G. Campbell, S. Darke & G. Popple

Effects of client characteristics and mental health on treatment completion and retention in a Therapeutic Community

EFFECTS OF CLIENT CHARACTERISTICS AND MENTAL HEALTH ON TREATMENT COMPLETION AND RETENTION IN A THERAPEUTIC COMMUNITY

Gabrielle Campbell, Shane Darke and Garth Popple

Technical Report Number 316

ISBN: 978-0-7334-2920-0

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGEMENTS

This research was funded by the New South Wales Health Department via research grants administered through the Network of Alcohol and other Drug Agencies (NADA).

The authors wish to acknowledge the treatment service staff for their support and help with recruitment of clients; specifically Trish Hyland and Nell Consiglio from WHOS New Beginnings for women, Barry Daley and Stuart Fenton from WHOS Gunyah for men, Lyn Roberts and Chrispen Molloy from WHOS MTAR and Carolyn Stubley, Georgina Bryant and Janice Grossetti from WHOS RTOD modified TC.

The authors would also like to acknowledge the support from Joanne Lunn (WHOS Comorbidity project officer) throughout the project, and Kelly Boland (WHOS Admin) for helping to collate the treatment completion data.

Finally, the authors would like to thank the 249 clients who generously gave their time, and for their openness and willingness to discuss the sensitive issues addressed in this research.

EXECUTIVE SUMMARY

Background

One of the key predictors of treatment outcome is retention in treatment. Previous research, however, has produced inconsistent results when examining factors that might influence treatment retention and completion in drug and alcohol treatment services. One argument has been that these mixed results have been produced by research that has attempted to combine different services and different types of clients into one group, when there is a great amount of variability. The current research was undertaken to examine client characteristics that might influence retention and completion in residential drug-free services and residential opioid-based treatment services.

Methodology

A sample of 249 clients were recruited from We Help Ourselves (WHOS) Sydney-based therapeutic community (TC) treatment services. One-hundred and ninety-one were from the drug-free services and fifty eight clients were recruited from the opioid-based services. Clients completed a face-to-face interview that asked about demographics, criminal history, lifetime and current drug use, mental health history and current mental health, and readiness to change. Treatment cessation data was collected on clients once they had left the service.

Key findings

Demographics

The mean age of entrants in the WHOS services was early to mid-thirties, and approximately two-thirds were male. Mean years of education was approximately 10 years. Just over half had not completed any tertiary education. The vast majority were receiving their main source of income from a temporary benefit. One-third of clients from the drug-free services and two-thirds of clients from the opioid-based services reported that they had ever been in prison. A lifetime of heavy and poly drug use was evident in clients from both services. Over half of the total sample had ever been diagnosed with a mental health problem and the present study

found that there were extremely high rates of psychopathology amongst the clients at the time of their admission.

Treatment completion and early drop-out

High proportions of clients from both the drug-free TC services and the opioid-based services completed treatment. Very early drop-out was confined to a minority, and was almost non-existent in the opioid-based TC services.

Effect of mental health on treatment completion and early drop-out

There were high rates of psychopathology at admission into treatment for both clients in the drug-free and opioid-based services. Despite this, the current study found that there were very limited results with regards to the effect of mental health on treatment completion and early drop-out. Whilst there was no effect of mental health on treatment completion or early drop-out rates amongst the drug-free services, there was some inconsistent results found amongst the opioid-based clients. A lifetime diagnosis of a mental health problem was associated with a higher likelihood of completion; on the other hand, a diagnosis of Borderline Personality Disorder was associated with a lower likelihood of completion. Based on the previous research in this area, it should not be assumed that psychopathology equates to a poorer treatment outcome.

Effect of other client characteristics on treatment completion and early drop-out

The current study found that there was a limited effect of other client characteristics on treatment completion and early drop-out. This is consistent with previous research. In the drug-free services, early drop-out was associated with recently being released from prison and a perception of being less likely to complete treatment. Those that completed treatment in the drug-free client group were more likely to be male and had a lower number of stressful life events. Across the opioid-based clients there were no predictors of treatment completion and only two clients dropped out of treatment within the first week.

