

# Risk factors for violence among long-term psychiatric in-patients: a comparison between violent and non-violent patients

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## Abstract

**Objective:** The problem of the prediction of violence in psychiatric patients has led to a proliferation of research over the last decade. This study focuses on enduring patient related risk factors of violence, and investigates which long-term patients in Weskoppies Hospital (a specialist psychiatric hospital) are the most likely to commit violent acts. **Method:** Nursing statistics on violent incidents and other security breaches were collected for 262 long-term in-patients over a six month period (April – September 2007). The 41 patients who committed violent acts were compared to the 221 non-violent patients in terms of demographic and clinical variables, using two-way tables and Chi-Square or Fisher's Exact Tests. **Results:** The prevalence of violence among the long-term patients was 16%. Fighting among patients was the most common form of violence (58%). The most significant risk factors of violence among the long-term patients are: A diagnosis of mental retardation; first hospital admission before the age of 40 years; total hospital stay >12 years; current accommodation in a closed ward; habitual verbal aggression; absence of disorganised behaviour; and being clinically evaluated as unsuitable for community placement. **Conclusion:** The findings will help to identify those long-term patients most at risk of violence. The subgroup of patients with mental retardation is responsible for a disproportionately large number of violent acts in the hospital. The risk lies not so much in their psychiatric symptoms, but more in their cognitive ability, coping skills and inappropriate admission circumstances. Efforts should be directed – at a provincial level – towards their community placement.

**Key words:** Violence; Risk factors; Inpatients; Mental disorders; South Africa

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## Introduction

The prediction of violence in psychiatric patient populations remains one of the most challenging aspects of working with psychiatric patients. The focus of this article is on enduring patient-related risk factors of violence in a long-term psychiatric in-patient setting, as opposed to the prediction of imminent violence in individual patients.<sup>1,2</sup> Moreover, the roles of nursing staff factors such as training and work experience, as well as environmental factors such as patient/nurse ratio and crowding in wards fall outside of the scope of this article.<sup>3-10</sup>

Previous research has linked aggressive behaviour to certain

genetic conditions, impaired socio-emotional information processing, demographic variables such as gender and age, and clinical variables such as diagnosis, the presence of mood symptoms, and substance abuse. These will be considered in turn below.

Specific genetic conditions that are associated with aggressive behaviour include the fragile X syndrome (particularly where additionally the high-transcribing long 5-HTTLPR serotonin transporter genotype is involved) and an X-linked mental retardation syndrome resulting from mutations in the Cullin 4B (CUL4B) gene.<sup>11,12</sup> A balanced chromosomal translocation involving chromosomes X and 18, and disrupting the collybistin gene (ARHGEF9) has also been found in a patient with, mental retardation and aggression.<sup>13</sup> In addition, Karl & Herzog reviewed the behavioural profile of neuropeptide Y, in relation to aggression.<sup>14</sup>

An association between aggression and inherent cognitive defects – such as impaired social information processing, socio-

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emotional understanding and social and problem-solving skills – has been demonstrated in patients with mental retardation and schizophrenia. Inaccuracy in correctly identifying interpersonal intent, a tendency wrongly to attribute hostile intent to others as well as a poorer ability to assess the intensity of emotion has also been demonstrated.<sup>15-20</sup>

Gender as a risk factor for violence has yielded contradictory findings. Numerous studies and meta-analyses have found a significantly higher risk of violence among male psychiatric patients.<sup>21-31</sup> On the other hand, some studies have demonstrated an increased risk of aggression in female psychiatric patients.<sup>32-38</sup>

In interpreting the contradictory gender-related findings, researchers argue that the greater risk for violence associated with male gender in the general population does not hold true to the same degree in the mentally ill population: The presence of schizophrenia appears to increase women's risk of violence to a greater extent than it does for men's risk, but not to the extent that women with schizophrenia are consistently found to be more violent than men with schizophrenia.<sup>29,39</sup> On the other hand, the predictors of violence depend on the setting: whereas clinical and psychopathological variables may predict violence in institutional settings, demographic and historical variables are better predictors in community settings and in clinical samples consisting of only high-risk patients.<sup>9,40</sup> External factors are also blamed, e.g., the era of managed health care that changed the profile of admitted patients, or a societal admission bias that causes aggressive women to be admitted sooner than aggressive men.<sup>35,38</sup>

The role of age in predicting violence among psychiatric patients has been examined in various populations, in mentally retarded, forensic and general psychiatry patients. Despite shortcomings such as a lack of a control group in some of these studies, the results are consistent – younger age is associated with more violent behaviour.<sup>3,4,22,23,27,29,31-33,40-47</sup>

