



Factors associated with recidivism:

**A retrospective analysis of
state patients admitted to
Sterkfontein Hospital**

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21 February 2016

DECLARATION

I, Dr N Morgan, declare that this research report is my own work. It serves as partial fulfilment of the requirements for the degree of Master of Medicine in the branch of Psychiatry. It has **not been submitted before for any** degree or examination at this or any other University.

.....

21 February 2016

DEDICATION

To my dearest mum,

You have paved the way; surely generations of woman shall follow.

PRESENTATIONS

1. Oral presentation

26th Annual Psychiatry Research Day - Department of Psychiatry, University of the Witwatersrand

Wednesday the 11th of June 2014

School of Public Health Building, University of the Witwatersrand

2. Oral presentation

18th Bi-annual SASOP National Conference

Thursday the 4th September 2014

Southern Sun Elangeni& Maharani Hotel, Durban

ABSTRACT

Aim

This study examined common factors associated with recidivism amongst state patients at Sterkfontein Hospital. More specifically, demographic, clinical and criminological factors of a recidivist group were compared to a non-recidivist group with the intention of understanding to what extent these factors might determine the likelihood of re-offending.

Method

A retrospective case file review of 293 inpatients and a random selection of 120 outpatients was conducted. For the purpose of the study a patient was classified as a recidivist if an additional charge or act of violence was added to the file whilst the patient was on leave of absence. Of the inpatients only those who met the criteria for recidivism were included in the study. All 120 randomly selected outpatients were included. Demographic, clinical and criminological data were captured for all patients.

Results

Of the 293 inpatients 60 patients met the criteria for recidivism. Twenty out of 120 outpatients were classified as recidivists. Thus 80 recidivists were compared to 100 non-recidivists. Using the χ^2 and Fischer's exact test substance use disorder, antisocial personality disorder, an index offence of assault and in-ward adverse events were found to be associated with recidivism ($p < 0.05$). Using logistic regression analysis the odds of recidivism in a patient with an index offence of assault was 8.4 (95% CI 1.6- 43.1) times of that who did not commit assault as an index offence. The odds of recidivism for patients with cannabis use was 2.8 (95% CI 1.3- 6.0) and for patients with in-ward sexual offence was 17.2 (95% CI 2.0-150).

Conclusion

This study suggests that state patients with comorbid substance use disorder and antisocial personality disorder are at higher risk for reoffending. Clinicians should also be aware of the potential risk amongst state patients with a charge of assault and patients who are found to be involved in in-ward adverse events. Important criminal history factors and certain clinical factors could however not be interpreted due to large amounts of missing data in patients' files.

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1. INTRODUCTION

The commission of violent and non-violent crime is an area that both intrigues and repels society. The non-criminal population may find such acts of violence unfathomable. They may seek an explanation as to how and why a human being could act in such a manner. The presence of a mental illness that drives a crime may be an explanation that soothes the more questioning mind or it may leave one with even more of a moral dilemma; *does a mental illness excuse criminal behaviour? Is the behaviour truly criminal if a person is mentally unstable?*

The concept of the criminally insane has been dramatically captured on the big-screen in movies like *Silence of the Lambs*(1991). At the core of such movies is a dangerous and psychopathic individual. In the field of forensic psychiatry, although not as always as thrilling as on the big screen, these concepts are dealt with on a daily basis. Forensic psychiatrists attempt to assess dangerousness and the risk of re-offence amongst mentally disordered offenders. This thesis strives to explore one main focus: recidivism in the mentally ill population.

Criminal recidivism is the act of committing another crime subsequent to the first offence. This research report will investigate what is known about recidivism in the mentally ill population and will attempt to identify the risk factors for recidivism amongst patients at Sterkfontein Hospital.

2. LITERATURE REVIEW

This chapter will critically discuss existing literature on the topic of recidivism within forensic psychiatry. The intention is hereby to point towards gaps in content and applicability of existing literature which this study aims to address. Before delving into an in depth analysis of recidivism, the chapter begins with an overview of the practice and scope of forensic psychiatry as well as defining a 'state patient'. Thereafter there is a discussion on recidivism. The major part of the chapter will discuss criminological, demographic and clinical risk factors for recidivism.

2.1 Forensic psychiatry and state patients

Forensic psychiatry is a sub speciality of psychiatry that deals specifically with mentally ill patients that commit crimes (Kaliski, 2006). Between 20% and 40% of persons with severe mental illness encounter the criminal justice system at least once in their lifetime (Swanson, 2001). Countries differ vastly in their delivery of care to mentally disordered offenders (MDOs). Some models are based on retaining the majority of MDOs within the judicial system while others make every effort to divert MDOs to forensic psychiatric facilities for the purpose of receiving treatment and sometimes for incarceration as well. These differing models of management of MDOs will be of significance later on in the chapter when various studies on recidivism are compared and contrasted.

State patients are certified by the court under Section 42, Chapter 6 of the Mental Health Care Act (MHCA) No. 17 of 2002. The process of becoming a state patient begins when a MDO is charged with a crime and then appears in a court of law. Within the South African criminal justice system it is incumbent on the legal team to refer alleged perpetrators that are suspected of having mental illness to a forensic psychiatric institute for an assessment.

The stated assessment is usually conducted over a 30 day period in a designated state forensic psychiatric unit. The assessment is conducted by a multidisciplinary team. After the evaluation is complete, forensic psychiatrists provide a report to the court pertaining to the accused's fitness to stand trial and their criminal capacity at the time of the alleged offence and recommend further management for the accused. Most often if the accused is not fit to stand trial or not criminally responsible due to the presence of a mental illness the magistrate will divert the MDO from the criminal justice system to a forensic mental health facility (Kaliski, 2006). In cases of major or more serious offences the MDO is sent to the forensic institute under Section 42 of the MHCA as a state patient. In cases of less serious crime the MDO may be referred to the institute as an involuntary mental health care user, under Chapter 5 of the MHCA. Involuntary mental health care users are managed within the general psychiatric facility and not the forensic unit. The focus of this thesis is on MDO that are charged with major offences and are then declared state patients.

Once declared a 'state patient' there is no specific time frame for which this status applies. Various restrictions are automatically imposed on state patients. For example, the patient may not leave the hospital unless a custodian is willing to sign responsibility and a psychiatrist authorises the leave of absence. During admission into a forensic psychiatric institute state patients are under the care of a multidisciplinary team. The team comprises of psychiatrists, nurses, psychologists, occupational therapists and social workers. Leave of absence (LOA) is a period of time when a state patient is granted permission to leave the hospital for a specified period of time. During this time legal restrictions are imposed on all state patients in the community and a breach of these conditions can result in immediate readmission. Examples of these restrictions include adherence to medication, abstinence

from substance use and regular review at the local clinic. The restrictions are largely decided by the treating team and the guardian of the patient is required to sign a document in agreement with the conditions of LOA.

If a state patient has been successfully managed in the community for a minimum period of two years, forensic psychiatrists may apply to the court for a conditional discharge. The two year period of successful LOA is used as a rough guide by Sterkfontein forensic clinicians; however this is not explicitly stated by the Mental Health Care Act. After a successful period of 'conditional discharge' a state patient may be discharged from his/her status as a state patient by means of an order from the judge in chambers (Zabow, Van Rensburg. & Voster, 2001).

It is critical to note that in South Africa under the Mental Health Care Act of 2002 a state patient is sent to a psychiatric institute, not as a means of sentencing but to receive care, treatment and rehabilitation. Psychiatric rehabilitation is the process of restoration of community functioning and well-being of an individual who has psychiatric disability (Lindqvist&Skipworth, 2000). Arguably one of the greatest challenges in forensic psychiatry is the rehabilitation of patients (Neville &Vess, 2001). The risk of the patient reoffending whilst in the community is of paramount concern to health professionals, the public and the criminal justice system. It is therefore essential that forensic psychiatrists have adequate evidenced based knowledge on the factors associated with recidivism and risk assessment.

2.2 Recidivism in forensic psychiatry

“A recidivist is one who, after release from custody for having committed a crime [...] falls back, or relapses into former behaviour patterns and commits more crimes” (Maltz, 1984, p.54). Within studies on recidivism, re-offence is most often the outcome that is measured. Each researcher may however define recidivism differently; for example, re-arrest, revocation of community leave (either for violation of leave conditions or new offence) or re-incarceration (Skeem, Manchak & Peterson, 2011). Furthermore recidivism can be separated into specific recidivism, violent recidivism or general recidivism. Specific recidivism describes re-offence which matches the index offence, violent recidivism includes only violent/major re-offence and general recidivism describes any offence after the index crime (Pflueger, Franke, Graf, & Hachtel, 2015). Despite these nuances, there is common ground in that a recidivist is generally understood as an individual who after committing a first offence commits another. For the purposes of this report recidivism or a recidivist encompasses broad parameters and there are no specific limitations on the re-offence type or outcome.

Studies looking at factors associated with recidivism have emerged as a significant body of research within psychiatry. Contributions however have roots in many different disciplines such as law, sociology, psychology, anthropology and psychiatry. Each discipline mentioned above attempts to assess recidivism from their perspective of proficiency. For example a sociological approach to recidivism may look at environmental factors such as homelessness or family structure while a study from the legal sciences may assess legislature or the impact of mental health courts on recidivism. Irrespective of the discipline, it can be agreed that it is important to study recidivism within the psychiatric population in order to understand its prevalence in society and the management thereof (Lamberti, 2007)

One of the challenges of analysing studies in recidivism is that different sample populations have been used. Many studies compare MDOs with general offender (Bonta, Law, & Hanson, 1998). Some studies follow up psychiatric patients discharged from mental health facilities and compare them to MDOs released from prison (Castillo & Alarid, 2010). MDO's that reoffend (recidivists) may also be compared to MDO's that have not reoffended. Therefore despite researchers attempting to assess the same variables, challenges in validity and applicability may arise (Nilsson, Wallinius, Gustavson, Anckarsäter & Kerekes, 2011).

2.3 The mentally ill and violence

Before considering the mentally ill 'reoffender' it is worth looking at whether a psychiatric patient is more dangerous than a general member of the public without a mental illness. In the 1990's there was a growing body of literature linking mental illness with violence (Eronen, Tiihonen & Hakola, 1996; Hodgins, 1992; Woodward, Williams, Nursten, & Badger, 1999). The MacArthur (1998) study however was a hallmark study that refuted these findings and thereby attempted to dispel the stigma attached to psychiatric patients. The MacArthur study (1998) found that unless a psychiatric patient had a comorbid diagnosis of substance abuse, psychiatric patients were not more dangerous than other members in their neighbourhood (Steadman et al. 1998). Over ten years later there are still debates about the findings of the MacArthur study (Lamberti, 2007; Torrey, Stanley, Monahan & Steadman, 2008).

Studies have also assessed risk factors for re-offence amongst MDOs and compared these with risk factors in the general offender population. The first large meta-analysis by Bonta et al (1998) found that having a major mental illness was actually protective and inferred reduced risk of re-offence. A similar meta-analysis was replicated by Bonta, Blais

and Wilson (2013) This study examined articles on MDO and recidivism from 1959 to 2011 with peak number of studies published in 2004. This meta-analysis once again confirmed that the same major risk factors for recidivism amongst general offenders apply to MDOs. However the second analysis found that the presence of a mental illness did not infer less risk for recidivism rather it found that having a major mental illness did not have any effect on re-offence.

2.4 Rate of recidivism amongst MDOs

Typical studies would follow up patients over different intervals to derive specific rates of recidivism within their respective cultural context. A well acclaimed study by Swanson (2001) in North America reports that the rate of violent re-offence of MDO was approximately 30% while another American study by Lovell (2002) found that 70% of MDOs released from prison received charges for new minor crimes and 2% reoffended with very serious crimes. In the United Kingdom, Coid, Hickey and Kahtan (2007) conducted a large scale cohort study on MDOs discharged from medium secure forensic hospitals and found that on a six year follow up period an average of one third of male MDOs recidivated while another United Kingdom prospective study by Maden, Scott, Burnett, Lewis and Skapinakis (2004) found that 15% of MDOs were reconvicted in a two year follow up and only 6% committed violent offences. Grann, Belfrage, and Tengstrom (2000) from Sweden made a significant contribution to the body of research in a number of studies on recidivism and found that 26% of MDOs with personality disorder and 14% of MDOs with schizophrenia committed violent crimes within two years post discharge. A more recent Swedish study by Lund, Hofvander, Forsman, Anckarster and Nilsson (2013) followed up MDO's for 13 to

20 years post offence and found that 47% were reconvicted for violent crimes. This study aimed to look at the difference between psychiatric patients that received different sentences post trial – a prison sentence, forensic psychiatric treatment or noncustodial sanctions. The study did not find major differences in each group (Lund et al, 2013). A Swiss study by Pflueger et al (2015) recorded rate of reconviction amongst MDO. Of a total of 259 MDOs, 51% were reconvicted and of those 13% committed violent re-offences. These findings show that recidivism studies are a flourishing field of research. There is hardly any research done in this area in South Africa and the rest of the developing world despite the pressing need for such studies.

2.5 Static and dynamic risk factors

Risk factors can be broadly divided in static and dynamic factors (Chaimowitz, 2008). Static risk factors are also known as non-modifiable factors. Typical examples of non-modifiable factors are age, marital status, offence type and age at first conviction. Static risk factors are historical and do not fluctuate. Dynamic risk factors, as the name suggests are modifiable factors. A few commonly mentioned modifiable factors are active mental illness, medication adherence, insight into their mental illness, and involvement with criminal associates (Chaimowitz, 2008). Static risk factors have been more extensively studied and shown to be the strong predictors of recidivism. They also tend to be the focus of risk assessment tools (McDermott, Edens, Quanbeck, Busse & Scott, 2008). Dynamic risk factors are particularly valuable to clinicians as once the factor is addressed there may be a reduction in recidivism (McDermott et al, 2008). The rest of this report discusses risk factors grouped into three main categories; criminological, demographic and clinical. The first two incorporate static variables whilst the latter includes mostly dynamic factors.

2.6 Criminological factors associated with recidivism

Generally criminological factors include variables such as age of first conviction, number of criminal charges, heterogeneity of charges, type of index offence (e.g. minor offence versus violent offence), previous convictions and incarcerations.

The meta-analysis by Bonta et al (1998) is a frequently quoted study on risk factors for recidivism. This analysis, as well a second meta-analysis by Bonta et al (2013) revealed that criminological factors such as number of previous convictions and age of first crime are the strongest predictors of recidivism. Maden, Rutter, McClintock, Friendship and Gunn (1999) in the United Kingdom reported that the average age of a recidivist on admission was 29 years old compared to 35 years old for a non-recidivist; and recidivists had a mean of 13 previous convictions compared with six for non-recidivists. Interestingly these are the same risk factors as for a general offender. In a large majority of studies in this field younger age at first crime and higher number of convictions have been reported the strongest and most reliable predictors of recidivism (Bonta et al, 2014; Kingston et al, 2015; Lund et al. 2011; Monahan, 2001; Nilsson et al, 2011; Skeem et al, 2001)

The relationship between the type of index offence and recidivism has also been noted. A large scale Canadian National Trajectory Project analysed MDOs with regard to rate of and risk factors for recidivism (Charette et al, 2015). The project yielded interesting results in that it found the rate of recidivism amongst MDOs less than that of general offenders. It also revealed that MDOs with more serious index offences were less likely to reoffend.

Similarly, Pflueger et al (2015) stated that MDOs with less serious index offences were more likely to reoffend. Public opinion may assume that an offender with a more serious offence is more dangerous and more likely to reoffend however these studies tell of an opposite

association. The relationship between offence type and recidivism is complex and should be studied further.

Specific offences such as homicide and sexual offences in the MDO population have been studied. A systematic review and meta-analysis of homicide recidivism in schizophrenia reported that approximately 2% of homicide offenders with schizophrenia had committed an earlier homicide (Golenkov, Nielssen & Large, 2014). This study concluded that the rate of homicide recidivism in schizophrenia is likely lower than some reports have suggested. A large scale study of over 1000 sexual offenders found that any psychiatric diagnosis including psychosis and mood disorders were risk factors for sexual recidivism (Långström, Sjöstedt & Grann, 2004). A more recently published study assessed the relationship between recidivism and mental disorders amongst sexual offenders (Kingston et al, 2015). In this study 95% of sexual offenders had a mental health diagnosis, 27.8 % committed sexual recidivism, 51.1% violent (including sexual) recidivism and 69.6 % general recidivism (Kingston et al, 2015). However this prospective study and a study by Abracen et al (2014) indicated that substance abuse and personality disorder were the only diagnoses associated with re-offence amongst sexual offenders. Psychosis or any other psychiatric diagnoses were not significant predictors.

2.7 Demographic factors associated with recidivism

Demographic factors related to gender, age, marital status and employment have been linked with recidivism. Age at first conviction is often grouped with criminological factors and has been discussed above.

Male gender has been found to be a predictor of re-offending in some studies (Bonta et al, 1998; Buchanan, 1999; Coid et al, 2007; Davies, Clarke, Hollin, & Duggan, 2007) however

many other studies with large sample sizes and long follow-up periods did not replicate this finding (Friendship, McClintock, Trutter & Maden, 1999; Lund et al, 2013; Phillips et al, 2005). Differences in outcome could be attributed to differing methodologies or population sample, however, studies by Coid et al (2007) and Philips et al (2005) both assessed MDOs released from medium secure units in the United Kingdom but have differing results with regard to male gender. Hence the link between gender and recidivism is unclear.