There was no consistency within the drug-free services between characteristics that predicted early drop-out and treatment completion, suggesting that there are many factors associated with retention and treatment completion and they may come into play throughout different stages of treatment.

The current study found that there was no effect of past, current, frequency or quantity of drug use on treatment retention. WHOS is a non-drug-specific treatment service, and these findings support the effectiveness of the services to provide consistent treatment to clients with a wide range of drug and alcohol and associated issues.

Differences between gender

There were differences between the males and females from the drug-free services, but not from the opioid-based services. Women were more likely to have a university degree, were more likely to have ever engaged in sex work, less likely to have a prison history, and were suffering from more severe mental health problems. Women in the drug-free service also had lower completion rates than the males. There were very few differences amongst the males and females from the opioid-based services, suggesting that they were a more homogenous group.

Conclusions

The major finding was that psychopathology had no relation to either treatment completion or early drop-out in the drug-free services, and only a limited effect in the opioid-based services. Clients with psychopathology should be not be seen as treatment "risks". A continued non-discriminatory and non-judgmental approach to new admissions, and an equal effort applied to each new admit, is the best practice, which has been the basis of the TC approach for many decades.

1.0 INTRODUCTION

The 2007 National Drug Strategy Household survey found that over one-in-ten respondents consumed alcohol at levels considered to be harmful in the long-term and one-in-five consumed alcohol at least once a month at levels to be considered harmful in the short-term (Australian Institute of Health and Ageing 2008). Furthermore, one-in-seven reported recent use (past 12 months) of an illicit substance, namely cannabis (9.1%), ecstasy (3.5%), methamphetamine (2.3%), cocaine (1.6%), benzodiazepines (1.4%) and heroin (0.3%)(Australian Institute of Health and Ageing 2008).

Although population levels are relatively low, the harms associated with such use are well documented. There are a number of risks and harms associated with heroin use including mortality (Hulse, English et al. 1999), fatal and non-fatal overdose (Warner-Smith, Darke et al. 2001; Warner-Smith, Darke et al. 2002; Darke, Williamson et al. 2007), high rates of blood-borne viruses (Des Jarlais and Friedman 1996; Ray 2002), high rates of psychiatric morbidity (Darke, Ross et al. 2004; Darke, Ross et al. 2005; Mills, Lynskey et al. 2005; Ross, Teesson et al. 2005; Darke, Mills et al. 2009), and high levels of criminal involvement (Ross, Teesson et al. 2005). Methamphetamine use, which has risen in prevalence in recent years, is also associated with substantial harm, including drug toxicity and mortality, cardiovascular/cerebrovascular pathology, dependence, psychosis, depression, anxiety and violent behaviours (Darke, Kaye et al. 2008). Finally, long-term alcohol use had been found to be associated with a number of harms. The recent National Health and Medical Research Council (NHMRC) alcohol guidelines (National Health and Medical Research Council 2009) summarise a number of harms including, cardiovascular disease, cancer, diabetes, liver disease, risks to unborn babies, mental health conditions, dependence, long-term cognitive impairment, self-harm and road trauma from long-term and short-term alcohol use. Collins and Lapsley estimated that the total social cost of drug and alcohol abuse for 1998-99 was A$34,439.8 million (Collins and Lapsley 2002). This included tangible costs, such as crime, health, production in the workplace, production in the home, road accidents and fire, and intangible costs such as morbidity and mortality.

Research has found that drug and alcohol treatment services are effective in reducing substance use, and the harms and risks associated with such use (Simpson, Brown et al. 1997; Gossop, Marsden et al. 2001; Darke, Ross et al. 2005). Findings from the 2007-08 National Minimum Dataset (Australian Institute of Health and Welfare 2009) found that 658 publicly funded (government and non-government) alcohol and other drug agencies provided 154,00 closed treatment episodes (that is, a period of contact with a defined start and end date). The most common principal drug of concern was alcohol (44.5%) followed by cannabis (21.6%), amphetamines (11.2%) and heroin (10.5%). Rehabilitation accounted for 7% of episodes. Research has found that clients entering residential rehabilitation have a poorer clinical profile than clients entering other treatment modalities, including higher rates of psychopathology (Ross, Teesson et al. 2005).