The complex influence of diagnosis on psychiatric patients' risk of violence has emerged from a variety of studies in different contexts. First, a diagnosis of schizophrenia (and other severe, enduring psychotic disorders) has been demonstrated unequivocally to increase a person's risk of violence in comparison to the general population.<sup>4,6,9,22,23,29,30,32,33,48-55</sup> The risk of violence is also higher when the psychopathology is more severe, e.g., when more severe positive symptoms of psychosis are present.<sup>4,7,9,32,33,48,53,56,57</sup> Some studies suggest that the effect of a diagnosis of schizophrenia on the risk of violence is only really significant when it is amplified by additional factors such as comorbid/premorbid antisocial conduct or antisocial personality traits.<sup>33,48,49,53,56-59</sup> Similarly, comorbid substance abuse/dependence dramatically increases the risk of violence in patients with schizophrenia.<sup>1,4,21,23,29,32,33,44,49,56,57,59,60</sup>

Another factor that appears to elevate the risk of violence in patients with schizophrenia is the presence of neurological damage, e.g., ventricular enlargement, parieto-occipital atrophy, asymmetrical temporo-parietal gyri, reduced grey matter volume in neural circuits involved in verbal working memory, as well as temporal EEG abnormalities.<sup>32,41,46,61-63</sup> However, a diagnosis of epilepsy itself has not been proven to increase the risk of violence.<sup>41,63</sup>

Patients with mental retardation have also been demonstrated beyond doubt to commit more violent acts than other members of the general population.<sup>3,8,36,38,61,64,65</sup> Moreover, the presence of a comorbid personality disorder – especially antisocial, but also dependent personality disorder – increases the risk of violence in

patients with mental retardation, as it does for patients with schizophrenia.<sup>37,66-69</sup> Similarly, comorbid substance abuse increases the risk of violence in patients with mental retardation.<sup>70</sup> Furthermore, violent mentally retarded adults have been shown to have larger brain ventricles than their non-violent counterparts, as well as a higher frequency of abnormal EEGs, yet no increased prevalence of seizure disorders (as for schizophrenia).<sup>27,47,71,72</sup>

In addition to schizophrenia and mental retardation (with or without comorbidity), the personality disorders as independent primary diagnoses – in particular antisocial and other cluster B personality disorders – are associated with violent behaviour.<sup>9,23,33,48-51,57,59,67,73</sup> A primary diagnosis of substance abuse/dependence has also been identified as a strong predictor of violence in psychiatric patients generally.<sup>4,22,38</sup> Furthermore, mood symptoms, especially irritability, and self-harm have been linked to an increased risk of violence.<sup>2,10,25,27,30,44,50,65,66,74-76</sup>

Regardless of diagnosis, violence in psychiatric patients has remained associated with long-stay hospital admissions.<sup>77</sup> But even more importantly, the most consistent finding concerning the prediction of violence in the psychiatric context has been that past violence predicts future violence.<sup>1,9,21,23,29,30,53,59,76</sup>

Various methodological issues have hampered research progress to clarify enduring patient-related risk factors of violence. First, the use of different definitions of aggressive behaviour and the inclusion of different sets of aggressive or challenging behaviours make it difficult to compare the results of studies.<sup>24,78</sup> Second, the identification of participants, and assessment of aggression and patient characteristics differ between studies.<sup>24,30</sup> For example, whereas incident reports might underestimate the prevalence of violence, interview reports lose accuracy by relying on participants' memory.<sup>27,32</sup> Moreover, some studies used no control group.<sup>37,66</sup> Furthermore, retrospective or cross-sectional versus prospective studies may yield different results.<sup>1,21,36</sup> The setting of a study (community versus in-patient) may also affect the findings, e.g., the prevalence of violence has been found to be low in a university hospital setting.<sup>30</sup> On the up-side, some epidemiological studies have creatively integrated various databases, such as national hospital admission/discharge records with national forensic conviction registers.<sup>21,36</sup>

The aim of this study was to develop a profile of those long-term psychiatric in-patients at Weskoppies Hospital, Pretoria who are most at risk of committing violent acts. It was hoped that the findings would aid in the clinical management of the long-term patients and in institutional decisions about the services offered to psychiatric patients at Weskoppies Hospital.

