisocial personality to be the most important risk factors for violent behavior.

Symptoms of Severe Mental Illness and Aggressive Behavior

Another main finding was that we did not find a relationship between symptoms of SMI and aggressive behavior. Although our sample scored high on the psychosis and activation factors (see Table 3), consisting of items indicative of positive and manic symptoms, no relationship was found with aggressive behavior. This is contrary to reviews by Darrel-Berry et al. (2016) and Rund (2018) who found that paranoid thinking or manic derailment was positively related to aggressive behavior. An umbrella review of meta-analyses confirmed a robust relationship between psychotic and manic disease and violence, as well as a relationship between antisocial personality disorder and aggression (Fazel et al., 2018). In addition, the systematic review by Witt et al. (2013) found a relationship between general symptom scores and aggressive behavior. Why, then, did we not find a relationship at the symptom level?

Like Nolan et al. (2005), we researched the relationship between aggression and symptoms that were actually present, as opposed to the relationship between aggression and a DSM-5 diagnosis or symptoms that were present at any point in time (during admission, for example). We found that aggression was absent more often than not in the patients who displayed aggression. Meaning that predicting if

TABLE 3. Binary Logistic Regression Analysis With Dependent Variable Presence of Aggressive Behavior

	Correlation with aggression	VIF	Std. error	t	Sig.
Dynamic factors					
Affect	0.036	1.288	0.8659	0.521	0.603
Psychosis	0.077	1.476	0.6851	-0.036	0.971
Activation (mania)	0.098	1.519	0.5586	0.129	0.898
Resistance	0.147	1.671	1.8202	1.032	0.305
Negative symptoms	0.023	1.438	1.5876	-1.699	0.092
Hostility	0.242	1.256	0.1213	2.742	0.008*
Historical covariates					
Antisocial traits	0.104	1.178	0.3400	2.106	0.037**
Medication adherence	0.118	1.162	0.3059	1.479	0.142
Conduct disorder at a young age	0.017	1.147	0.2980	-0.667	0.506
Lifetime diagnosis of substance use disorder	0.027	1.170	0.1656	-0.215	0.830

VIF = Variance Inflation Factor.
 * $p < 0.001$.
 ** $p < 0.05$.

aggression is likely to occur is easier than predicting *when* it will occur. Our research shows that in our high-risk patients of whom half did display aggressive behavior during their stay, our symptom profile predicted quite accurately when aggression would not occur but was unfortunately not helpful in predicting when it would.

Nolan et al. (2005), whose design we used to be able to more precisely study the relationship between actual symptoms and aggressive behavior, did find a significant relationship between positive symptoms and aggressive behavior (Nolan et al., 2005). However, their analysis of incidents showed that positive symptoms as a main cause for aggressive behavior were observed in only 20% of the incidents. Singh et al. (2011) argued in their review that comorbid psychopathy predicts violence in schizophrenia above and beyond psychotic symptoms. Most likely, antisocial or psychopathic traits were more prevalent and a more relevant factor in our imprisoned sample than in studies using hospitalized samples.

Incidents related to underlying antisocial traits are thought to be provoked by environmental triggers more often than incidents associated with positive symptoms of psychoses (Nolan et al., 2003). Although environmental characteristics associated with aggressive behavior have been identified in studies for the penitentiary setting (Gadon et al., 2006), we found no such studies for detainees with SMI. However, management of aggressive incidents caused by positive symptoms might be different than for incidents in which antisocial traits play an important role. For example, medication might be more effective in treating positive symptoms, whereas interactional management might be more effective in preventing incidents of the latter type (Nolan et al., 2003).

Strengths

A strength of our research is that we related symptoms of SMI with aggressive incidents in the same time frame. Because research on the relation between SMI and aggressive behavior is usually done by correlating diagnosis with aggression, or by relating measurements of symptoms at the start of a treatment with aggression, our research provides a more accurate picture of the symptoms that were actually present at the time of the aggression. Our findings suggest that the symptoms of psychosis or mania that our patients experienced did not explain the aggressive behavior that they display. For this specific population, anger, discontent, and underlying antisocial traits may contribute more to short-term risk for aggressive behavior. The implications are that interaction strategies may be more effective to manage aggressive behavior than treating the symptoms of SMI by, for example, administering psychotropic medication.

Limitations

We found that antisocial personality traits are related to aggressive behavior of people with severe mental illness in a

penitentiary setting. A limitation of this study was that, for 50 of the 160 people studied, no anamnestic information was available and the quality of the information of another 27 people could not be ensured. It is likely that this caused a certain amount of false negatives on the variable antisocial personality traits. Therefore, our finding that antisocial personality traits are related to aggressive behavior might not be very reliable. Only 10 of the 160 persons scored positive on this variable, although this might be an underestimation. To classify the presence of antisocial personality traits, reliable (hetero) anamnestic information is needed, which could often not be obtained because the patients were not able or willing to provide such information. When they did consent to search for heteroanamnestic information, it proved to be difficult to collect sufficient information, because of broken relationships with family and others, migration, discontinuous treatment histories, and many other reasons. Our research was focused on the influence of dynamic symptoms on aggression and not on the influence of more stable traits like antisocial personality on aggressive behavior. Including measures aimed at antisocial attitudes and thinking patterns could have improved our study.

Implications for Clinical Forensic Nursing Practice

Publications from various mental health institutions show that positive symptoms of psychosis and manic symptoms are related to aggressive behavior. We did not find such a relationship, although our patients scored high on manic and positive symptoms and aggressive behavior. We hypothesize that our study sample (detainees with SMI) is a specific population with different characteristics than those in general mental health institutions. However, our findings may still generalize to other populations with positive symptoms and aggression. An important lesson to take away from our study is that feelings of anger and discontent were related to aggression. Whereas psychotic and manic symptoms are mainly treated using medication, hostility and antisocial personality styles may respond better to a relational approach. An important pitfall is a focus on treating positive symptoms, which may overshadow attention to managing the other factors that are related to aggression.

Recommendations

Investigating patterns of antisocial attitudes and thinking in patients with SMI would be an important addition for future research. Another recommendation for future research is the inclusion of environmental or interactional factors.

We recommend that personality traits and characteristics of the setting are included in future research. Our research indicates that discontent and anger were variables related to aggressive behavior, usually targeting staff. It is important to understand what triggers this discontent. A qualitative approach, for instance, using interviews, to

understand what motivates people in aggressive incidents might help to adapt treatment and the interaction with this difficult and also vulnerable group of patients. We also recommend analyzing aggressive incidents to become aware of environmental and interactional motives for aggression, to be able to address them. Instruments to assist staff are already being used with a promising effect in acute psychiatric care in Holland (van de Sande et al., 2017) and abroad (Daffern et al., 2007; Oglloff & Daffern, 2006). Even if the evidence on how best to prevent and deescalate aggressive behavior by patients with severe symptoms is limited (Gaynes et al., 2017), it has also become clear that ward atmosphere and the response of staff can make a difference (Salzmann-Erikson & Yifter, 2020). Although in the Dutch penitentiary context, a lot of attention is already being paid to the environment and to relations with the staff, this could perhaps be intensified with regard to those detainees with severe psychiatric symptoms.

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