Some studies that have assessed marital status with regard to recidivism have not found it to be a predictor of recidivism (Edwards et al, 2002; Friendship et al, 1999; Philips et al, 2005). Contrastingly the regularly mentioned meta-analysis by Bonta et al (1998) found that among demographic variables age, gender and single marital status were the strongest predictors of recidivism. The second analysis by Bonta et al (2013) reported that problems with employment, being single and having family problems were predictors of general and violent recidivism. Castillo and Alarid (2011) from the USA examined characteristics of 307 adult MDOs and did not find employment status to be a predictor of recidivism.

Not many studies comment on level of education as a risk for recidivism. However Bonta et al (1998 and 2013) state that educational level was not a significant risk factor for both general and violent recidivism

These correlates have only been established in developed countries and cannot be extrapolated to a South African population. A socio-demographic study that compared MDOs from Zimbabwe to MDOs in England and Wales showed major differences in population groups in terms of age, marital status and level of literacy. Only employment status was comparable between the two groups and furthermore 53% of Zimbabwean MDOs had committed homicide compared to 20% of English and Welsh MDOs (Menezes,

Oyebode & Haque, 2007). The assumption following these contrasting findings is that different geographical groups do not always follow the same trends. It is therefore important that the relationship between demographic factors and recidivism continues to be (re)examined on a local level.

2.8 Clinical factors and recidivism

The two most important clinical variables linked to increased risk for recidivism are substance abuse and antisocial personality disorder (Buchanan, 1998; Gagliardi, Lovell, Peterson & Jemelka, 2004; Maden et al, 2004; Nilsson et al, 2011; Lund et al, 2013). The list of references supporting this finding could extrapolate to the majority of studies on recidivism in MDOs.

The presence of a mental illness alone such as schizophrenia or bipolar disorder has *not* shown to be a significant predictor of recidivism (Coid et al, 2007; Nilson et al, 2011; Phillip et al, 2005) however substance abuse and personality disorders alone or in combination with mental illness are strong predictors of recidivism (Castillo and Alarid, 2011; Grann et al, 2008; Lund et al, 2011). The MacArthur study (1998) reported that among recently discharged psychiatric patients the prevalence rate for violence was 18% for major mental illness without substance abuse, 31% for major mental illness with comorbid substance abuse and 43% for personality-disordered patients with comorbid substance abuse. In a long term study on schizophrenic patients the risk for violence was increased 30 fold in patients with schizophrenia and substance abuse compared to 16 fold in schizophrenia alone (Wallace, Mullen & Burgess, 2004).

Bonta et al (2013) found that drug abuse was a significant predictor of general recidivism while alcohol abuse was strong predictor of violent recidivism. Overall alcohol is the

substance most strongly associated with recidivism (Bonta et al, 1998). Alcohol has been found to facilitate aggression and antisocial behaviour and correlations have been made between alcohol, sexual violence, intimate partner violence and murder (Bonta et al, 2013). Thus it is not surprising that there is such a strong association between alcohol and recidivism.

Psychopathy and antisocial personality disorder are often used interchangeably. Robert D Hare pioneered studies in psychopathy in offender populations. This research led to the development of the Hare Psychopathy Checklist (PCL). The PCL was revised to a 12 item checklist and is now referred to as the PCL revised (PCL-R) or PCL screening version (PCL: SV). The PCL-R is used extensively both for research and clinical purposes. It has also been used for research that influenced the Diagnostic Statistical Manual (DSM) criteria for ASPD (Hare, 1996). Dr Hare, in an article in the Psychiatric Times (1996), warned against using the terms ASPD and psychopathy synonymously. While most psychopaths will also fulfil the criteria for ASPD, the majority of those diagnosed with ASPD are not psychopathic (Hare, 1996). The DSM iv diagnostic criteria for ASPD states that these patients have a pervasive disregard for and violation of others rights and also list seven common characteristics in ASPD. Psychopathic individuals also present with deviant and disrespectful behaviour; however psychopathy is a personality disorder that denotes more specific problems with affective, interpersonal, and behavioural characteristics. These present with impulsivity, superficial emotions, lack of empathy, guilt, or remorse, pathological lying, lack of responsibility and persistent violation of social norms and expectations (Thomson et al, 2015). Common terms used to describe psychopaths at an interpersonal level are grandiose, arrogant, cold-hearted, superficial, domineering and manipulative. Psychopathic individuals

are also quick-tempered and lack the ability to form meaningful emotional bonds (Hare, 1991). The prevalence of psychopathy is less than 1% in general populations (Coid, Yang, Ullrich, Roberts & Hare, 2009). Psychopathy and high scores on the PCL-R are consistently found as strong predictors of re-offence (Coid et al, 2015)

Associations have been made between active major mental illness and violence. Mentally ill patients with threatening or paranoid delusions are twice as likely to become violent as non-paranoid psychotic patients (Buckley, Noffsinger, Smith, Hrouda & Knoll, 2003).

Approximately 20% of violent psychotic patients were motivated by their hallucinations or delusions (Taylor, 1985). Anger attacks were reported in 44% of patients with depression (Fava, 1998) and amongst MDOs a diagnosis of depression has been linked with risk for sexual offence (Coid et al, 2007). Patients with dementia and intellectual disability are also a subgroup that pose risks for violence (Rueve & Welton 2008). The study by Swanson et al (1990) showed that the risk for violence increased linearly with the number of psychiatric diagnoses; nevertheless a diagnosis of substance abuse remained the single most important diagnosis in predicting violence. Furthermore the majority of studies on recidivism in the MDO population have not found an association between psychosis, mood or anxiety disorders and re-offence (Bonta et al, 1998, Bonta et al, 2013). Bonta et al (2013) states, "these results leave us to conclude that major mental illnesses are unreliable predictors of general and violent recidivism" (Bonta et al, 2014 , pg. 285).

Coid et al (2015) published the first study that compared multiple diagnostic subcategories and risk for re-offence. Most other studies combine all psychotic, mood, and anxiety disorders into one clinical category and have concluded that these diagnoses are not predictors of re-offence. However with a large sample size Coid et al (2015) have concluded

that while personality disorder remains the highest clinical category for violent re-offence, there are also important distinctions to be made with regard to specific diagnoses. Patients with depressive disorders were least likely to reoffend. The study also found that incidence rates for violent and acquisitive offences were higher for those with delusional disorder compared to patients with schizophrenia/schizoaffective disorder (Coid et al, 2015). Patients with mania/hypomania were more than twice as likely to be reconvicted of a violent offence, and four times more likely to commit a sexual offence (Coid et al, 2015).

Level of intelligence is another clinical variable that may increase risk for recidivism. Level of intelligence as an individual category is the only other clinical variable (other than substance abuse and personality disorder) that has been associated with recidivism. A few older studies show that lower intelligence level moderately increased risk for recidivism (Gleuck & Gleuck, 1950; Hirschi & Hindelang 1977). However the study by Gray, Fitzgerald, Taylor, MacCulloch and Snowden (2007) included 145 mild to severely intellectually disabled offenders and found that lower intelligence level was predictive of *less* crime. Bonta et al (2013) taking all studies into consideration concluded that lower intelligence significantly predicted general recidivism.

Length of stay in hospital is also an important clinical variable to be considered. Coid et al(2007, p.223-p. 225) states that “risk of violent conviction was reduced among those who had stayed 2 years or more in medium secure services.” A study in Scotland focused on patient readmissions post discharge (Duncan et al, 2002). The authors found that the most apparent risk factor for readmission was a previous admission of less than one year duration. Patients with greater than five year length of stay were rarely readmitted and violence was overall the most common reason for return to the State Hospital(Duncan,

Short, Lewis & Barrett, 2002). A retrospective study by Maden et al (1999) also found a relation between length of stay in hospital and reconviction. The study reported the average length of stay in a medium-secure psychiatric unit was 223 days for recidivists and 325 for non-recidivists. Philip et al (2005) identified only three factors that predicted recidivism and number of days in hospital was one of the three factors. The other two factors were age on admission and the number of previous offences.

“One hundred patients wait for beds at Sterkfontein” was the title of an article in the Times Live on 22nd June 2011. The sub heading stated, “The families of more than 100 mentally-challenged inmates waiting for beds at Sterkfontein Psychiatric Hospital will listen with huge interest to what the head of the hospital has to say in court next week” (Ndlovu, 2011). A guest editorial by Ogunlesi, Ogunwale, De Wet, Roos and Kaliski (2012) highlighted the challenges in forensic psychiatry in Africa – the main ones being lack of knowledge about forensic psychiatry and resource shortages. It is for the above reason that the duration of first admission was of particular interest to the author of this thesis. Due to bed shortages and long waiting lists, clinicians at Sterkfontein Hospital are often under pressure to allow state-patients back into the community on LOA. It is therefore important to know whether specific duration of admittance impacts recidivism as authorising an LOA very soon after admission due to bed shortages may impact society at large.

The time from discharge to re-offence is an important variable to consider as it may provide information as to when a MDO is at greatest risk for reoffending. Steadman et al (1998) and Yoshikawa et al (2007) found that most MDOs reoffend within the first two years in the community. Castillo and Alarid (2011) and Lovell et al (2002) reported that most reoffended within the first year. Phillips et al (2005) assessed MDO's for an average of six years post

discharge and stated the risk for re-offence was highest in the first three years. Coid et al (2007) made a slightly different finding and stated that the risk for re-offence increased each year post discharge and peaked at nine years.

In as much as this research may be decidedly valuable to the clinician within the study's area of origin, it is almost impossible to extrapolate to other countries. The South African legal system regarding management of MDOs differs considerably from other countries. It is imperative that one assesses recidivism and MDOs in the context of the current challenges within the South African system.

To date however there has been no South African study addressing the risk factors for recidivism. Most often risk assessments are made by means of clinical judgement as most actuarial tools are not specifically validated for a South African population. Countries that have scientifically validated risk factors for recidivism, have gone on to formulate risk assessment tools such as the Violence Risk Appraisal Guide and the Offender Group Reconviction Scale (Snowden, Gray, Taylor & MacCulloch, 2007). Another commonly used and validated risk assessment tool in the Historical Clinical Risk Management rating scale (HCR-20) (Webster, Douglas, Eaves & Hart, 1997). The HCR-20 combines actuarial measures with structured clinical judgement. Many argue that actuarial prediction of risk is more reliable than clinical judgement (Lawlor, 2002; Quinsey, Harris, Rice & Cormier, 2006). Other researchers state that the most effective means of assessing risk of violence is through clinical judgement (Buchanan, 1999). One of the most recent articles on violence risk assessment was authored by two well-known and highly acclaimed researchers in the field – J Monahan and J Skeem (2014). The publication highlights that laws have been implemented in various countries making informed risk assessment mandatory. The article

also states that there is no one consensus on the best risk assessment tool, however a combination of approaches should be used based on the purpose of the risk assessment(Monahan & Skeem, 2014). In South Africa, however, we have yet to assess whether the internationally known risk variables apply to a South African population of MDO's. Therefore the aim of this study is to assess the factors associated with recidivism within a South African context in order to better inform clinicians of the risk factors within a South African population. This research will also allow for future developments in risk assessment tools for South African clinicians.

2.9 Aims and objectives of the Study

This study aimed to investigate the factors associated with recidivism amongst state patients admitted to Sterkfontein Hospital.

The fundamental purpose of this study is to better understand the risk factors for recidivism in a South African population and thereby assist the South African clinician to formulate a more accurate risk assessment. The outcome of this research will help the clinician identify and manage risks before they manifest into violence. It will hopefully improve patient management which will also help in creating a safer environment.

Study Objectives

- Compare state patients that have reoffended with state patients that have not reoffended.
- Describe the demographic factors associated with recidivism. The specific demographic factors to be measured are: age; gender; level of education; employment status; and marital status.

- Describe the clinical factors associated with recidivism. The specific clinical variables to be measured are: the mental health diagnosis, duration of hospital admission prior to first LOA and duration of LOA prior to re-offence.
- Describe the criminological factors associated with recidivism. A history of criminal activity prior to becoming a state patient was assessed. The study also assessed which offences are more frequently repeated.

3. METHODOLOGY

This chapter provides a description of the study design and methodological processes carried out for this study. It also justifies the chosen study design and explains the study population and sampling process. Furthermore it includes a discussion on statistical tests that were applied and relevant ethical considerations.

3.1 Study Design

In essence, research design refers to the action plan that guides the research process from the beginning to the end (Yin, 2003). This means that the research design should also include steps for collecting, measuring and analysing data (Coldwell & Herbst, 2004).

This study utilised a quantitative, retrospective case file review that was both descriptive and comparative in nature. Quantitative research, as the name implies, produces quantifiable data. It usually involves collecting large amounts of primary data for measurable phenomena such as people or events and then establishing statistical relationships between various variables (Couchman & Dawson, 1995).

This approach is thus useful and popular for investigating phenomena that require accurate measurement and quantification (Polit & Beck, 2004). A retrospective study is one in which data is collected about past events. In using a retrospective approach one can measure and explore change and identify the causal factors bringing about change (de Vaus, 2006). Measurements derived from a retrospective approach are then used for descriptive and explanatory purposes.

This study is both descriptive and comparative. Clinical and administrative files of state patients at Sterkfontein hospital were analysed and relevant data was captured. The measurements comprised multiple variables relating to a recidivist population. These variables were also compared to a non-recidivist group. A retrospective case file review was chosen largely for logistical and practical purposes. Many other studies in the field of criminal recidivism are prospective in nature. In a prospective study one would choose a group of people who do not display the outcome of interest – in this case being a re-offender. The study would then measure a number of variables such as substance abuse that could influence the development of the condition of interest. Over time, the researcher will thus capture data at different points to observe whether the selected sample will develop the condition of interest (Mann, 2014).

In comparison to obtaining information retrospectively, prospective studies often lead to greater accuracy and can reduce the risk for loss of data (Nagurney et al, 2005). For the purpose of this research report, obtaining information prospectively could have allowed one to capture specific behavioural and psychiatric trends in patients released from prison or hospital. However, in the context of a Master's thesis the prospective approach was not

feasible as these types of studies require long follow up periods; a large qualified team to carry out the study; a sizable budget as well as complex ethical consideration (Payne, 2007). Despite the limitations of the approach, a retrospective review allowed for a larger sample population, was low budget and still provided insightful results in a reasonably short period of time.

3.2 Study Population

The study population consisted of male mentally ill patients that committed crime. These offenders were found unfit to stand trial and/or not criminally responsible due to the presence of mental illness. Hence they were ordered by court to become state patients of Sterkfontein Hospital in Krugersdorp – the place where this study took place.

The researchers elected to only include male state patients as the sample of female state patients is significantly smaller and likely too small to offer statistically significant results. Furthermore it was not an aim of the study to compare male and female reoffenders. It was also thought that studying an exclusive male population may reduce confounding variables that could occur in a mixed gender offender population.

As this study aimed to assess the factors associated with recidivism, two main categories of patients were captured. The first group comprised MDO's that are recidivists; the second group those without recorded criminal acts post admission as state patient (a control group). In the context of this study a recidivist refers to a state patient that offended again post admission. The re-offence charge did not have to be in the same category as the initial

charge in order to be deemed a 're-offence'. For example a patient who was first charged with murder, and then later charged with rape still fell under the recidivist group. A recidivist was defined as a state patient who had documentation of a new charge or acts of violence whilst on LOA. This study did not categorise patients as recidivists if they had multiple charges before becoming a state patient. Hence the study was limited to patients that re-offended after receiving psychiatric treatment and rehabilitation at Sterkfontein hospital with subsequent reintegration into the community.

3.3 Sampling

Two sampling methods were applied in this study. The majority of the sample was chosen by simple random selection, which is also known as a probability sample (Nieuwenhuis, 2012; Hussey & Hussey, 1996). The rest of the sample was chosen by purposive non-probability selection. Non-probability sampling is also called judgemental sampling. In contrast to the random selection detailed above, in certain selected cases the decision of which files to capture was already made upfront and the researcher did not consider other potential participants that fell outside the pre-determined scope (Nieuwenhuis, 2012; Hussey and Hussey, 1996). The rest of this section will further clarify and justify the sampling approach.

The Sterkfontein Hospital Forensic department holds the files of patients that are admitted into a ward, and patients that are currently residing in the community due to so-called 'leave of absence'. The latter group will be referred to as 'out-patients'. The study

population consists of both in-patients and out-patients. Both in-patient and out-patient data was captured in order to increase the sample – not for purposes of comparison.

The in-patients sample was selected purposively. All the files of in-patients were analysed, however only recidivists were included in the sample. In other words, if a patient was admitted in the ward at the time of data collection and a recidivist, they were included in the study and immediately fell within the recidivist category. The out-patient population was chosen differently. A random sample of 120 out-patients was included in the study. The out-patient files are kept in filing cabinets at the out-patient clinic. Patient files are filed according to the month they are scheduled for review by the forensic team. Hence there are 12 drawers labelled January to December. In each drawer files are randomly placed and do not follow any alphabetical sequencing. Ten files were randomly selected from each drawer. These files were analysed and patient data captured. The out-patients were then divided into recidivists and non-recidivists. One may question the reasoning behind the process of approaching the in-patient and out-patient sample differently. Hence the following paragraph provides further clarification for this decision.