Although under the new South African Mental Health Care Act (Act No. 17 of 2002) psychiatric patients are referred to as 'mental health care users', we use the term 'patients' here in the interests of communicating effectively in an international forum.<sup>79</sup> Also, we use the DSM-IV term 'mental retardation' instead of 'intellectual disability' or 'developmental disability'.<sup>60</sup>

## Method

### Setting

Weskoppies Hospital in Pretoria is a 1067-bed specialist psychiatric hospital that renders in- as well as out-patient psychiatric services to a large geographical area, including forensic and child/adolescent-psychiatric services. In accordance with the new South African Mental Health Care Act and the international trend towards de-institutionalisation, the proportion of

long-term patients in Weskoppies Hospital has also been decreasing progressively, as increasing numbers of long-term patients have been placed in community care.<sup>79</sup>

### Design

This was a quantitative, cross-sectional descriptive study combining clinical file data and routine nursing statistics relating to security breach incidents committed by the long-term in-patients in Weskoppies Hospital. 'Security breach' is a nursing term for any incident that compromises the safety and security of hospital personnel, mental health care users or property which may result in losses for the department. Within the security breaches, violence was defined as assault (on fellow patients or staff), fighting among patients and damage to property.

The primary research question was: Which long-term psychiatric in-patients are the most likely to commit violent acts? More specifically: Are violent long-term psychiatric in-patients different from non-violent long-term psychiatric in-patients with respect to demographic variables, clinical characteristics, or habitual behavioural problems? Regarding the latter, the question is asked whether certain habitual behavioural problems (even non-violent behavioural problems) indicate an increased risk for future violence?

### Subjects

Study subjects included all 262 long-term psychiatric in-patients in Weskoppies Hospital between 1 April and 30 September 2007. Data was collected from ten wards: four open male wards, one semi-closed male ward, one closed male ward, three open female wards and one closed female ward.

### Outcome measures

Nursing statistics of all security breach incidents committed by long-term in-patients were routinely collected during the study period. For each incident, the identifying details of the patient, the ward in which the patient was accommodated at the time of the security breach and the nature of the incident were recorded. Apart from the incidents defined as violent (i.e., fighting among patients, damage to property and assault on fellow patients or staff), data was also recorded on other security breach incidents, including possession of prohibited substances, theft, suicide attempts, arson, burglary, rape/sodomy and drug trafficking of illicit drugs or medication.

Demographic information was recorded from the clinical files: age, gender, level of education, original municipal district, number of admissions, age at first admission, total duration of hospital stay, current ward, involvement by relatives or friends, where they live, and the frequency of their visits. The clinical variables included the current DSM-IV diagnoses, level of functioning and insight, severity of psychopathology, symptom stability, treatment resistance, comorbid general medical conditions, reasons for readmissions, clinical evaluation of suitability for community placement, and the presence/absence of a series of habitual behavioural problems.

### Data management and statistical analysis

The data on all security breach incidents were transferred onto study specific data sheets approved by a statistician from the Department of Statistics, University of Pretoria. The security breach data were linked to individual patients and integrated with their demographic and clinical data. The integrated data set accommodated for the fact that some of the patients had

committed multiple offences of different types.

The relationship between violent incidents on the one hand, and demographic and clinical characteristics on the other, was analysed statistically by comparing the patients who had committed violent acts with the patients who had not committed any violent act during the study period, in terms of the demographic and clinical variables. For these comparisons, two-way tables and Chi-Square or Fisher's Exact Tests were used. Cases with missing data were excluded from analyses. The analyses were conducted by the Department of Statistics, University of Pretoria.

### Ethical considerations

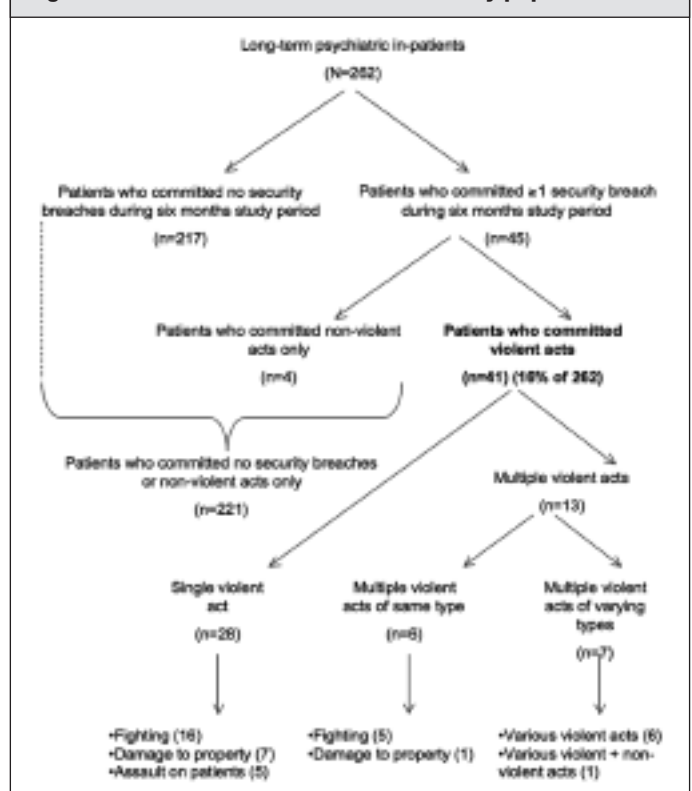
This study received ethics approval from the Research Ethics Committee of the Faculty of Health Sciences, University of Pretoria. A waiver of written informed consent was granted for this study that was exclusively records-based. Written consent was obtained from the Chief Executive Officer of Weskoppies Hospital to access clinical and hospital records. Patient confidentiality was ensured by using unique subject numbers and codes on study specific documentation.

### Results

Figure 1 describes the composition of the study population. Forty-one of a total of 262 long-term psychiatric in-patients (16%) committed one or more violent acts during the six months study period. These 41 violent patients formed the majority (91%) of the 45 patients who committed any type of security breach – violent or non-violent (Figure 1). Of the 41 patients who committed violent acts, 28 (68%) did so only once (Figure 1). The most common form of violence was fighting, at 58% (Table I). Table II summarises the demographic characteristics of the study population.

When the 41 patients who committed violent acts were

**Figure 1: Prevalence of violent acts in study population.**



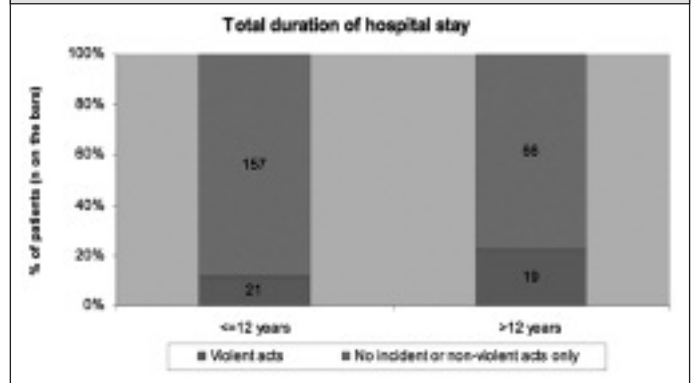
compared to the other 221 patients who committed no security breaches or non-violent acts only, in terms of demographic and clinical variables, a certain profile of statistically significant differences emerged (Table III): The violent patients were more

often accommodated in closed wards than the non-violent patients ( $p < 0.0001$ ), more often had their first hospital admission before the age of 40 years ( $p = 0.0247$ ) (Figure 2), and more often had a hospital stay of longer than 12 years ( $p = 0.0258$ ) (Figure 3).

**Figure 2: Proportions of patients in terms of age at first hospital admission who committed violent acts during the six months period.**



**Figure 3: Proportions of patients in terms of total duration of hospital stay who committed violent acts during the six months period.**



**Table I: Types of security breaches committed by 45 patients during the six months study period**

| Type of security breach             | No of patients | % of 45 patients * |
|-------------------------------------|----------------|--------------------|
| Fighting among patients             | 26             | 58%                |
| Damage to hospital property         | 12             | 27%                |
| Assault on patients                 | 9              | 20%                |
| Assault on staff                    | 3              | 7%                 |
| Possession of prohibited substances | 3              | 7%                 |
| Theft                               | 2              | 4%                 |
| Suicide attempt                     | 1              | 2%                 |
| Arson                               | 0              | 0                  |
| Burglary                            | 0              | 0                  |
| Rape / sodomy                       | 0              | 0                  |
| Drug trafficking – illicit drugs    | 0              | 0                  |
| Drug trafficking – medication       | 0              | 0                  |

} Forty-one patients committed violent acts

\* The percentages do not add up to 100% since some of the patients committed multiple acts of different types.

**Table II: Demographic characteristics of study population**

| Present age, age at first hospital admission, and total duration of hospital stay: |     |                                 |                       |         |
|--|-----|---------------------------------|-----------------------|---------|
|  | N   | Variable                        | Mean (years)          | Std Dev |
| All long-term in-patients  | 262 | Present age                     | 49.64                 | 13.52   |
|  |     | Age at first hospital admission | 36.73                 | 13.26   |
|  |     | Duration of hospital stay       | 12.76                 | 9.48    |
| Patients who committed violent acts  | 41  | Present age                     | 48.18                 | 14.85   |
|  |     | Age at first hospital admission | 34.31                 | 13.70   |
|  |     | Duration of hospital stay       | 13.60                 | 9.20    |
| Patients who committed no security breaches or non-violent acts only               | 221 | Present age                     | 49.90                 | 13.29   |
|  |     | Age at first hospital admission | 37.17                 | 13.16   |
|  |     | Duration of hospital stay       | 12.61                 | 9.54    |
| Gender distribution:   |     | N                               | Male:female ratio (%) |         |
| All long-term in-patients  |     | 262                             | 65.27 : 34.73         |         |
| Patients who committed violent acts  |     | 41                              | 65.85 : 34.15         |         |
| Patients who committed no security breaches or non-violent acts only               |     | 221                             | 65.16 : 34.84         |         |