The in patient population was vital to the study as there are many recidivists in the wards. Many recidivists remain in-patients for longer periods of time as they are assessed as more dangerous, more likely to reoffend and thus not granted LOA. Within the in-patient population, however, consent needed to be obtained from these patients if their information was captured. Obtaining consent from psychiatric patients can become challenging; therefore in an effort to minimise this only the data of recidivists were captured. In a psychiatric population there may be patients that are actively psychotic, intoxicated or have severe cognitive fall out. The presence of such conditions may impair

their ability to understand, interpret and retain information and thus impact on their ability to give consent. The study included 60 in-patients. As per recommendations from the University of Witwatersrand ethics committee consent was not necessary from out-patients, however due to the extremely large out patient population only 120 patients were selected. The absence of an electronic data base that contained all the state patients belonging to Sterkfontein Hospital made the sampling process challenging. Furthermore the clinical and administrative files of patients are stored separately. The only means of locating patients that had more than one charge was to physically go through each clinical file and then try and correlate this information with the administrative file. Very often clinical notes were missing and even the administrative notes could not be found therefore it is highly possible that recidivists were missed during the sampling process.

For the results to be statistically valid the study needed 15 patients per variable measured.

There are 11 variables (listed later in this section) therefore statistical calculations showed that the sample population should be a minimum of 165 patients.

The total sample population consists of 181 patients. Of these, 80 fall within the recidivist category.

The recidivist category can be further sub categorised into recidivists with a charge and recidivists without a charge. The absence of a formal charge against MDOs that reoffend is a strong confounding variable to consider. It is not uncommon that community members report crimes committed by state patients on leave to the local police and police opt to immediately escort the patient back to Sterkfontein Hospital rather than pursuing the charge. It is for this reason the study included patients that have had violent re-

offences/readmissions into the recidivist group. A few criteria were used to try and standardise the process of categorising a patient as a recidivist if a charge was not laid.

Very clear and specific documentation of an offence had to be captured for a file to count as a valid recidivist file. Detailed and clearly documented collateral information from family members describing a criminal incident was sufficient to label a patient as recidivist even in the absence of a formal charge. However, cautionary measures were taken to not over-assign patients as recidivists without a charge. Therefore if patients were alleged to have committed a crime but the incident report was vague or incomplete, the patient was not captured as a recidivist. Unfortunately, in a large proportion of cases, notes stated that patients were “violent and aggressive”, however due to insufficient detail regarding the act of violence these patients were not classified as recidivists.

In a further attempt achieve accuracy and avoid researcher bias, the recidivist group without formal charges and the group with charges were compared to each other regarding their demographic, psychiatric and criminological variables. Only after this comparison yielded no significant discrepancy, a combined recidivist sample was formed for further analysis as per the objectives of this study.

3.4 Inclusion and exclusion criteria

Inclusion Criteria

- Adult (>18 years) state patient of Sterkfontein Hospital.
- Re-offence that occurred in hospital was included in the recidivist group provided a charge was laid. It can be argued that in-patients that committed acts of violence in the

ward (adverse events such as assault or sodomy) should have been classified as recidivists despite the absence of a formal charge. On extensive consideration by the authors we decided to *not* classify patients with in-ward adverse events as recidivists for the following reasons

Forensic psychiatric wards at Sterkfontein Hospital contain approximately 50-80 mentally ill men who have committed offences and often been in hospital for a long duration. The nature of this population, overcrowding in wards and sub-optimal in-patient facilities are likely to increase the risk of violence in the ward. Furthermore in-ward adverse events are not always clearly documented in files. Often a number of state patients may have been involved in a fight; however this is not documented in each patient's file. Thus in an effort to avoid false positive results and an inflated number of recidivists we did not include patients that were involved in in-ward adverse events as recidivists.

- Clear documentation of criminal acts after becoming a state patient was deemed as a re-offence even in the absence of a charge.
- Patients that were recidivists and in-patients at the time of data collection were included provided that consent was obtained.
- No limitations were placed in terms of date of admission of patients

Exclusion Criteria

- Female state patients. The study excluded females in order to create a more homogenous sample. It was also not an aim of the study to compare male and female state patients.

- Those that recidivated prior to becoming a state patient were not included in the recidivist group. Hence, recidivism was calculated from time of admission as a state patient. This decision was made based on lack availability of information in patient files. Some patient's files may include such information however in the large majority this information is missing.
- In-patients were excluded from the sample unless the patient had re-offended and consent was obtained.
- Patients who were made involuntary mental health care users after their first charge and then a state patient on the second charge were not categorised as recidivists. Once again, this decision was made based on the limited information available in the clinical notes. Information gathered from the time of becoming a state patient was easier to obtain and thus more reliable. It was generally not clear if a state patient was previously an involuntary patient based on a prior offence.

3.5 Data collection

Data was collected by means of a retrospective record review of patient's files. A retrospective review entailed analysing historical notes of patients and capturing relevant information. Patients' files included doctor's notes, nursing records, occupational therapy and psychology reports. The main source of the data was obtained from doctor's notes; however at any given time doctor's notes for a single patient are stored in four different locations at Sterkfontein Hospital. This is largely due to the fact that state patients have many years of notes, therefore old notes and more recent notes are stored separately. Furthermore doctor's notes from the patient's observation period and leave of absence reviews are in separate files. The data was captured directly onto an excel spreadsheet.

3.6 Measures

The main measures were the demographic, clinical and criminological variables. All measures were retrieved from the patient's records. Demographic variables were measured as follows:

- Age at the time of first admission as a state patient.
- Marital status categorised as single, married, divorced or widowed.
- Highest level of education was captured as primary school, high school, matric, tertiary or special education
- Employment status at the time of first admission was captured as unemployed, permanent employment or self-employment. Unfortunately employment status was not well documented in the files. Over 90% of patients were said to be unemployed, and no details were given about possible informal employment.

Clinical variables included the mental health diagnosis, duration of hospital stay prior to re-offence and in-ward adverse events. The mental health diagnosis was categorised into the following:

- Schizophrenia
- Substance induced psychotic disorder
- Other psychotic disorder
- Bipolar disorder
- Other mood disorder
- Personality disorder

- Cluster B personality traits
- Intellectual disability
- Mood or psychotic disorder secondary to general medical condition
- Other diagnosis

Substance use disorder was categorised into:

- polysubstance use (three or more substances)
- alcohol use
- cannabis use
- alcohol and cannabis use
- other substances

Due to insufficient information stating whether the substance use was abuse, dependence or misuse the general term substance 'use' was used.

Adverse events that occurred in the ward were also captured. An adverse event relates to behaviour in the ward which is not in keeping with ward rules and may cause harm to fellow patients or staff. The most common adverse events that were captured were: abscond from ward, repeatedly engaging in fights in the ward, sodomy and damage to property. If a charge was laid against the patient for crime committed in the ward, the patient was categorised as a recidivist. Cannabis use in the ward is a serious adverse event, however this information was not captured as occasionally an entire ward may gain access to cannabis but this is not documented in each individual patient's file.

It was also difficult to find the exact time from admission to first LOA. In some cases it was possible to get an approximate duration. In such cases the duration was captured as < 6 months, 6months- 1 year and > 1 year. In a large proportion this variable was unknown.

Criminological factors that were assessed are criminal history, category of index offence, and category of recidivist offence. A positive 'criminal history' refers to the patient having charges prior to becoming a state patient. In the majority of cases this variable was unknown as police documents stating the patients prior charges were missing. In cases where the past criminal history was known, the specific number of charges laid was captured.

Offences were captured according to the specific charge laid against the patient such as rape, attempted murder or robbery and were then grouped into the following categories

- Contact related crime (to a person)
 - Murder, attempted murder, sexual offence, assault with intent to do grievous bodily harm (assault GBH), common assault, robbery with aggravating circumstances, common robbery
- Contact related crime
 - Arson and malicious damage to property (MDP)
- Property related crime
 - Burglary and theft of a motor vehicle
- Crime detected – policeaction
 - Illegal possession of a firearm, drug possession

- Other serious crime
 - Other theft, shoplifting
- Minor crime
 - *Crimen injuria*, violation of a protection order, public drinking, intimidation

If the patient had a second observation the patient's fitness to stand trial and criminal responsibility on the second observation was captured.

3.7 Statistical Analysis

Data analysis was carried out using SAS. (Reference: SAS Institute Inc., *SAS Software, version 9.3 for Windows*, Cary, NC, USA: SAS Institute Inc. (2002-2010))

Between-group tests were conducted as follows:

The X^2 test was used to assess the relationships between categorical variables. Fisher's exact test was used for 2 x 2 tables or where the requirements for the X^2 test could not be met. The strength of the associations was measured by Cramer's V and the phi coefficient respectively. The following scale of interpretation was used:

0.50 and above	high/strong association
0.30 to 0.49	moderate association
0.10 to 0.29	weak association
below 0.10	little if any association

The 5% significance level was used throughout, unless specified otherwise.

In other words, *p-values* <0.05 indicate significant results.

3.8 Ethics

The ethics department of the University of Witwatersrand granted approval of the study.

There was no direct harm or risk to patients. Their right to confidentiality was discussed when obtaining consent. A patient code was created to ensure that patient's names were not used. Consent was obtained from in-patients if their data was captured. In the case of 3 patients, telephonic consent was obtained from family members. No patients refused permission to capture their information.

4. RESULTS

The results of this study provide a description of the demographic, clinical and criminological variables of 180 state patients of Sterkfontein Hospital. The results also demonstrate significant clinical and criminological differences between 80 recidivists (R) and 100 non-recidivists (NR). There were no significant differences found between any demographic variables.

The results will be presented in the following order:

- Description of the total population and sample population
- Demographics of the sample
- Description of recidivists with a charge versus recidivists without a charge
- Comparison of demographic variables between R and NR
- Description of clinical variables followed by a comparison between R and NR

- Description of criminological variables followed by a comparison between R and NR
- Outcome of the second observation
- Results of the logistic regression analysis

4.1 Description of the sample

A total of 293 in-patient files were reviewed. Sixty of these were classified as recidivists and included in the final sample group. The total number of out-patients at Sterkfontein Hospital could not be calculated due to a lack of a data base and a complex filing system. Of the total out-patients 120 were randomly selected and all 120 were included in the final sample. Twenty out-patients were classified as recidivists. Of the 180 patients in the study group, 80 (44%) were recidivists. Of these, 41 (51%) were formally charged. The recidivists comprised 60 inpatients and 20 outpatients, while the non-recidivists were exclusively out-patients. The study did not find a single recidivist that was charged for an offence in the ward. Thus all those classified as recidivists were charged or committed acts of violence in the community. No further distinction is made between 'in' and 'out' patients in this analysis.

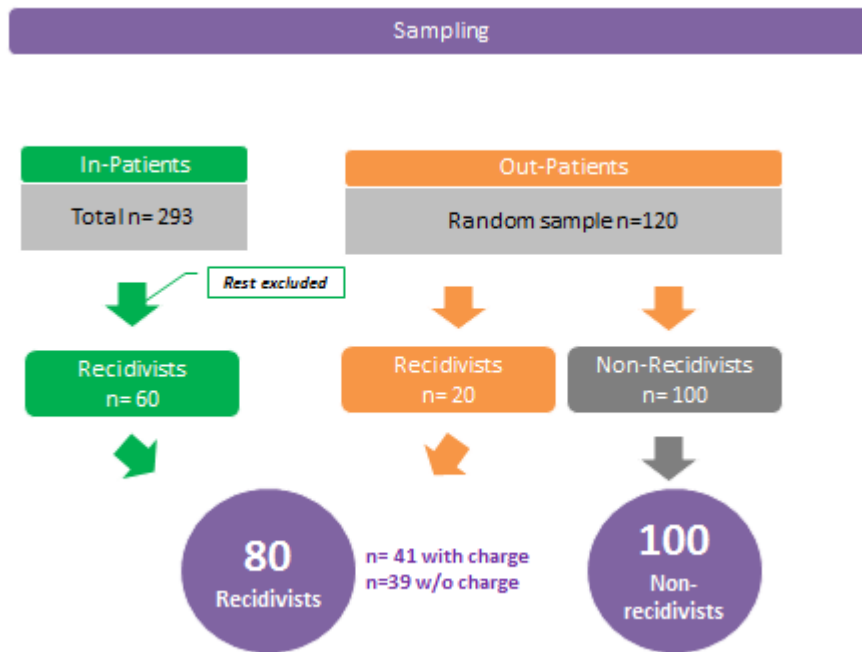


Figure 1. Sampling

4.2 Demographics of the sample (n=180)

4.2.1 Age at first admission as a state patient

The average age of the patients was 30.7 years (sd=10.2y; range 14-66y; median 29.0y; interquartile range 23-37y) (1% unknown). The distribution of ages is shown below:

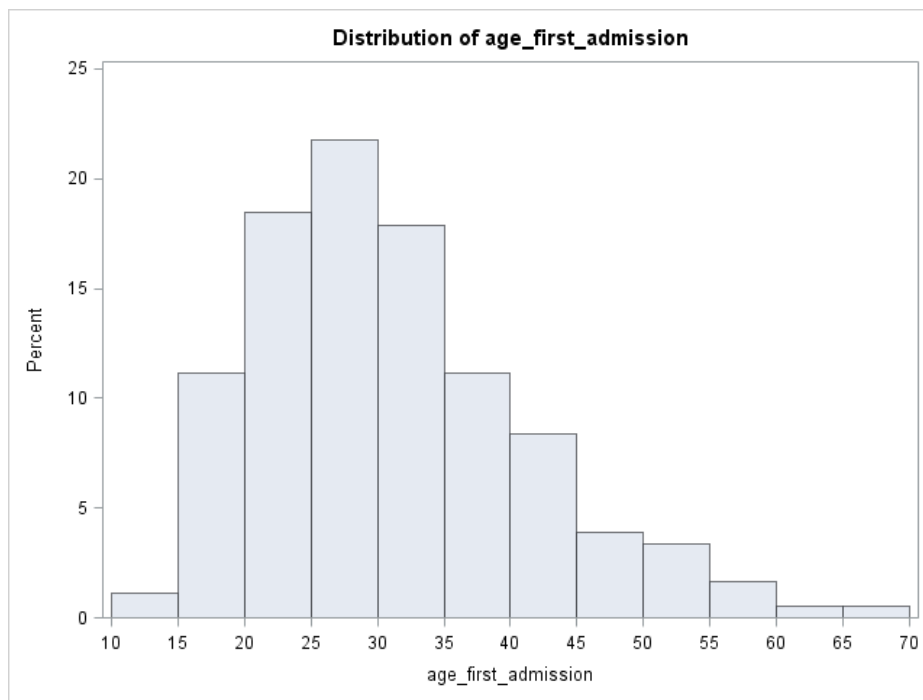


Figure 2. Age distribution

For further analysis, ages were grouped as shown below:

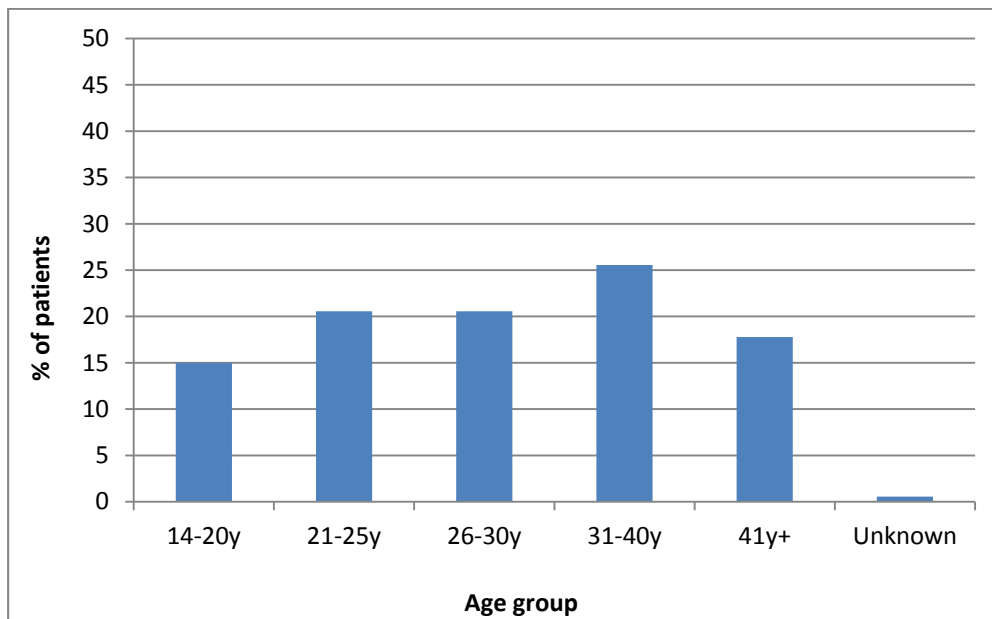


Figure 3. Age grouping for analysis

4.2.2 Marital Status

The majority of patients were single (87%). Only 7% were married. Seven patients out of 180 were divorced, 1 widowed and 3 were unknown.

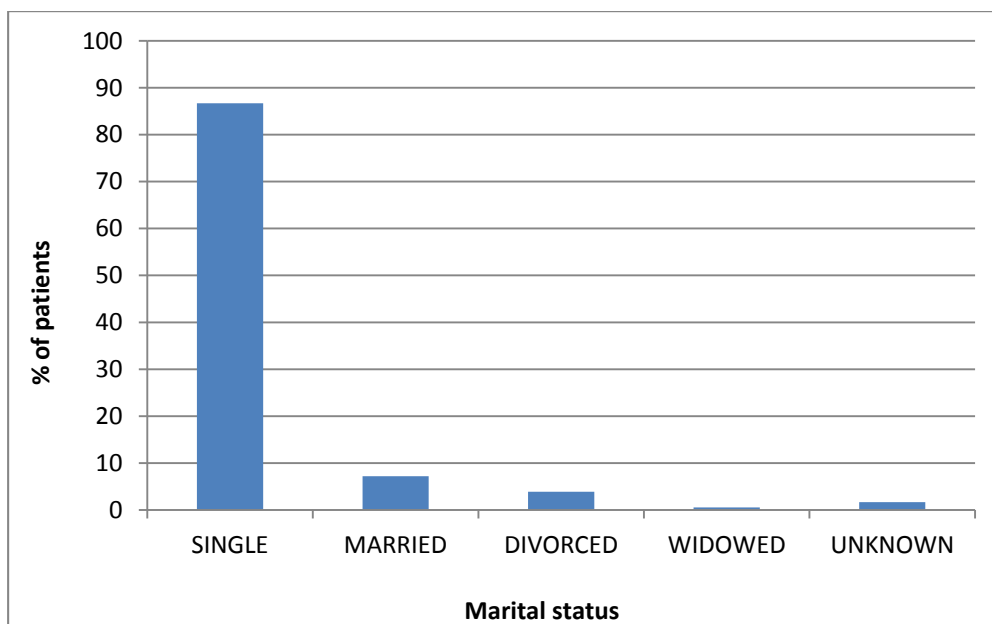


Figure 4. Marital status

4.2.3 Highest level of education

The patients were predominantly educated up to primary school (32%) and high school (no matric) (31%) level. Of the rest of the sample 8.3% had a matric education, 2.2% tertiary education and 11.7% attended special education schooling. In 13% of the sample, the HLOE was unknown.

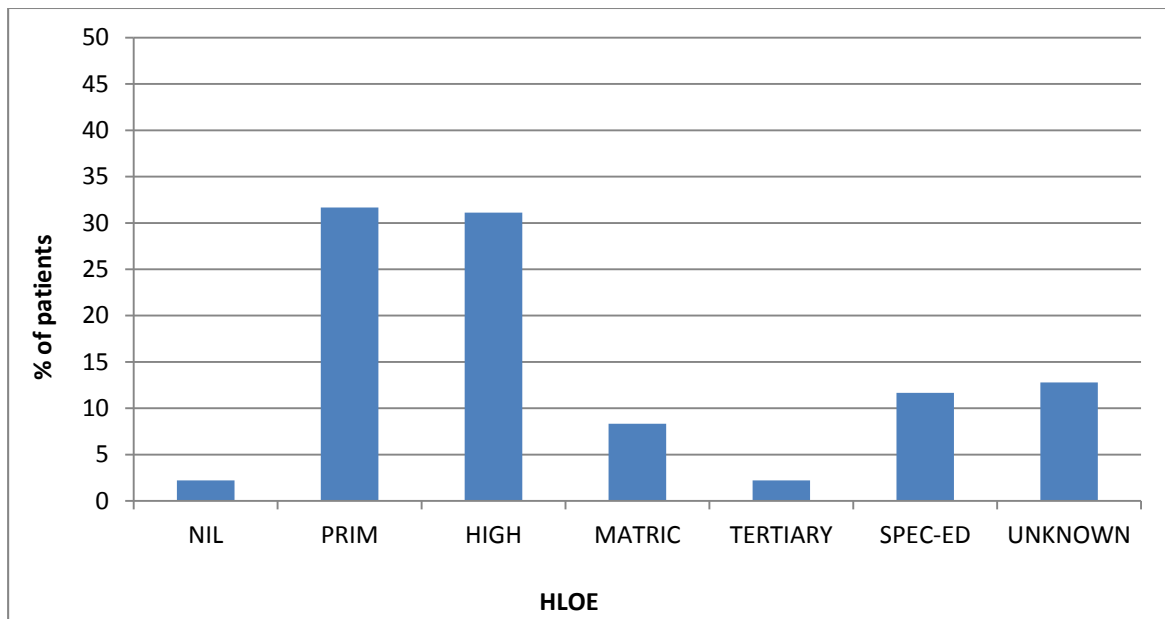


Figure 5. Highest level of education

4.2.4 Employment status

91% of the patients were unemployed. 5.6% were permanently employed and 1.7% were self-employed. In three out of 180 patients the employment status was unknown.

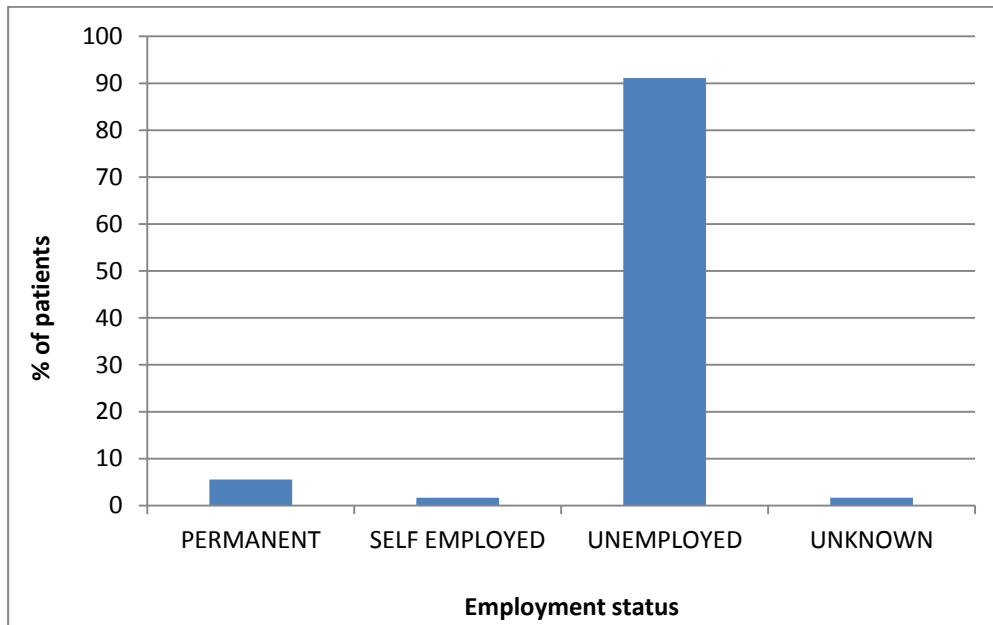


Figure 6. Employment status

4.3 Comparison of recidivist with a charge versus recidivists without a charge

Significant between-group differences were found only for some of the recidivist offences:

- Charges were laid in 12/15 rape cases ($p=0.020$)
- Charges were NOT laid in all 'other sexual offence' cases ($p=0.005$)
- Charges were NOT laid in 16/20 assault cases ($p=0.002$)
- Charges were laid in all housebreaking & robbery cases ($p=0.026$)

Notably there were no significant differences in any of the demographic, clinical or index offence variables. This thus confirmed the justification for combining the two groups into one R group for further analysis.

4.4 Comparison of demographic variables (R/NR)

Age at first admission

The frequency distribution was shown earlier (Figure 3). There was no significant association between age distribution and R/NR ($p=0.88$).

Marital status

The frequency distribution was shown earlier (Figure 4). There was no significant association between marital status and R/NR ($p=0.56$).

Highest level of education

The frequency distribution was shown earlier (Figure 5). There was no significant association between HLOE and R/NR ($p=0.51$).

Employment status

The frequency distribution was shown earlier (Figure 6). There was no significant association between employment status and R/NR ($p=1.00$).

4.5 Clinical variables and comparison between R/NR

4.5.1 Axis I diagnosis

83% of the patients had an Axis I diagnosis. There was no significant association between the presence of an Axis I diagnosis and R/NR ($p=0.11$).

For the patients with an Axis I diagnosis, the individual conditions are shown below. Note that the percentages do not sum to 100% since some patients had more than one diagnosis. The most common diagnosis (59%) was schizophrenia. The second most common diagnosis was bipolar disorder (8.7%) and psychosis secondary to head injury (8.7%). Schizoaffective disorder (SAD) accounted for 6.7% of the Axis I diagnosis. 6% were diagnosed with psychosis secondary to epilepsy. Only seven patients out of 180 were diagnosed with substance induced psychosis (SIPD) and another seven patients with psychosis not otherwise specified (psychosis NOS).

There were significant, weak, associations with R/NR for two conditions:

- SAD ($p=0.047$; phi coefficient=0.17): A higher proportion of R had SAD, compared to NR.
- Psychosis secondary to epilepsy ($p=0.036$; phi coefficient=0.18): A lower proportion of R had this condition, compared to NR.

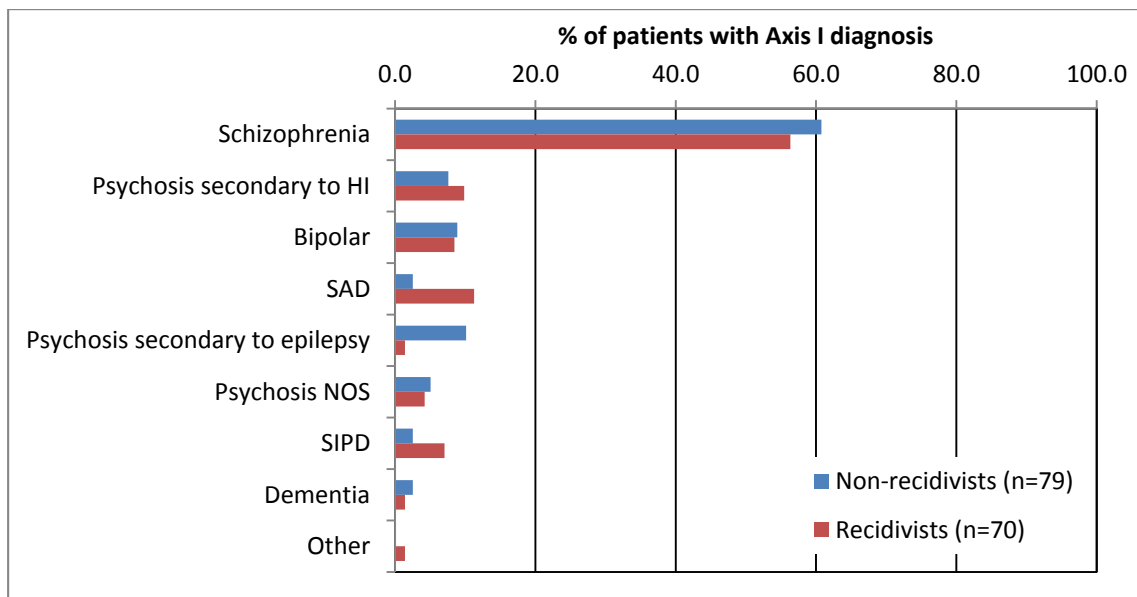


Figure 7. Axis I diagnosis

4.5.2 Substance use

Overall, 66% of the patients were known to use one or more substances. There was a significant association between substance use disorder and R/NR ($p=0.0015$; phi coefficient=0.24 (weak association)): Substance use was higher in the R group compared to the NR group.

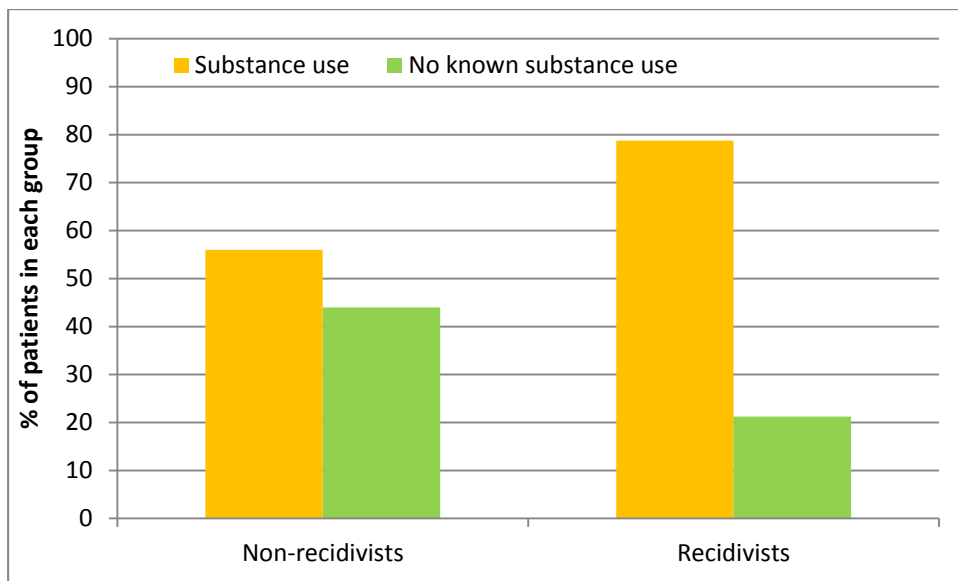


Figure 8. Substance abuse comparison between R/NR

Of the patients with substance use, 73% used one substance, while 27% used two substances (in all cases but one, this was alcohol and cannabis). There was no significant association between the number of substances used and R/NR ($p=0.30$). There was no association between a particular substance use and R/NR.

For the patients with substance use, the substances used are shown below. Note that the percentages do not sum to 100% since some patients used more than one substance. The most common substance used was cannabis (with or without alcohol). 44.5% ($n=53$) of patients used cannabis only. Combined alcohol and cannabis use was the second most common (26.1%). Of the total sample 16.8% used alcohol only and 11.8% used multiple substances (polysubstance use).

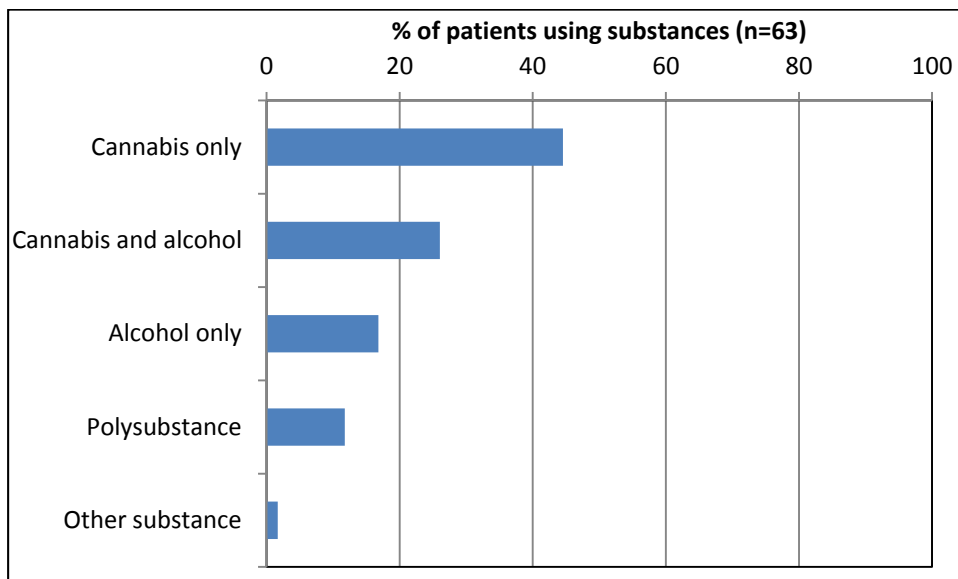


Figure 9. Category of substance use

4.5.3 Axis 2 diagnosis

34% of the patients had an Axis II diagnosis. There was no significant association between the presence of an Axis II diagnosis and R/NR ($p=0.53$).

Of the patients with an Axis II diagnosis, 97% had one condition, while 3% (2 patients) had two conditions. There was no significant association between number of conditions and R/NR ($p=1.00$).

For the patients with an Axis II diagnosis, the individual conditions are shown below. Note that the percentages do not sum to 100% since some patients had more than one diagnosis.

The most common diagnosis was intellectual disability (74.2%) followed by antisocial personality disorder (16.1%) and antisocial traits (12.9%). There were significant associations with R/NR for each of the three conditions:

- Intellectual disability ($p < 0.0001$; phi coefficient=0.60 (strong association)): A lower proportion of R had ID, compared to NR.
- ASPD ($p = 0.0051$; phi coefficient=0.37 (moderate association)): A higher proportion of R had this condition, compared to NR.
- Antisocial traits ($p = 0.0017$; phi coefficient=0.40 (moderate association)): A higher proportion of R had this condition, compared to NR.