The most common primary DSM-IV diagnosis among the violent patients was mental retardation, significantly more so than among the non-violent patients ( $p=0.0017$ ) (Figure 4). The smallest proportion of violent patients was found in the group suffering from schizophrenia. In Figure 4, the category 'other psychotic disorders' included schizoaffective disorder, substance-induced psychotic

disorders, and psychotic disorders due to general medical conditions. The category 'other disorders' included mood disorders, anxiety disorders, and personality disorders. In addition, the violent patients were more often clinically evaluated as unsuitable for placement outside of the hospital ( $p<0.0001$ ), as would be anticipated.

**Table III: Profile of patients who committed violent acts.**

**Patients who committed violent acts (n=41) were compared to the rest of the patients (n=221) in terms of demographic and clinical variables, using Chi-Square and Fisher's Exact Tests. (Variables are arranged according to p-values.)**

In terms of demographics and hospital stay, violent patients demonstrated the following more often than non-violent patients:

|   |   |                         |
|---|---|-------------------------|
| 1 | Currently accommodated in closed ward                       | $p < 0.0001^{**}$       |
| 2 | First hospital admission before the age of 40 years         | $p 0.0247^*$            |
| 3 | Total duration of hospital stay >12 years                   | $p 0.0258^*$            |
| 4 | Younger (present age $\leq 45$ years)                       | $p 0.1389$              |
| 5 | Fewer admissions ( $\leq 2$ ) during total hospital stay    | $p 0.2648$              |
| 6 | Having no involved relatives/friends                        | $p 0.8101$              |
| 7 | Male gender   | $p 0.9316$              |
| 8 | Level of education  | (too many missing data) |
| 9 | Municipality from which the patient was originally referred | (too many missing data) |

In terms of clinical picture, violent patients demonstrated the following in comparison with non-violent patients:

|    |   |                   |
|----|---|-------------------|
| 1  | Clinically evaluated as unsuitable for placement outside of the hospital (more often) | $p < 0.0001^{**}$ |
| 2  | Mentally retarded (more often)  | $p 0.0017^{**}$   |
| 3  | Symptoms constant rather than episodic (more often)                                   | $p 0.1350$        |
| 4  | Greater severity of symptoms (more often)   | $p 0.1616$        |
| 5  | Comorbid epilepsy (more often)  | $p 0.2024$        |
| 6  | Low general level of functioning (more often)   | $p 0.2412$        |
| 7  | Aggression as a reason for readmission (less often)                                   | $p 0.4197$        |
| 8  | Comorbid hypertension (more often)  | $p 0.5787$        |
| 9  | Comorbid mood disorder (more often)   | $p 0.6538$        |
| 10 | Treatment-resistant psychosis (less often)  | $p 0.7133$        |
| 11 | Poor insight (more often)   | $p 0.7244$        |
| 12 | Previous head injury (more often)   | $p 0.7560$        |
| 13 | Comorbid psychotic disorder (less often)  | $p 0.7767$        |
| 14 | Comorbid substance related diagnosis (less often)                                     | $p 1.0000$        |
| 15 | Comorbid personality disorder (more often)  | $p 1.0000$        |

In terms of habitual behavioural problems, violent patients demonstrated the following in comparison with non-violent patients:

|    |  |              |
|----|--|--------------|
| 1  | Verbal aggression (more often)   | $p 0.0146^*$ |
| 2  | Disorganised behaviour (less often)  | $p 0.0214^*$ |
| 3  | Inappropriate behaviour (less often)                                       | $p 0.0651$   |
| 4  | Self-harm (more often)   | $p 0.0690$   |
| 5  | Theft (more often)   | $p 0.0787$   |
| 6  | Agitation or restlessness (less often)                                     | $p 0.1044$   |
| 7  | Oppositionality / non-compliance with hospital rules (more often)          | $p 0.1207$   |
| 8  | Cannabis abuse (less often)  | $p 0.1282$   |
| 9  | Suicide attempts (more often)  | $p 0.1282$   |
| 10 | Physical aggression (more often)   | $p 0.1538$   |
| 11 | Absconding (less often)  | $p 0.3403$   |
| 12 | Abuse of other substances, i.a. cigarettes and cough medicine (more often) | $p 0.3665$   |
| 13 | Harassment of fellow-patients (more often)                                 | $p 0.4094$   |
| 14 | Hoarding (more often)  | $p 0.5408$   |
| 15 | Trading in sex (more often)  | $p 0.5678$   |
| 16 | Disinhibited behaviour (less often)  | $p 0.8228$   |
| 17 | Alcohol abuse (less often)   | $p 1.0000$   |
| 18 | Uncontrolled sexual activity (less often)                                  | $p 1.0000$   |

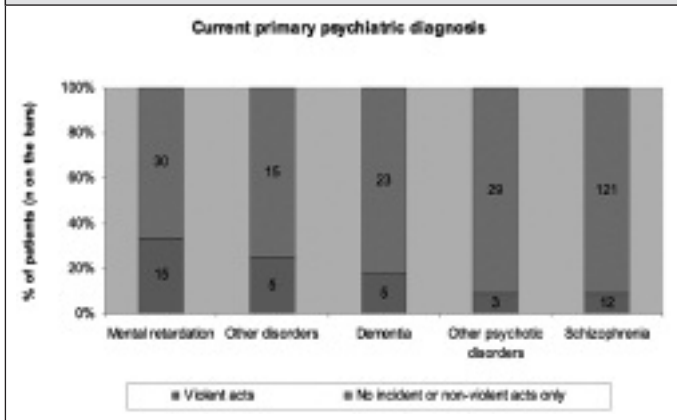
\* = statistically significant at the 0.05 level

\*\* = statistically significant at the 0.01 level

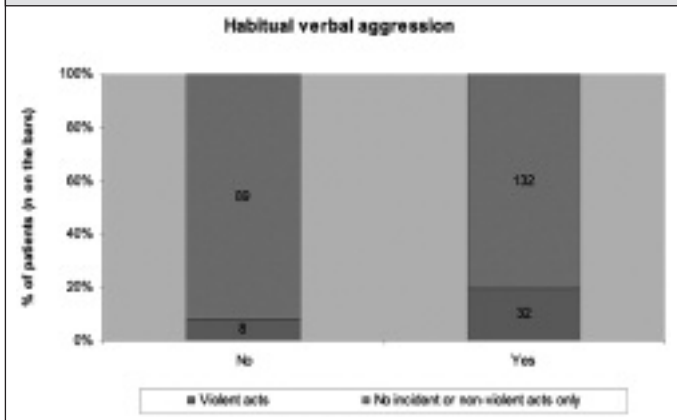


When the violent patients were compared to the non-violent patients with respect to their patterns of habitual behavioural problems, they more often demonstrated verbal aggression ( $p=0.0146$ ), self-harm ( $p=0.0690$ ) and theft ( $p=0.0787$ ). Interestingly, the violent patients demonstrated less habitual disorganised ( $p=0.0214$ ) and/or inappropriate ( $p=0.0651$ ) behaviour than the non-violent patients (Figures 5 and 6).

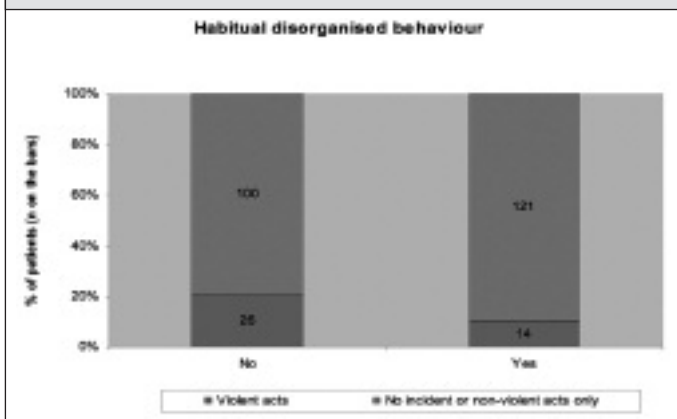
**Figure 4: Proportions of patients from different diagnostic groups who committed violent acts during the six months study period.**



**Figure 5: Proportions of patients who committed violent acts during the six months period in relation to habitual verbal aggression.**



**Figure 6: Proportions of patients who committed violent acts during the six months period in relation to habitual disorganised behaviour.**



**Discussion**

In summary, the main findings of this study were:

- The prevalence of violence among the long-term in-patients was 16% (Figure 1);
- Two-thirds of the violent patients committed a single violent act during the study period (Figure 1);
- Fighting among patients was the most common form of violence (58%) (Table I);
- Violent patients were significantly more likely (than non-violent patients) to be accommodated in closed wards, to have been younger at the time of their first hospital admission, to have had a longer hospital stay, to have mental retardation, and to be considered unsuitable for placement outside of the hospital (Table III, Figures 2-4); and
- Violent patients were significantly more often verbally aggressive and less often showed disorganised behaviour than non-violent patients (Figures 5-6).