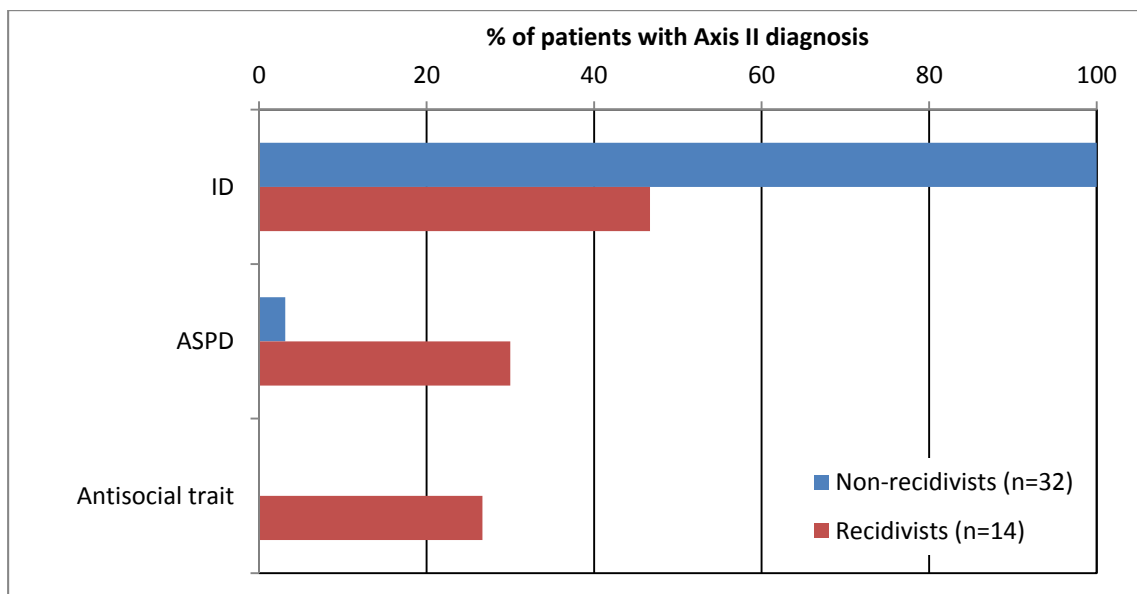


Figure 10. Axis II diagnosis

4.5.4 In-ward adverse events

Overall, 27% of the patients were involved in in-ward adverse events. There was a significant, moderate, association between in-ward adverse event and R/NR ($p < 0.0001$; phi coefficient=0.41): Ward adverse events were higher in the R group compared to the NR group.

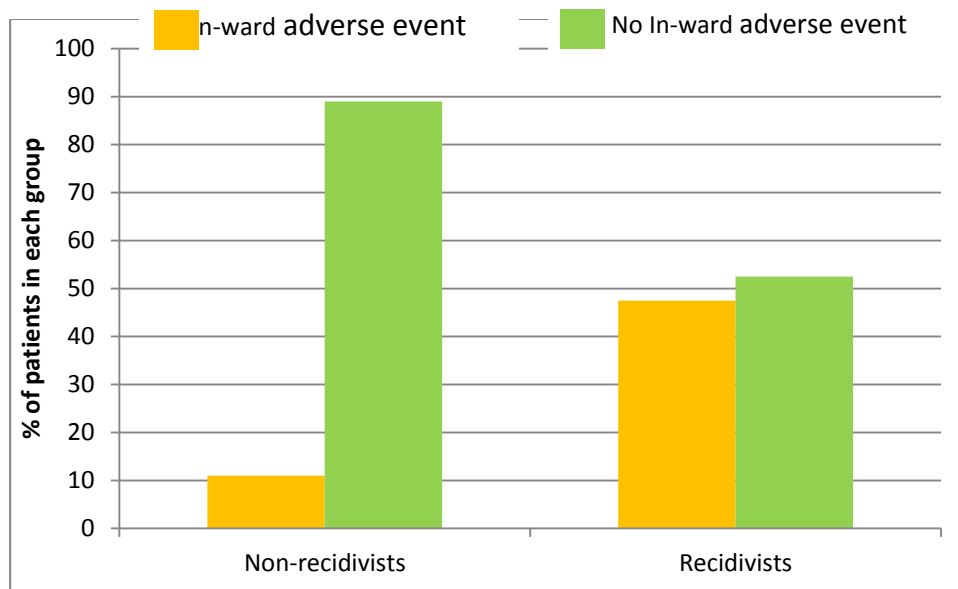


Figure 11. In-ward adverse events comparison between R/NR

Of those who were involved in in-ward adverse events (n=49), the majority (82%) had one ward adverse-event.

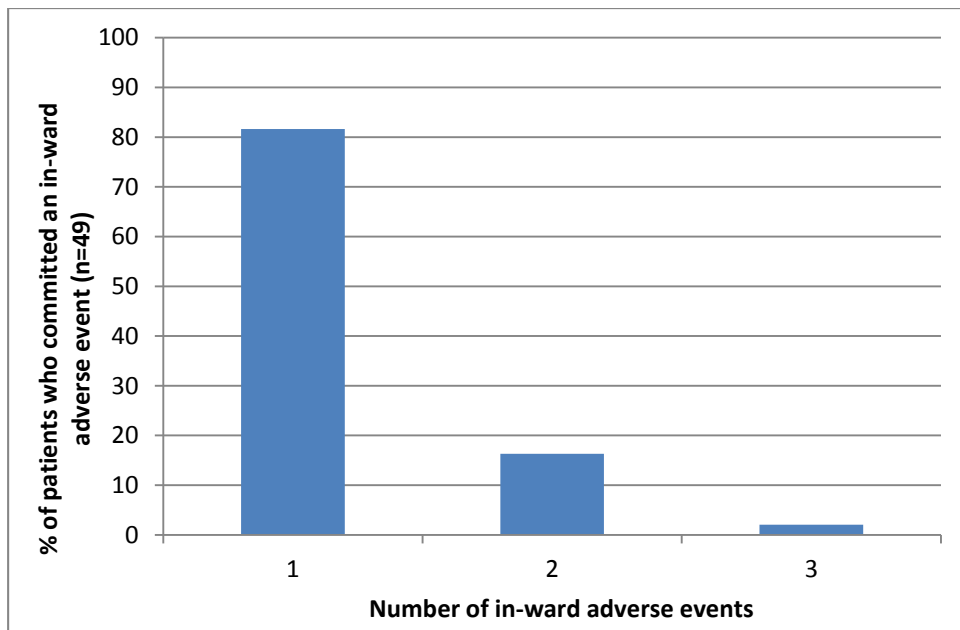


Figure 12. Number of in-ward adverse events

The proportions of the individual in-ward adverse events are presented below. Note that the percentages do not sum to 100% since some patients were involved in more than one in-ward adverse event. The most common adverse- event was dangerous and aggressive behaviour (47%), followed by abscondment (43%), sexual offence (20%), and then damage to property (6%). Two patients out of the total sample had documentation of attempted suicide. There were no significant associations between an individual offence type and R/NR.

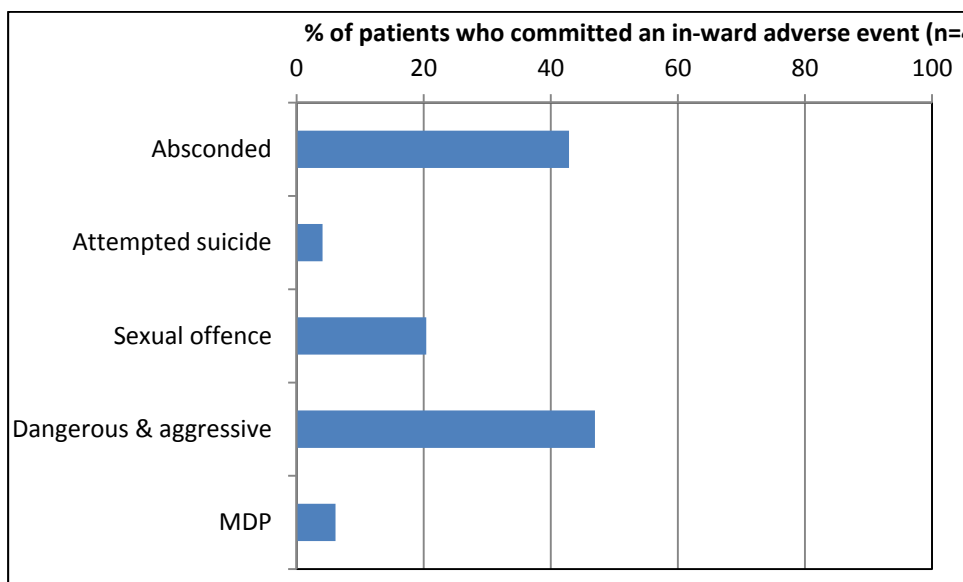


Figure 13. Category of in-ward adverse event

MDP=malicious damage to property

4.5.5 Duration of admission before 1st LOA

58% of the data were missing and therefore could not be used as a predictor for recidivism.

Of the total sample (n=180) 105 patients had missing data for this variable. Of the 75 patients in which this variable was captured 52 patients spent six months to one year in hospital before going out on their first leave of absence (LOA). 16 patients spent less than six months in hospital and 7 patients were admitted for more than a year.

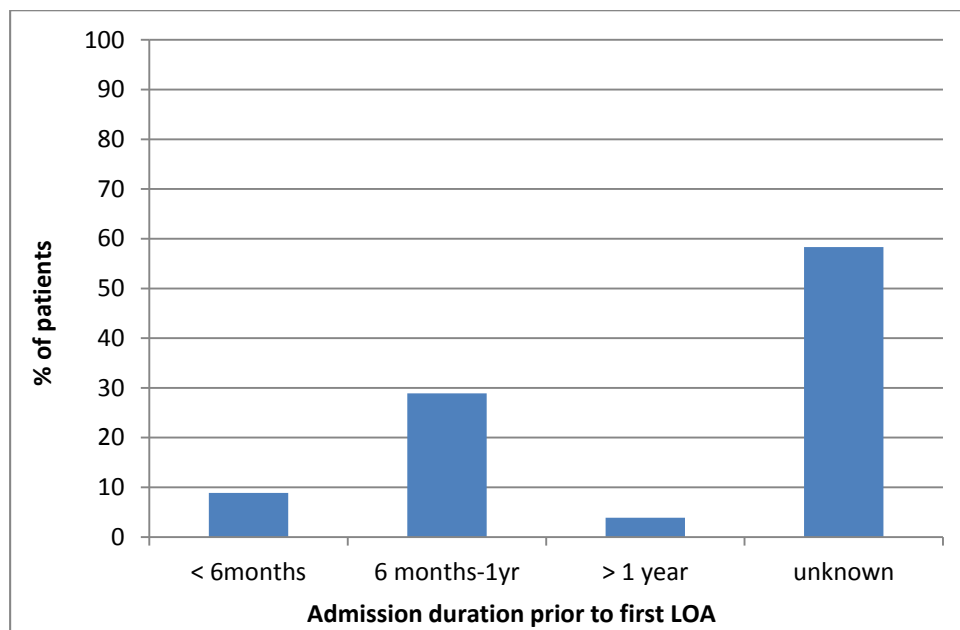


Figure 14. Duration of admission prior to first LOA

4.5.6 Time to recidivist offence (R only; n=80)

30% of the data were missing, thus inferences drawn from the available data were treated with caution, since we did not know if the missing data were missing at random or not. It appears that, in 75% of the cases for whom the data was available, the recidivist offence occurred after 2 years or more.

- 26.3% reoffended at 2- 5 years
- 26.3% reoffended after 5 years

- 7.5% reoffended between 1-2 years
- 6.3% reoffended before 1 year
- 3.8% reoffended after reclassification

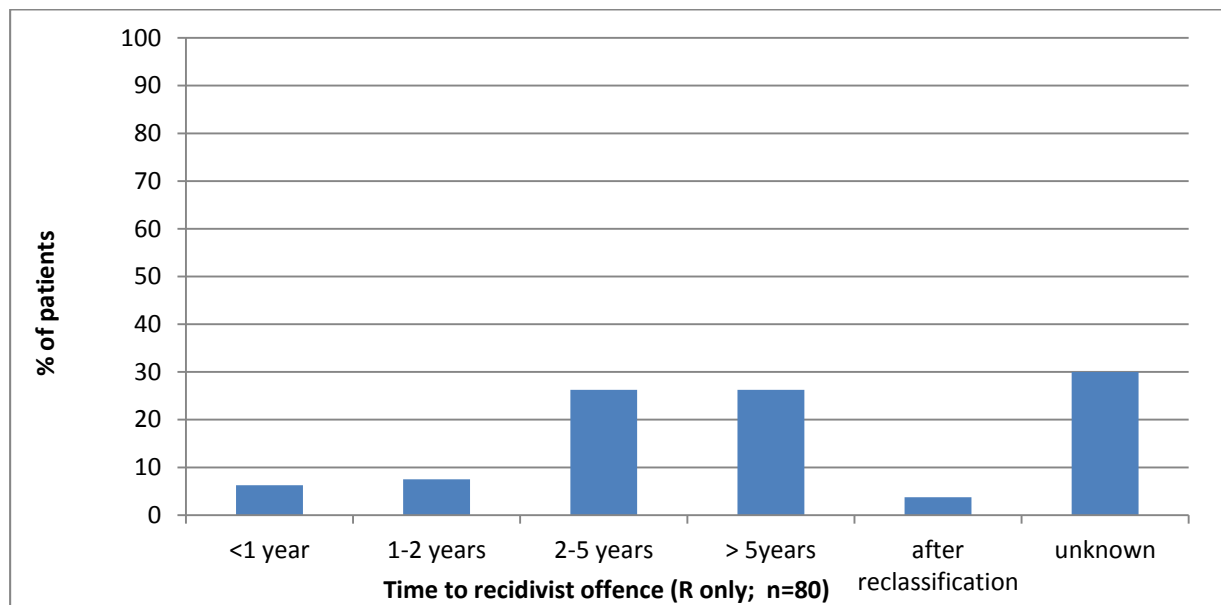


Figure 15. Time to recidivist offence

4.6 Criminological variables and comparison between R/NR

4.6.1 Criminal convictions prior to certification as a state patient and number of charges pre-state patient

76% of the data were missing, thus this variable could not be assessed as a predictor of recidivism. Out of 180 patients criminal history was available for only 44 patients. 33 patients out of the 44 had a positive criminal history prior to becoming a state patient. 19 patients out of 44 had two or more charges and the rest had one documented charge.

Table 1. Crime Classification

Level 1	Level 2
Contact Crime	Murder
Contact Crime	Attempted Murder
Contact Crime	Sexual Offence
Contact Crime	Assault GBH
Contact Crime	Common Assault
Contact Crime	Robbery Aggravating
Contact Crime	Common Robbery
Contact Crime	Kidnapping
Contact Related Crime	Arson
Contact Related Crime	MDP
Property Related Crime	Housebreaking, Robbery
Property Related Crime	Theft of motor vehicle
Crime Detected - Police Action	Drug Possession
Crime Detected - Police Action	Illegal Possession of firearm
Other Serious Crime	Other Theft
Other Serious Crime	Shoplifting
Minor crime	Minor crime

4.6.2 Index offence(s)

The majority of patients (88%) had committed one index offence. There was no significant association between number of index offences and R/NR ($p=0.054$).

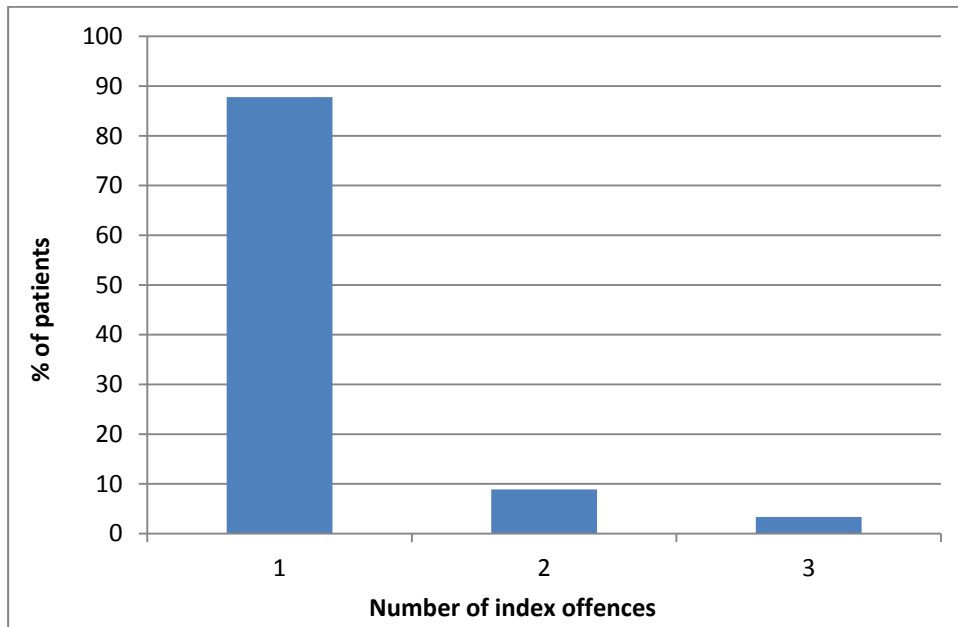


Figure 16. Number of index offences

The proportions of the individual offence types are illustrated below. Note that the percentages do not sum to 100% since some patients committed more than one index offence.

Offences were classified as follows (figure 18)

Of the total ($n=180$) the most common index offence was rape (34.4%), followed by assault with grievous bodily harm (GBH) (19.4%) and murder (16.7%). 6.7% of the sample committed assault, 6.1% indecent assault and 6.1% were charged with theft. 5% were charged with malicious damage to property (MDP) and 4% were charged with robbery with aggravating circumstances. Less than 4% of the sample had charges of attempted rape, attempted murder, arson, kidnapping or minor offences.

There was a significant association with R/NR for Assault ($p=0.026$; phi coefficient=0.21): A higher proportion of R committed assault as the index offence, compared to NR.