The prevalence of violence in this study of 16% falls within the range reported in the relevant literature.<sup>3,4,21,24,26,27,30,32,33,41-43,64,78</sup> The low prevalence may have something to do with the setting being a specialist psychiatric hospital that is also a training hospital for the University of Pretoria, which might possibly suggest a high level of expertise in the management of patients with severe mental disorders.

The low prevalence might also reflect some methodological issues. For example, our definition of violence was narrow and excluded incidents of verbal aggression, rape/sodomy, suicide attempts, self-harm, arson and burglary. Even so, the fact that no incidents of rape/sodomy, arson, burglary or drug trafficking were reported, might merely reflect the limited six months study period. Moreover, non-violent forms of sexual abuse may not have been reported as rape/sodomy. Also, it is possible that minor forms of drug trafficking might have gone unnoticed. Furthermore, the use of routine hospital incident statistics could also have led to the underestimation of the prevalence of violence.<sup>32</sup>

The finding that most of the violent patients were single offenders might also reflect the limited study period. Given a longer study period, some of these violent patients might have committed multiple violent acts. In this regard, note that Sigafos et al found that 80% of 2412 people with MR engaged in three or more forms of aggression.<sup>26</sup> Regarding the most common forms of violence in this study (Table I), our results support those of Kraus & Sheitman who found that in a large state psychiatric hospital setting, most commonly the assault victims were other patients.<sup>37</sup>

Although the violent patients in this study were significantly more likely (than non-violent patients) to be accommodated in closed wards, the majority (73%) of the violent patients were still accommodated in open wards at the time of their violent acts, probably because of a lack of available closed ward accommodation. All in-patients with uncontrollable aggression or other behavioural problems would usually be considered for transfer to a closed ward. One wonders how these figures might have been different if more closed ward accommodation had been available for long-term patients, as has been discussed at regular intervals at the hospital. Might the prevalence of violence have been lower if more patients had been accommodated in closed wards?

The younger age at first hospital admission and the longer duration of hospital stay among the violent patients are in line with studies as referred to earlier.<sup>3,4,22,23,27,29,31-33,40-47,77</sup> The fact that the gender distribution of the 41 violent patients was similar to that of the 221 non-violent patients in this study might reflect some of the issues raised in the Introduction. In particular, our institutional setting – in which many high-risk patients are treated and which may be biased towards difficult-to-place patients – might have contributed to the obscuring of the usual gender differences with regard to violence.<sup>9,40</sup>

The overrepresentation of mentally retarded patients among the violent patients is consistent with previous reports of a high prevalence of violence among patients with mental retardation.<sup>3,8,36,38,61,64,65</sup> On the other hand, the unexpectedly low prevalence of violence among the patients with schizophrenia and other psychotic disorders (Figure 4) might say something about a local reliance on psychotropic medication rather than behavioural interventions in the management of aggression and violence. One is also reminded of an old question – whether the rehabilitation services offered by Weskoppies Hospital might not be as appropriate for patients with mental retardation as they are for patients with schizophrenia.

The overrepresentation of mentally retarded patients among the violent group might also indicate a broader social problem. Unfortunately, due to a lack of appropriate services for patients with mental retardation in our community, many of those patients end up being accommodated in psychiatric hospitals despite their not being mentally ill. Their long-term institutionalisation as such then puts them at a higher risk of violence.<sup>77</sup>

Surprisingly, there was a lack of association between violence and the following clinical variables: personality disorders, mood disorders, neurological disorders or other general medical conditions, substance related disorders, and aggression as a reason for readmission. It is to be noted, though, that this study population was too small for meaningful analysis of predictors of violence. Similarly, the association between violence and many of the recorded habitual behavioural problems did not reach statistical significance. The significant association between violence and habitual verbal aggression is in line with earlier findings that assaultive patients with mental retardation had a higher frequency of other problem behaviours.<sup>45</sup>

The finding that violent patients significantly less often demonstrated disorganised behaviour than non-violent patients, is surprising. One might have anticipated that patients with disorganised behaviour (which may indicate severe psychosis) would be at increased risk of becoming violent.<sup>44,73</sup> Although a discussion of the nature and the mental correlates of violence is beyond the scope of this article, the lack of disorganisation among the violent patients in this study raises the question whether a certain amount of planning, cognitive organisation, or goal-directed executive ability is needed to carry out and complete a violent act.<sup>22</sup>