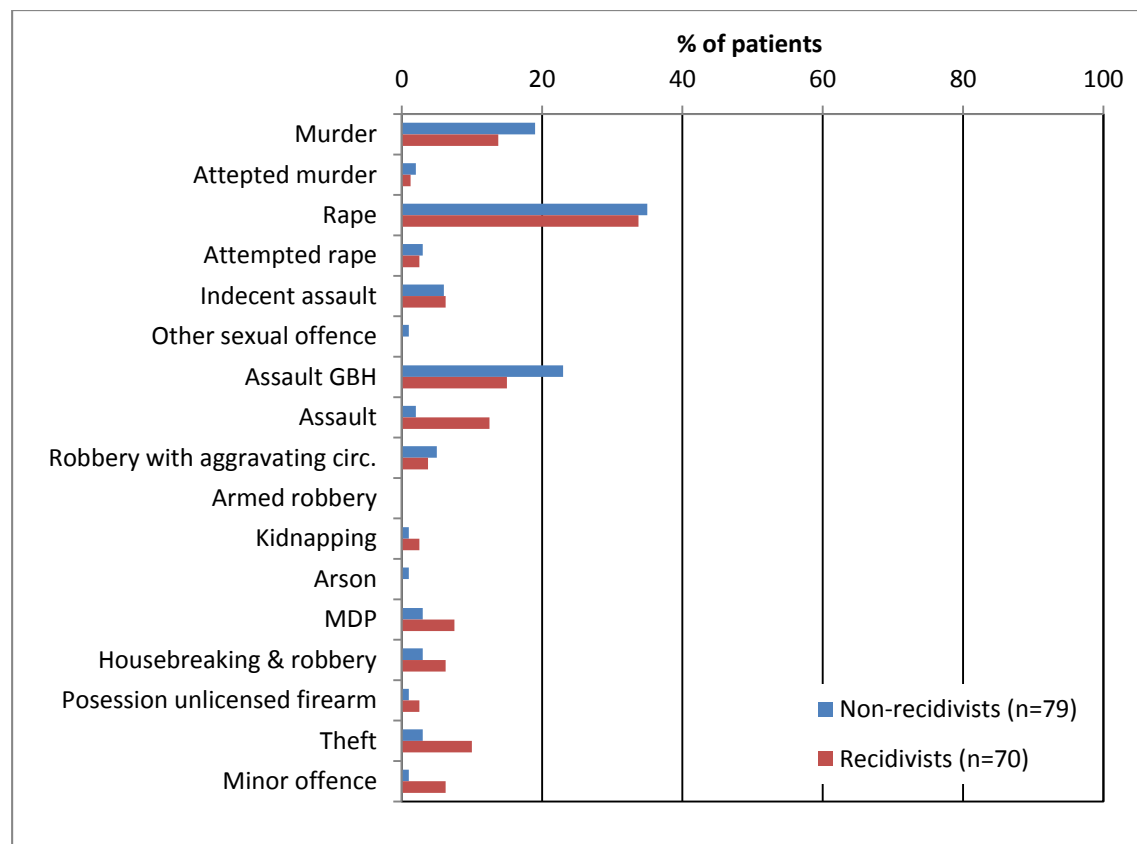


Figure 17. Category of index offence

Using the level 2 crime classification, we find that overall 43% of the index offences were sexual offences. There was no significant association with R/NR.

The proportions of the offence types, grouped according to the level 1 classification, are illustrated below. Note that the percentages do not sum to 100% since some patients committed more than one index offence type. The most common offence group was contact crime (89%). There were no significant associations with R/NR.

- Contact related crime- 5.6%
- Property related crime- 4.4%
- Other serious crime- 6.1%
- Crime- detected police action- 1.7%
- Minor offence- 3.3%

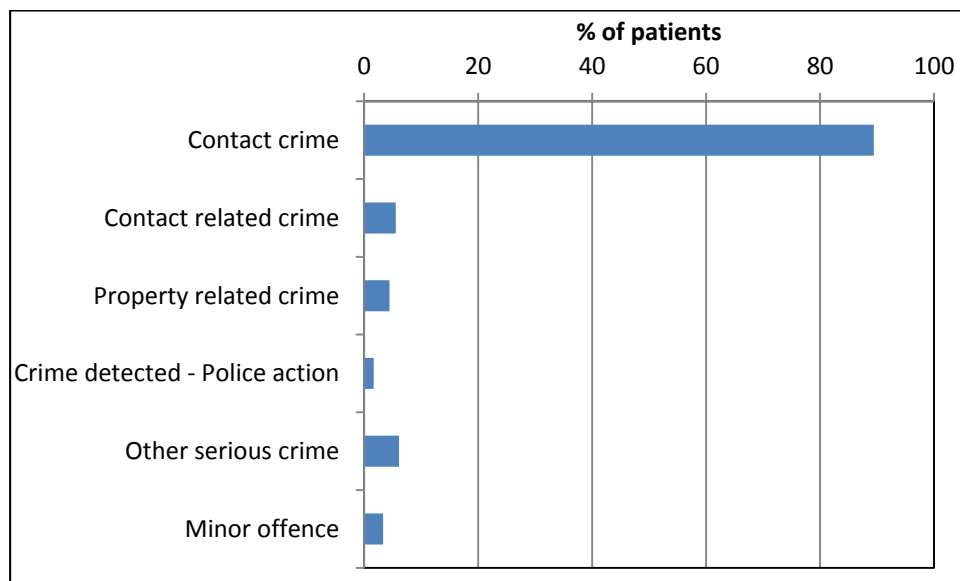


Figure 18. Index offence level 1 crime classification

4.6.3 Recidivist offence(s) (R only; n=80)

The majority of patients (71%) had committed one recidivist offence.

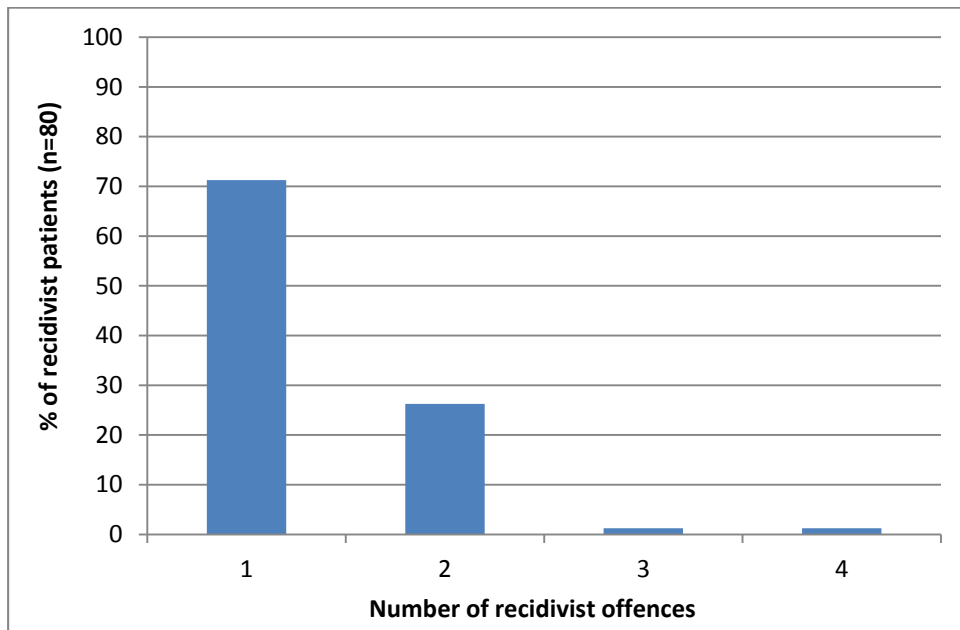


Figure19. Number of recidivist offences

The proportions of the individual recidivist offence types are illustrated below. Note that the percentages do not sum to 100% since some patients committed more than one recidivist offence. The most common offence was assault (25%), followed by rape (18.8%).

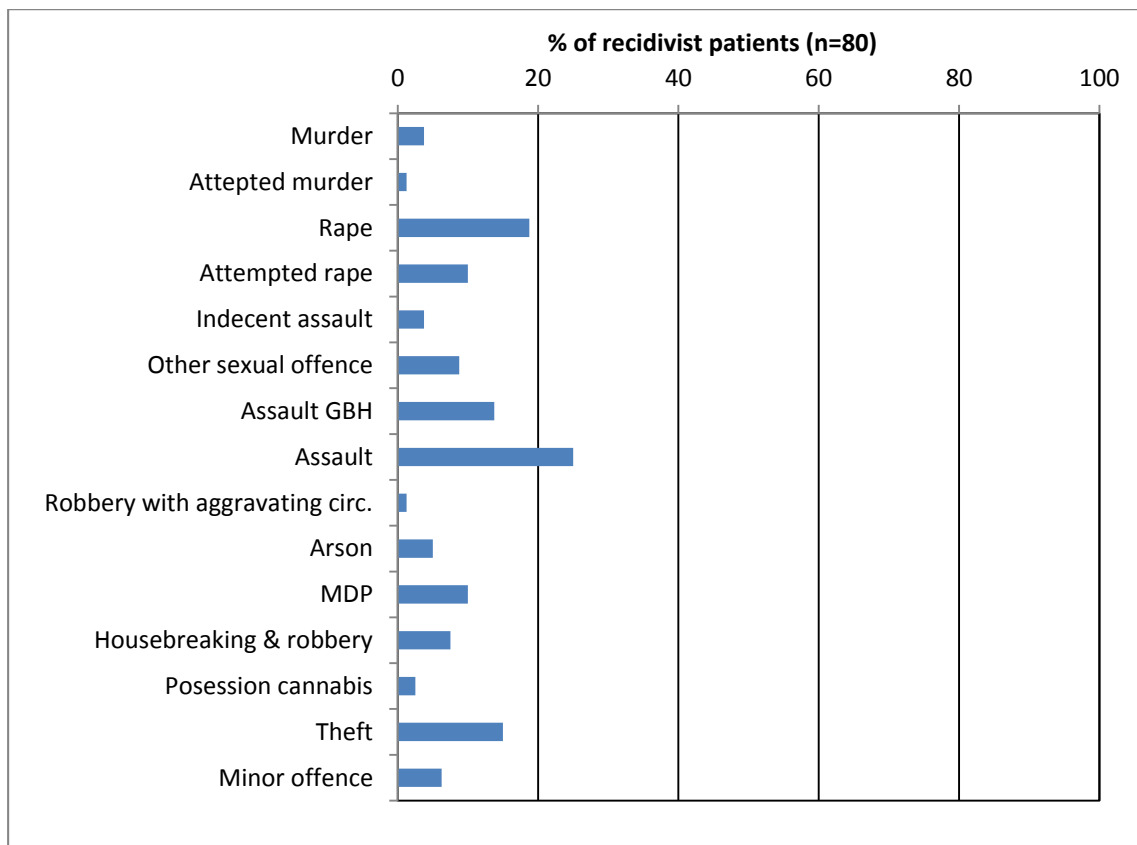


Figure 20. Classification of recidivist offence

Using the level 2 crime classification, we find that 40% of the recidivist offences were sexual offences.

The proportions of the offence types, grouped according to the level 1 classification, are illustrated below. Note that the percentages do not sum to 100% since some patients committed more than one recidivist offence type. The most common offence group was contact crime (78%).

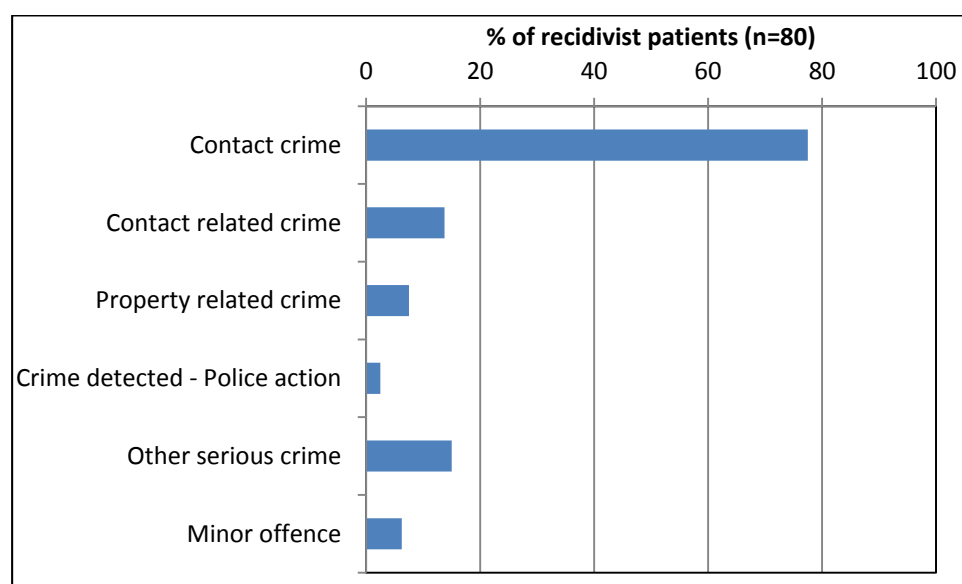


Figure 21. Recidivist offence level 1 crime classification

4.7. Outcome of second observation (R only; n=80)

39% of the patients did not have a second observation. Amongst those that did, most were found to be not fit and not responsible.

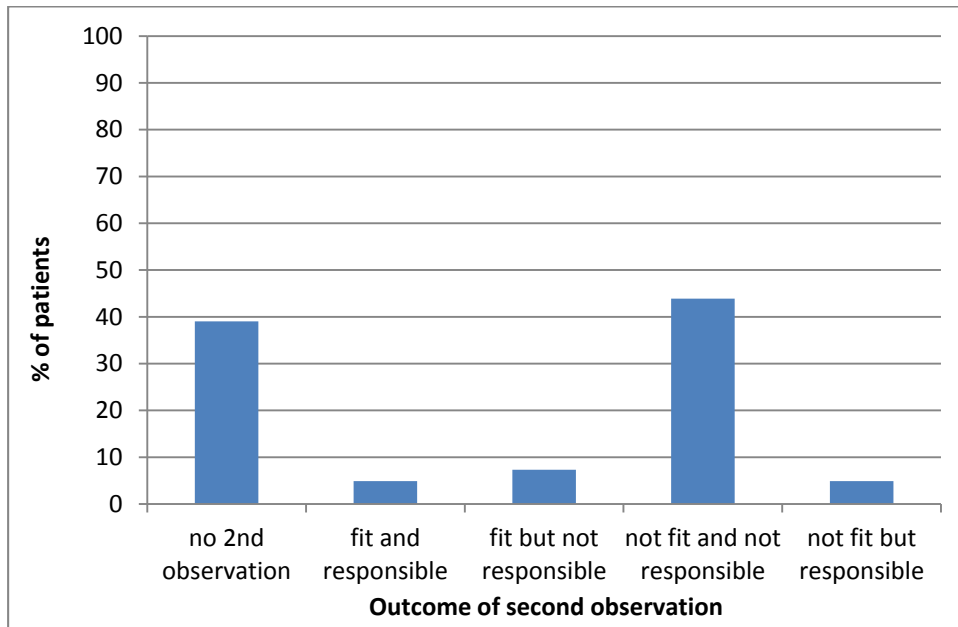


Figure 22. Outcome of second observation

4.8 Logistic regression analysis

Logistic regression analysis was used to examine the relative impact of a number of independent variables (demographic, clinical and criminological) on recidivism – the dependent variable. Odds ratios produced by this technique estimate the average change in odds of a predicted event (recidivism) associated with the presence of a risk factor.

4.8.1 Logistic regression step one

Given the large number of independent variables (IVs), and the sample size limitations, univariate logistic regression was first performed with each IV separately. Variables with a

Wald statistic significant at $p < 0.20$ were retained for multivariate analysis. 95% confidence intervals (CI) were computed for the odds ratios (OR) in testing the measure of association.

The following IVs had a Wald statistic significant at $p < 0.20$ in the univariate analysis:

- Axis I diagnosis (Y/N)
- Axis I: Psychosis secondary to epilepsy
- Axis I: SAD
- Axis I: SIPD
- Axis II: ID
- Axis II: ASPD
- Substance use (Y/N)
- Number of substances
- Substance: Cannabis (only)
- Substance: Polysubstance
- Number of index offences
- Index crime: Assault GBH
- Index crime: Assault
- Index crime: MDP
- Index crime: Theft

- Index crime: Minor
- Index crime (Level 1): Contact crime
- In-ward adverse event(Y/N)
- Number of in-ward adverse events(0/1/2+)
- In-ward adverse event: Absconded
- In-ward adverse event: Sexual offence
- In-ward adverse event: Dangerous & aggressive behaviour

4.8.2 Logistic regression step two

Before commencing multivariate analysis, bivariate correlation analysis was conducted among the IVs listed above: phi coefficients were determined between two dichotomous variables and Cramer's V between two categorical variables. A combination of certain variables was avoided for the multiple logistic regression. The following variables in combination had significant association with each other and therefore were not to be grouped together as they confound the dependent variable –recidivism.

- Intellectual disability with
 - Axis I diagnosis
 - Substance use
- Number of index offences with Index offence: Minor
- In-ward adverse event with number of in-ward adverse events
- In-ward adverse event with

- Ward: Absconded
- Ward: Dangerous & aggressive behaviour
- Number of in-ward adverse events with
 - Ward: Absconded
 - Ward: Sexual offence
 - Ward: Dangerous & aggressive behaviour
- Number of substances used with
 - Intellectual disability
 - Substance use
 - Cannabis use

Given the confounding of Number of substances used and Substance use, as well as the strong associations of the former with two other variables, it was more appropriate to model Substance use rather than Number of substances used as it allows further specification of all the substance types of interest.

4.8.3 Logistic regression step three

In terms of the strongly associated variables from step one and an avoidance of certain combinations from step two the following variables were grouped together for multivariate regression analysis:

- 1) ID, Number of index offences, in-ward adverse event(Y/N)

- 2) Axis I diagnosis, Substance abuse, Number of index offences, in-ward adverse event(Y/N)
- 3) ID, Index offence: Minor, in-ward adverse event (Y/N)
- 4) Axis I diagnosis, Substance abuse, Index offence: Minor, in-ward adverse event (Y/N)
- 5) ID, Number of index offences, number of in-ward adverse events
- 6) Axis I diagnosis, Substance abuse, Number of index offences, number of in-ward adverse events
- 7) ID, Index offence: Minor, number of in-ward adverse events
- 8) Axis I diagnosis, Substance abuse, Index offence: Minor, number of in-ward adverse events
- 9) ID, Number of index offences, Ward: Absconded, Ward: Sexual offence, Ward: Dangerous & aggressive behaviour
- 10) Axis I diagnosis, Substance abuse, Number of index offences, number of in-ward adverse events
- 11) ID, Index offence: Minor, Ward: Absconded, Ward: Sexual offence, Ward: Dangerous & aggressive behaviour
- 12) Axis I diagnosis, Substance abuse, Index offence: Minor, Ward: Absconded, Ward: Sexual offence, Ward: Dangerous & aggressive behaviour

Variables which were not significant at the 5% level were sequentially removed from the model. Many of the final models were identical once non-significant variables had been removed. The retained variables were

- Substance use: Cannabis
- Substance use: Polysubstance
- Index crime: Assault
- In-ward adverse event OR number of in-ward adverse events OR Ward: Absconded, Ward: Sexual offence, Ward: Dangerous & aggressive behaviour.

The maximum number of variables in any final model listed below was six which fortunately meant that the sample size needed for the regression analysis was met.

4.8.4 Multivariate analysis results

Model A

- The odds of recidivism (vs. no recidivism) for those patients who used cannabis (only) was 2.6 times the odds of recidivism for those who did not use cannabis, controlling for the other variables in the model. (Odds ratio=2.6; 95% CI 1.2-5.6).
- The odds of recidivism (vs. no recidivism) for those patients with polysubstance use were 3.7 times the odds of recidivism for those without polysubstance use, controlling for the other variables in the model. (Odds ratio=3.7; 95% CI 1.1-13.1).
- The odds of recidivism (vs. no recidivism) for those patients with assault as an index offence was 8.8 times the odds of recidivism for those who did not commit assault as the index offence, controlling for the other variables in the model. (Odds ratio=8.8; 95% CI 1.7-45.1).

- The odds of recidivism (vs. no recidivism) for those patients with an in-ward adverse event was 7.3 times the odds of recidivism for those with no in-ward adverse event, controlling for the other variables in the model. (Odds ratio=7.3; 95% CI 3.3-16.1).

Model B

- The odds of recidivism (vs. no recidivism) for those patients who used cannabis (only) was 2.7 times the odds of recidivism for those who did not use cannabis, controlling for the other variables in the model. (Odds ratio=2.7; 95% CI 1.3-5.7).
- The odds of recidivism (vs. no recidivism) for those patients with polysubstance use were 3.6 times the odds of recidivism for those without polysubstance use, controlling for the other variables in the model. (Odds ratio=3.6; 95% CI 1.0-12.9).
- The odds of recidivism (vs. no recidivism) for those patients with assault as an index offence was 8.8 times the odds of recidivism for those who did not commit assault as the index offence, controlling for the other variables in the model. (Odds ratio=8.8; 95% CI 1.7-45.0).
- The odds of recidivism (vs. no recidivism) for those patients with one in-ward adverse event was 8.6 times the odds of recidivism for those with zero in-ward adverse events, controlling for the other variables in the model. (Odds ratio=8.6; 95% CI 3.5-20.9). The parameter for two or more in-ward adverse events (vs. zero in-ward adverse event) was not significant.

Model C

- The odds of recidivism (vs. no recidivism) for those patients who used cannabis (only) was 2.8 times the odds of recidivism for those who did not use cannabis, controlling for the other variables in the model. (Odds ratio=2.8; 95% CI 1.3-6.0).
- The odds of recidivism (vs. no recidivism) for those patients with polysubstance use were 4.4 times the odds of recidivism for without polysubstance use, controlling for the other variables in the model. (Odds ratio=4.4; 95% CI 1.3-15.0).
- The odds of recidivism (vs. no recidivism) for those patients with assault as an index offence was 8.4 times the odds of recidivism for those who did not commit assault as the index offence, controlling for the other variables in the model. (Odds ratio=8.4; 95% CI 1.6-43.1).
- The odds of recidivism (vs. no recidivism) for those patients who absconded from the ward was 3.3 times the odds of recidivism for those who did not commit this in-ward adverse events, controlling for the other variables in the model. (Odds ratio=3.3; 95% CI 1.1-10.2).
- The odds of recidivism (vs. no recidivism) for those patients who committed a sexual offence in the ward was 17.2 times the odds of recidivism for those who did not commit in-ward adverse events, controlling for the other variables in the model. (Odds ratio=17.2; 95% CI 2.0-150).

- The odds of recidivism (vs. no recidivism) for those patients who had dangerous and aggressive behaviour in the ward was 5.3 times the odds of recidivism for those who did not commit in-ward adverse events, controlling for the other variables in the model. (Odds ratio=5.3; 95% CI 1.8-16.1).

Of the three models listed above Model C contains the most clinically relevant variables and thus is of greater usefulness to a clinician assessing risk. It was therefore decided to use Model C for further discussion around risk factors for recidivism.

5.DISCUSSION

The discussion consists of a detailed analysis of the study's results including possible reasons for the findings and comparison with existing literature. It also includes the limitations of the study and future recommendations.

5.1 Sample demographics

The average age of the sample was 30.7 years which is consistent with local and international studies (Marais, 2012; Maden et al, 2004; Lund et al, 2011). The majority of patients were single, unemployed and did not attain a matric qualification similar to that of other studies profiling state patients (Barett et al, 2007; Marais, 2012, Strydom et al, 2011). These demographic findings may highlight some of the socio-economic problems inherent to South Africa in general. For example the latest unemployment rate was reported to be 30% and approximately 60% of people over 20 have not completed their schooling (SA census 2011). Urban migration and cultural traditions such as labola may also impact on marital status (Hosegood, McGrath, & Moultrie, 2009). Literature on the mentally ill certainly highlights that persons with mental illness are often a marginalised sector of

society (Waghorn & Lloyd, 2005). It may then be inferred that psychiatric patients within the above context may be more likely to be unmarried, unemployed and less educated.

5.2 Comparison of recidivists with a charge to recidivists without a charge

The number of recidivists with a charge and those without a charge were almost equal in number (n=41 and n=39). Furthermore those with a charge and those without a charge did not differ with regard to demographic, clinical and index offence variables. This was a positive finding as careful consideration was made when assigning a patient to the recidivist group in the absence of a charge. This finding may suggest that many more state patients who commit violent acts while on LOA may warrant a charge which possibly should be addressed by the criminal justice system and not only the health care system. The only area in which differences existed between the two groups was with regard to the types of recidivist charges laid. In the majority of housebreaking, robbery and rape cases charges were laid; however charges were less frequently laid in cases of assault and other sexual offences. This may be a result of the public's perception of seriousness of crime that require reporting and law enforcement agencies' perceptions of which reported crimes merit a formal charge. Further studies would be needed to explore this trend.

5.3 Comparison of demographic variables between recidivist and non-recidivists

Recidivists (R) and non-recidivist (NR) did not differ with regard to any demographic variables. Thus there were no significant differences between age, level of education, marital status, and employment between the two groups. Some of these results are in keeping with existing literature. Bonta et al (1998) did not find level of education to be a predictor of general or violent recidivism. Phillips et al (2005), Friendship et al (1999) and

Edwards et al (2002) did not find marital status to be a predictor of recidivism. Castillo and Alarid (2011) reported no significant relationship between employment status and recidivism. Younger age at first admission or younger age at first conviction has however repeatedly proved to be a strong predictor of re-offence (Lund et al, 2011; Monahan, 2001; Skeem et al, 2011; Nilsson et al, 2011). It was therefore unexpected that the R and NR did not differ with regard to age at first admission. It is not known if a difference in age would have been established if age at first *arrest* was captured rather than age at first *admission*. Age at first arrest was not assessed as this was infrequently recorded in patients' files. In retrospect however it may have been useful to use the SAPS case number as an indication of age of first arrest. A larger sample size is also necessary to establish a definite association between age and recidivism.

5.4 Clinical variables and comparison between recidivist and non-recidivist

5.4.1 Axis I disorders

The most common diagnosis was schizophrenia (59%) followed by bi-polar disorder (9%), psychosis secondary to head injury (9%) and schizoaffective disorder (7%). Both international and local literature report schizophrenia to be the most common diagnosis amongst MDO's (Barett et al, 2007; Maden et al, 1999; Marais, 2012; Strydom et al, 2011). Schizophrenia tends to be the predominant diagnosis among MDO's, however it is interesting to note that a much higher percentage of mood disorders are reported in international studies. For example an American study by Castillo and Alarid (2011) reported 36% of MDOs with a diagnosis of bi-polar disorder and 23% with depression. A UK study by Coid et al (2007) reported that 7% of MDOs were diagnosed with depression. At Sterkfontein Hospital among 180 patients there was not a single diagnosis of depression. This may be a result of missed diagnoses by clinicians at Sterkfontein Hospital or a

significantly different profile of disorders in Johannesburg, South Africa. Another explanation may be that in South African courts fewer offenders with depression are referred for an observation.

There was a significant association between Schizoaffective disorder (SAD) and recidivism as a higher proportion of R had SAD compared to NR. A negative correlation was found between psychosis secondary to epilepsy and recidivism and a lower proportion of R had psychosis secondary to epilepsy compared to NR. The association between these two conditions and recidivism has not been reported in previous studies. Coid et al (2015) published the first study on specific clinical diagnoses and recidivism. This study did not however find SAD or psychosis secondary to a general medical condition to be particularly predictive of recidivism. Possible explanation for the trend found in this study may be that mood features in chronic psychosis increases ones risk for committing an offence. There may also be an association between epilepsy and MR that increases risk for re-offence. These associations need to be explored in further studies.

5.4.2 Substance use disorders

Overall 66% of the sample used one or more substances. 45% of substance abusers used cannabis only, 17% used alcohol only and 26% used alcohol and cannabis. Cannabis and alcohol is repeatedly found as the most common substance used amongst state patients and the general South African population (Marais, 2012; Peltzer & Ramlagan, 2008).

Substance use disorders were significantly higher amongst recidivists confirming that substance use is a risk factor for recidivism. Substance use disorders have been reported as one of the strongest predictors of recidivism in most studies in the field of recidivism; however, alcohol use is often more prevalent than cannabis (Castillo & Alarid, 2011). A

possible but untested reason for this may be due to under reporting of alcohol use especially in the case of traditional or home brewed beer. Another possible reason for this finding may be that more MDOs use cannabis more frequently as it is cheaper than alcohol in South Africa. Both Maden et al (1999) and Castillo and Alarid (2011) describe that more than 30% of MDOs used drugs such as stimulants, including cocaine and amphetamines as well as hallucinogens and heroine. In this study sample only 12% were polysubstance users and 2% 'other' drug users demonstrating that fewer MDOs used the aforementioned drugs. Importantly Bonta et al (2014) highlight that despite substance abuse being a significant criminogenic factor, substance abuse interventions are seldom priority in forensic psychiatric rehabilitation. Two meta-analyses of treatment studies for mentally ill offenders, by Morgan et al (2012) and Martin et al (2012) found that only 2 of 26 studies and 4 of 25 studies targeted substance abuse as a treatment intervention. These findings serve to further support the recommendations of this study especially with regard to substance intervention at Sterkfontein Hospital forensic psychiatric services.

5.4.3 Axis II diagnosis

Approximately 35% of the sample had an Axis II diagnosis. The most common diagnosis was intellectual disability (ID) (75%). Amongst all diagnostic categories ID was the third most common diagnosis after substance use and schizophrenia. This is also in keeping with previous studies on state patients (Marais, 2012). Only ten patients out of the total had a diagnosis of antisocial personality disorder and eight were reported to have antisocial traits. This finding is not in keeping with international studies. Most South African studies profiling state patients have not investigated or reported on antisocial personality disorder. In North

American studies the frequency of personality disorders, especially antisocial personality disorder was 46% to 88% and in European studies it was 37% to 56% (Lund et al, 2011). In this study it is not known whether the low percentage of personality disorders is due to a missed diagnosis of antisocial personality disorder, poor documentation of patient diagnoses when there are multiple disorders or thirdly a significantly different profile of South African mentally disordered offenders. There is evidence that assessing personality disorder is important when doing a risk assessment on MDO's (Hare, 1996). It is therefore important to investigate the reason for this finding. If it is found that more patients actually do have antisocial personality than is documented this has implications for the quality and value of the risk assessment at Sterkfontein Hospital.

There was a significant association with recidivism for all three Axis II diagnoses. A much lower proportion of recidivists were diagnosed with ID compared to non-recidivists ($p < 0.05$). Thus the findings suggest that lower intelligence level is associated with less re-offence. While this is not in keeping with the meta-analysis by Bonta et al (2014) it is in keeping with Gray et al (2007). Gray et al (2007) had a similar study design to our study and recorded that MDO with ID were reconvicted at approximately one half the rate of the non-ID group. Notably both this study and Gray et al had a fairly large sample of intellectually disabled MDOs. Kunz et al (2004) reported that learning disability was a risk for recidivism and rehospitalisation. Of note this study had a small sample size and was not exclusive to mentally disordered offenders as it included general psychiatric patients that displayed aggression. Furthermore learning disability may be associated with overall intellectual disability however does not necessarily imply that one is intellectually impaired.

As was expected there was a positive correlation between a diagnosis of antisocial personality/antisocial traits and recidivism demonstrating that this diagnosis may be a risk for re-offence. This is in keeping with the majority of studies in the field (Bonta et al, 2014).

5.4.4 Ward adverse-events

Just fewer than 30% of the sample had documented ward adverse events or a history of attempted suicide in the ward. The most common adverse event was a display of dangerous or aggressive behaviour in the ward. The second most common was absconding from the ward followed by sexual offence and then damage to property. Two patients of the total attempted suicide. Adverse events in the ward were assessed by looking at the patients' clinical notes. Using this method to measure this variable may not provide the most accurate finding as sometimes adverse events are not documented in the patients' clinical files. Another possible method for measuring this variable would be to look at nursing records of adverse events. Using these records rather than the doctors' clinical notes could strengthen the validity and reliability of this finding.

Adverse events were much higher amongst the recidivist population. This suggests that patients that demonstrate violence in the ward may be more likely to reoffend. Using logistic regression specific adverse events were found to be predictors of recidivism. This will be discussed later in the chapter. Ward incidents may also relate to symptom control or response to treatment. Therefore this finding may suggest a more complex association between ward adverse events, and psychopathology which is then associated with criminal behaviour. There is a fair body of research with regard to institutional aggression (Wang & Diamond, 1999; Serper et al, 2005, Dernevik et al, 2002). Most of this research however focuses on predicting which patients admitted to a psychiatric institute are more likely to be aggressive towards themselves, staff or other patients. Some of the research in the field of

in-patient aggression also examines the use of risk assessment tools in predicting in-patient aggression (McDermott et al, 2008). These studies frequently use scales such as the HCR-20, VRAG and PCL-R to assess inpatient violence (Belfrage et al, 1999; Ross et al, 1998; Nichols et al, 1999). These are the same tools used to predict post release/post discharge re-offence. Dernevick et al (2002) states there are some similarities and differences between risk factor for in-patient violence and post release recidivism. However the use of in-patient aggression as a means to assess recidivism is not a widely studied.

5.4.5 Duration of admission before first LOA

The majority of the data could not be found for this variable. This is largely due to an inefficient archiving and filing system for forensic patients at Sterkfontein Hospital. In order to accurately measure the duration of the patients' first admission, the original notes from the first admission had to be found and then followed through until the patient was released on LOA. There are separate clinical and administrative files as well as four different locations where a file could be stored. In order to complete this study within a reasonable time limit it was not possible to search for all the mentioned documentation. This highlights the need for an electronic data base which could capture the movement of state patients into and out of hospital as well as store information regarding re-offence and the outcome thereof.

Of the 75 patients in whom this variable was captured the majority spent six months to one year in hospital prior to their first leave in the community. It is difficult to compare this variable to other studies as there are no reports of this in South African studies. A few UK studies report on the average length of admission and have found that those with a shorter admission were at higher risk of reoffending. Medium secure units in the UK often send patients to less restrictive facilities prior to release into the community therefore it would

not be suitable to compare average length of stay in a South African institute to a UK institute.

5.4.6 Time to recidivist offence

Once again this variable was largely uncaptured as the information was not found. It was hoped that interpretation of this variable would suggest when MDOs in the community are at highest risk for reoffending. Of the patients in which this variable was captured 20% reoffended within the first two years, 37.5% reoffended between two to five years and 37.5% reoffended after 5 years. Most other reports of re-offence state that MDOs are at highest risk within the first two to three years (Phillips et al, 2005; Steadman et al, 1998; Yoshikawa et al, 2007). Two other studies report the risk for re-offence is highest within the first year (Castillo & Alarid, 2011; Lovell, 2002). The results of this study should be interpreted with caution as 30% of the data is missing and it is not known if this data is missing at random or not.