This study has a number of methodological strengths. First, comparing the violent patients to a control group of non-violent patients facilitated more meaningful analyses than would have been possible without such a control group. Next, the design of monitoring violent incidents and integrating that data with available demographic and clinical data per patient

enriched the findings of an otherwise plain cross-sectional descriptive study. Although this study design is small and simple in comparison with some of the large-scale epidemiological studies, it yielded meaningful findings without overburdening an already over-stretched local workforce.<sup>1,21,36</sup> The fact that the results of this study are mostly in line with previous international studies suggests that these findings are generalisable to an extent.

Regarding limitations, the fact that the study population was too small for meaningful analysis of predictors of violence limits the potential clinical implications. A further limitation is that certain clinical aspects were not recorded in detail, e.g., the severity of psychosis, possible causes of individual patients' violent acts, or details of patients' forensic history.

Notwithstanding these limitations, this study holds promise for future research if it could be extended to include a period of further de-institutionalisation or the implementation of aggression management programmes. Using a before-after design, such a study might evaluate the effectivity of service interventions. Regarding enduring patient-related risk factors of violence, future studies might fruitfully focus on substance abuse in the hospital. Alternatively, qualitative studies among patients and staff on factors that contribute to violence or on the nature and meaning of violence would represent other promising avenues.

The main contribution of this study lies in its relevance for the planning of psychiatric services at Weskoppies Hospital, with a view to reducing the prevalence of violence. In addition to the obvious clinical benefits, a lower prevalence of violence would also lead to financial savings for the Department of Health. In this regard, our recommendations are:

- Concentrate efforts towards de-institutionalisation in the group of 45 long-term patients with mental retardation who appear to be at high risk of committing violent acts. Notwithstanding their valid service-related needs, a specialist psychiatric hospital is inappropriate accommodation when no mental illness is present. Due to their presence, a significant number of patients with schizophrenia or other psychotic disorders do not have access to appropriate treatment. Furthermore, the presence of the patients with mental retardation places an additional burden on the current long-term in-patients with schizophrenia or other psychotic disorders.
- In the meantime, consider an even distribution across wards of the patients with mental retardation. This recommendation is based on the findings relating to case mix by LePage et al who found that a high proportion of mentally retarded (and young) patients in certain wards was associated with an increased rate of violence in those wards.<sup>8</sup>
- Assess all the remaining long-term patients in terms of the identified risk factors. Those at high risk of becoming violent might benefit from more intensive clinical monitoring, in order to prevent violence.
- Allocate more closed ward accommodation to the long-term patients in Weskoppies Hospital as far as budgetary constraints would allow, in order to help prevent violence.
- Consider focusing rehabilitation programmes towards the patients with schizophrenia and other psychotic disorders, who make up more than two-thirds of the long-term in-patients.

## Conclusions

According to this study, the most significant risk factors of violence among long-term in-patients are:

- Diagnosis of mental retardation;
- First hospital admission before the age of 40 years;
- Total hospital stay longer than 12 years;
- Currently accommodated in a closed ward;
- Habitually verbally aggressive;
- Absence of disorganised behaviour; and
- Clinically considered unsuitable for placement.

These risk factors tell us something about the composition of the population of long-term patients in Weskoppies Hospital. There is quite a high percentage of patients with mental retardation who have been in-patients for a long time – not because of mental illness, but because of a lack of suitable community accommodation. These patients with mental retardation are responsible for a disproportionately large number of violent acts. Their high risk of violence appears to have little to do with psychiatric symptoms, but rather with their cognitive ability, coping skills and the circumstances around their often inappropriately extended hospital admission. The lack of suitable accommodation indicates one area in which the mental health services offered in the Pretoria region are not in line with the realities and progress in the rest of the world.

In conclusion, institutional constraints in the de-institutionalisation of mentally retarded patients are having a ripple effect at grassroots level by affecting the composition of the long-term in-patient population and contributing to unnecessarily high levels of patient violence. The violence in turn is placing a heavy burden on the hospital, including a financial burden in terms of the maintenance of damaged facilities, a staffing burden and a burden in terms of medical treatment.

In the interim, the recommendations given above include monitoring more closely those patients who have the above-identified risk factors, and making available more closed ward accommodation to the long-term in-patients. Notwithstanding these general recommendations, in the light of budgetary and staffing constraints at the hospital, it makes sense to streamline efforts towards the most pressing concerns, in this instance the issue of community care for mentally retarded patients – an issue that involves, i.a., the provincial health authorities.

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