5.5 Criminological variables and comparison between R/NR

5.5.1 Charges prior to certification as a patient and number of charges pre-state patient

Over 70% of the data was missing for this variable. The majority of patients within the sample had a summary of the initial observation findings recorded in their clinical file. Within this document there is a section in which a criminal history is documented. In the large majority of cases the criminal history was not available at the time of observation as the police document (SAP69) was not provided to the forensic psychiatry team. In the absence of the SAP69 forensic psychiatrists can only record a criminal history based on what

the MDO may report however this information may be unreliable. The fact that the criminal history is unknown in most state patients is one of the most important findings of this study.

There is overwhelming evidence indicating that criminological variables (previous criminal history and number of previous charges) are the strongest predictors of recidivism (Bonta et al, 1998). These variables could not be assessed as predictors of recidivism in this study as most of the data was missing. A possible alternative for assessing criminal history in state patients could be to access South African criminal records data bases however there may be logistic and ethical challenges. A major recommendation of this study is that the SAP69 should be a mandatory document available to the clinical team treating state patients.

5.5.2 Index offence

Almost 90% of index offences were violent crimes against a person (contact crime). Sexual offences accounted for 43% of index offences. Of the sexual offences 34.4% were rape charges. The majority of the other contact crimes were assault GBH (19.4%) and murder (16.7%). These findings are in keeping with other South African studies (Strydom et al, 2011; Barrett et al, 2007). In comparison to international literature however violent crime against a person is much higher in South Africa. Friendship et al (1999) reported that 5% of the index offences were rape and 6% were murder. Lund et al (2011) reported that 7.9% had an index charge of rape of an adult, and 11.9% charged with homicide. South African general crime statistics show that contact crime is the most prevalent offence in South Africa with rape and murder being the most common. The results amongst state patients of Sterkfontein Hospital are thus in keeping with the national crime statistics. This trend may also reflect patterns of referral for observations.

An index charge of assault had a significant correlation with recidivism suggesting that those charged with assault initially were more likely to reoffend. A study on mentally ill offenders in Switzerland found that MDO's that committed less serious index offences, such as violation of narcotics law (59%), property crimes (54%), assault (53%), and robbery (49%), were closely associated with an elevated risk for reoffending (Pfleuger et al, 2015). The Canadian National Trajectory Project reported a similar trend (Charette et al, 2015). Thus our findings are in keeping with both Canadian and Swiss studies. As the association between an index charge of assault and re-offence has been found in two separate studies it may be useful to explore this trend further in a larger sample and at another South African forensic psychiatric institute.

5.5.3 Recidivist offences

Of the total sample of 180 state patients, 80 were recidivists. It is not within the objectives of this study to assess the rate of recidivism as there was a sampling bias in favour of recidivists. Seventy eight percent of recidivist offences were violent crimes against a person. Of these 40% were sexual offences and 25 % were cases of assault. An American study by Lovell et al (2002) reported that 72% of re-offences were minor crimes and serious re-offences occurred in only 4.4% of the MDOs. Friendship et al (1999) reported that 17.8% of the re-offences were sexual offences and about 60% were violent (including murder, attempted murder, wounding and assault). Findings regarding the nature of re-offence differs considerably, however it is clear that at Sterkfontein Hospital serious violent crimes account for a high proportion of re-offences. The significantly high rate of violent re-offences found in this study are in keeping with the general high rate of violent crime in South Africa.

5.5.4 Outcome of second observation

Just under half of the sample did not have a formal charge laid therefore it would follow that an even lower percentage would have had an observation. Thirty nine percent of those in whom a charge was laid, did not have an observation. The main reasons for the patients not having an observation was due to charges being dropped. The reason for the charges not being pursued in court was not documented in the files however it is highly likely that in most cases charges were dropped as the MDO was already a state patient that had a previous court order under section 42 of the Mental Health care Act.

One could argue that pursuing all charges in a MDO that is already a state patient may be wastage of state funds and court time. Some MDO's may however be fit to stand trial and criminally responsible on subsequent charges which could lead to incarceration within the criminal justice system. Therefore the decision to either not charge a state patient or drop the charges may impact justice for society at large.

Among the 60.9% of patients that had a second observation 43.9% were found not fit to stand trial and not criminally responsible, 7.3% were fit to stand trial but not criminally responsible. Approximately 5% were found fit and responsible, and another 4.9% were not fit to stand trial but criminally responsible. In cases where an MDO was found not fit to stand trial but still responsible for their crime, the MDO should return to court when their mental state improves. This suggests that almost 10% of state patients that had a second charge may face incarceration. At the time of data collection, however these patients were still state patients of Sterkfontein Hospital. A possible reason for this may be that there is a backlog in processing applications for patients to return to court.

5.6 Logistic Regression

When logistic regression analysis was applied to the data, three models were generated. Of the three models generated by the analysis, Model C is the most useful model clinically.

This model showed that the odds of recidivism were highest amongst:

- Cannabis users
- Polysubstance users
- MDO's with an index offence of assault
- MDO's with reported in-patient aggressive behaviour and in-patient sexual assault
- MDO's who attempted to abscond from the ward

The results of the logistic regression and the X^2 and Fischer's exact test are complementary. Substance abuse, an index offence of assault and in-ward adverse events had significant associations with recidivism in the latter mentioned tests. The regression analysis was however able to pick up more specific substances and adverse events.

5.7 Limitations

Missing data was one of the biggest limitations of the study. This is a common challenge with a retrospective approach. Some of the most important information regarding criminal history of patients was missing and therefore not assessed. The absence of a digital data base meant identifying recidivists was solely based on careful analysis of doctors' notes. It also meant that it was difficult to trace patients' movement in and out of hospital and thus variables such as length of stay in hospital and time to re-offence could not be reliably assessed.

The recidivist category included patients that had a charge laid against them and those that had documentation of violent acts even in the absence of a charge. It could be argued that including patients that did not have a formal charge into the 'recidivist' category impacts the reliability and validity of the study. To some extent this may be a justifiable contention.

When assessing the literature on violence, mental illness and recidivism however it is worth noting that the definition of re-offence or acts of violence differs considerably. Furthermore various different tools have been used to measure violence or re-offence. Buchanan (1999) mentions methodological difficulties in his study on criminal conviction of patients post-discharge he highlights that there may be poor sensitivity when using *conviction* as the principal outcome as many patients may have been convicted but records of crime were missing or that patients may be violent but not convicted due to the presence of mental illness. In a South African context, the researchers felt it was justifiable to include patients that had a well-documented history of violent behaviour without a charge into the recidivist category. The patients with a charge were combined with those without a charge into one recidivist group only after statistical tests showed no major differences.

The decision to not classify patients who were involved in in-ward adverse events as recidivists may be seen as a limitation. It can be argued that acts of violence in the ward should have equal significance to acts of violence in the community and thus the patients that were involved in-ward adverse events should have been classified as recidivists. The researchers felt that using in-ward adverse events as a means of defining a recidivists may have created false positives and may have also affected the reliability and validity of the study findings. We thought it was more clinically useful to examine adverse events as a variable that was associated with recidivism. The results of the study confirmed that an in-

ward adverse event is a predictor of recidivism. It is worth noting that abscond from ward, sodomy and aggressive behaviour were predictors of recidivism and thus laying a charge for these acts in the ward could result in greater justice for society at large.

Potential recidivists may have been missed during the retrospective review as often information regarding patients' violent/aggressive behaviour while in the community lacked detail with regard to the degree of violence, or impact on the alleged victim. When information was not clearly documented patients were not included in the sample. It is also possible that recidivists were not accounted for as information about what occurred in the community was unavailable to clinical staff and therefore not documented. A prospective approach to such a study is likely to prevent such challenges.

Another possible limitation is with regard to the control or 'non recidivist' group. The control group consisted of out-patients only. These patients had been in the community for varying periods of time ranging from six months to over five years. For those in the community for a shorter period of time it is not known whether they may still go on to re-offend. Thus one could argue that the control group is not a true control. Literature in the field of recidivism show that re-offence occurs within the first three years of release (Castillo & Alarid, 2011; Yoshikawa et al, 2007). It was therefore difficult to decide if the non-recidivists had to have spent a specific duration in the community before including them into the control group. This study showed that the majority of patients reoffended after two years, which suggests that it may have been beneficial to limit the control group to those who were in the community for at least two years. More South African studies that are prospective in nature with large sample sizes and long follow-up periods are needed to accurately assess when state patients are at highest risk for re-offence.

This study only assessed three main categories of factors associated with recidivism- demographic, clinical and criminological. There may however be many other factors associated with recidivism that were not within the scope of the study. For example, sociological variables such as housing, family structure, family supervision and access to drugs may impact recidivism. Other clinical variables such as medication adherence were not assessed but have been shown to decrease violence (Chaimowitz et al, 2008). This study was one of the first studies in South Africa addressing state patients and recidivism. It therefore focused largely on previously identified risk factors from international studies. The study was limited to what could be assessed in a short time frame with limited resources. It also investigated issues from the perspective of forensic psychiatry rather than a psychological, social or law viewpoint. In a complex field such as forensic psychiatry and recidivism it is however worthwhile combining and sharing information from different fields to adequately address the issue (Rueve & Welton, 2008).

The sample size (n=180) was adequate for the logistic regression and most of the chi tests however the associations between certain variables and recidivism could have been strengthened by a larger sample. The sample was also limited to male state patients at Sterkfontein Hospital and thus may not be generalizable to the entire country. It would therefore be valuable to replicate this study in other forensic psychiatric institutes within South Africa in order to compare the findings.

5.8 Recommendations

Many recommendations have been discussed through-out this chapter. The main recommendations are summarised and bulleted below.

- More research within the field of recidivism is needed in South Africa.

Prospective studies could provide more accurate measures.

- Hospitals managing state patients should have an electronic data base.

- The SAP69 and patient's history of criminal charges should be easily accessible to clinical staff.

- Clinicians working in forensic psychiatric institute should strive towards improved note taking. It would be in the interest of patients, staff and the community for doctors to take more detailed and neatly written notes. Within state facilities doctors training in psychiatry rotate through different hospitals every six months. This means that doctors taking over patient management are reliant on the previous doctor's handwritten information. During data collection it was noted that sometimes information regarding a patient's re-offence was not followed thorough in the clinical notes from one doctor to the next. This may have serious implications for risk assessment of a patient prior to release into the community.

- The diagnosis of certain mood disorders and antisocial personality disorder was much lower than international findings. It may be worthwhile to explore possible reasons for this in future studies. Accurate diagnoses are important for risk assessment especially in the case of antisocial personality disorder.

- New findings were picked up in this study. Schizoaffective disorder and a charge of assault were found to be a risk for reoffending and a diagnosis of ID and epilepsy decreased chances of re-offence. As these associations have not been found previously it would be of great value to explore these specific variables further in future studies.
- The majority of the sample used substances, predominantly cannabis and alcohol. Substance use was also found to be a risk factor for re-offence. It is therefore suggested that the dual diagnosis of substance abuse and mental illness is sufficiently managed. Currently a dual diagnosis unit is available at Sterkfontein Hospital; however in light of the large percentage of substance use disorders it may also be advisable to implement dual diagnoses programmes within all the forensic wards. It may also be feasible to contract patients to attend substance abuse groups while in the community by requesting it as condition of LOA. It may also be advisable to do frequent drug screens and to re-admit patients that are found to be abusing substances while on LOA.
- Clinicians at Sterkfontein hospital should be encouraged to carry out and document thorough risk assessments. Clinical notes prior to releasing patients on LOA did not indicate that a specific risk assessment was done. In some countries it is mandatory to use actuarial risk assessment tools. The debate about whether actuarial or clinical assessment is more valuable is ongoing (Monahan & Skeem, 2014). A combination of both is generally

advised however there are not many risk assessment tools that have been validated in a South African context. It therefore falls on clinicians to make a decision based on justifiable clinical judgement and to adequately document if there are risks for re-offence and steps taken to manage the risk.

5.9 Conclusion

This is one of the first studies focusing on recidivism in a South African state patient population. Some of the results of the studies are in keeping with international literature however many factors found to be associated with recidivism are new and deserve further exploration. This study also highlighted some of the gaps in forensic psychiatry at Sterkfontein Hospital. Post-Apartheid South Africa has instituted mental health care legislature that is aligned with global trends however more work needs to be done to ensure systems are in place to effectively implement the law.

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Appendix 1

INFORMATION DOCUMENT

Study title: Factors associated with recidivism: a retrospective review of state patients readmitted to Sterkfontein Hospital.

Good day

I, Dr. N Morgan am doing research on state patients at Sterkfontein hospital that have re-offended. Research is the process through which I hope to shed light on some of the characteristics which patients that relapse into criminal behavior have in common. This research will help staff members at Sterkfontein hospital to better understand the risks relating to state patients and how to prevent re-offenses.

Invitation to participate: I am asking for your support during the time of research with access to files of state patients. I also appreciate your collaboration by explaining to other staff members and patients what I am trying to achieve.

What is involved in the study: I hope to achieve my research goal by looking at files of state patients that have been readmitted to SFH from January 1995 to January 2012. With these files I will specifically look out for those of patients that continue to commit crimes after being admitted for the first time. I will also look out for commonalities amongst the reoffenders such as age, gender, social background, education and drug abuse and compare it with patients that have not reoffended.

Risks: There is no known risk involved with this study.

Benefits: Being supportive of this study will help us develop a better understanding of patients with criminal histories and help us as health professionals better manage these patients.

The participant will be given pertinent information on the study while involved in the project and after the results are available.

Participation is voluntary- refusal to participate will involve no penalty or loss of benefits to which the participant is otherwise entitled, and that the subject may discontinue participation at any time without penalty loss of benefits to which the participant is otherwise entitled.

Confidentiality: Efforts will be made to keep personal information confidential. Absolute confidentiality cannot be guaranteed. Personal information may be disclosed if required by law.

Organizations that may inspect and/or copy your research records for quality assurance and data analysis include groups such as the Research Ethics Committee.

Contact details of researcher

Nirvana Morgan can be contacted on +27-76-753-8051 or nirvana.perumal@gmail.com

Contact details of REC administrator and chair

Professor Cleaton-Jones can be reached on +27-11-717-1234

Appendix 2

INFORMED CONSENT

- I hereby confirm that I have been informed by the study doctor, Dr N Morgan, about the nature, conduct, benefits and risks of this study, Factors associated with recidivism: a retrospective analysis of state patients readmitted to Sterkfontein Hospital.
- I have also received, read and understood the above written information (Participant Information Leaflet and Informed Consent) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by University of Witwatersrand department of statistics.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.

PARTICIPANT:

Printed Name	Signature / Mark or Thumbprint	Date	and
Time			

I, Dr N Morgan herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

STUDY DOCTOR:

Printed Name	Signature	Date	and
Time			

TRANSLATOR / OTHER PERSON EXPLAINING INFORMED
CONSENT.....(DESIGNATION):

Printed Name	Signature	Date	and
Time			

Appendix 3



health and social development

Department: Health and Social Development
GAUTENG PROVINCE

**STERKFORTEIN HOSPITAL
CLINICAL DEPARTMENT**

Enquiries: Dr. Subramaney

Telephone : (011)951-8341

Facsimile : (011) 951-8391

e-Mail: Hannie.Smith@gauteng.gov.za

Dr. M.R. Billa
Chief Executive Officer
Sterkfontein Hospital
KRUGERSDORP

Dear Dr. Billa

**STUDY : FACTORS ASSOCIATED WITH RICIDIVISM: A RETROSPECTIVE REVIEW OF STATE
PATIENTS READMITTED TO STERKFORTEIN HOSPITAL**
RESEARCHER: DR. N. MORGAN

The above study was discussed at the Research Committee meeting. We recommend that permission be granted that Sterkfontein Hospital be used as a site for the above research. However, since this is a research project involving voluntary participation, we cannot guarantee participation of individuals/patients.

Upon completion of the study, a copy thereof should be submitted to Sterkfontein Hospital

Thank you.

DR. U. SUBRAMANEY
PRINCIPAL PSYCHIATRIST / CLINICAL HEAD
05/03/2012

Approved.

DR. M.R. BILLA
CHIEF EXECUTIVE OFFICER

06-03-2012

Appendix 4

DATA SHEET

					DOA			
AGE	18-39		40-61		MARITAL STATUS	S	M	D
INDEX CHARGE					HIGH SCHOOL	Y	N	
RECIDIVIST	Y		N		EMPLOYMENT	U/E	SKILL	US
RECIDIVIST CHARGE:								
VIOLENT READMISSION:								
OTHER READMISSION:								
AXIS 1 DX:								
AXIS 2 DX:								
SUBSTANCE ABUSE	POLY SUBS	ETOH			CANNABIS	OTHER		
ADVERSE EVENTS	ASSAULT			SODOMY			SUBST	
DURATION OF ADMISSION PRIOR TO 1 ST LOA		< 1YR			1YR-5YR		>5YR	
DURATION OF LOA PRIOR TO OFFENSE		<1YR			1YR-5YR		>5YR	
CRIMINAL HISTORY		+VE HISTORY			NO. OF CHARGES		NO HISTORY	

Appendix 5



UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Dr Nirvana Morgan

CLEARANCE CERTIFICATE

M120348

PROJECT

Factors Associated with Recidivism a
Retrospective Review of State Patients Re-
admitted to Sterkfontein Hospital

INVESTIGATORS

Dr Nirvana Morgan.

DEPARTMENT

Department of Psychiatry

DATE CONSIDERED

30/03/2012

DECISION OF THE COMMITTEE*

Approved unconditionally

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE 30/03/2012

CHAIRPERSON


(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable

cc: Supervisor : Dr G Del Fabbro

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...