1.1 Therapeutic Communities

Therapeutic Communities (TC) were developed in the mid 1960s in response to a rise in drug and alcohol abuse and the belief that no single approach could encompass all types of drug and alcohol users (De Leon 1985). The basis of a TC is the view that individual change must occur through self-help in a community-living environment with the aim of offering a complete change in lifestyle which includes abstinence, stabilisation, elimination of anti-social behaviour, development of employable skills, and the acquisition of positive attitudes, values and behaviours (De Leon 1985). Peer influence is used to help individuals learn to assimilate social norms and develop more effective social skills (Smith, Gates, Foxcroft 2009). The use of the 'community', through which this change will occur, is what differentiates TCs from other treatment services, such as residential rehabilitation.

1.2 We Help Ourselves (WHOS)

WHOS (We Help Ourselves), a registered charity, was established in 1972 by a group of committed ex-consumers of alcohol and other drugs, who had identified an innovative and cost effective way to help substance dependant members within the general community in finding a productive way of living. This humble beginning of a self-help initiative has evolved into a recognised professional organisation today

known as 'WHOS'. The organisation has demonstrated the ability to survive the early days of its evolution, the ever-changing trends in the field and to stay abreast of current cutting-edge initiatives.

WHOS is made up of a number of different services. These include WHOS New Beginnings (a women's residential therapeutic community), WHOS Gunyah (a men's residential therapeutic community), WHOS MTAR (a Methadone to Abstinence Residential mixed-gender therapeutic community), WHOS Hunter (a rural based rmixed-gender residential therapeutic community), WHOS RTOD (Residential Treatment of Opioid Dependence a modified, mixed-gender, therapeutic community with a treatment goal of stabilisation), and WHOS Sunshine Coast (Queensland), a regional residential mixed-gender therapeutic community.

WHOS treatment services provided the perfect opportunity to examine the inconsistencies in the research literature with regards to correlates and predictors of treatment retention and completion, due to the availability of different types of services, such as residential drug-free services and opioid-based TC services.

1.3 Retention and treatment outcome

TCs are considered effective in the treatment of drug and alcohol abuse (Darke et al. 2006; De Leon 1985). Large-scale studies conducted in the United States, United Kingdom and Australia have found a relationship between length of time spent in treatment and better treatment outcomes, such as abstinence, a reduction in risk behaviours, psychopathology and criminality (Simpson, Brown et al. 1997; Gossop, Marsden et al. 2001; Darke, Ross et al. 2005). Furthermore, research has found that whilst treatment outcomes for those who completed treatment are much greater than those who drop-out of treatment, there were still positive treatment outcomes related to length of stay (De Leon 1985). Treatment completion, however, is associated with superior outcomes (Darke, et al. 2006). Overall, longer retention duration has been consistently associated with a better outcome (Darke, Ross et al 2005; Gossop et al. 2002; Teesson et al. 2007). This is not a modality-specific finding, being true for both maintenance and drug-free rehabilitation. Longer retention duration means that the client receives a larger "treatment dose" (Joe, Broome & Simpson 1999). By "dose",

what is meant is overall exposure to the treatment regime and the possibility of therapeutic change. The picture is, however, more complex than a simple accumulation of time in treatment. It is *stable retention* that is the key. While *longer* retention times are associated with better outcomes, so are *fewer* treatment episodes (Darke et al. 2005; Gossop et al. 2002).

Retention is thus crucial. Research has also found that residential rehabilitation services have a high attrition rate. Previous research has found that drop-out rates range from approximately 44% to 89% amongst a range of different types of services with different durations of treatment (Sansone 1980; De Leon and Schwartz 1984; Condelli and Dunteman 1993; Vickers-Lahti, Garfield et al. 1995; Ravndal and Vaglum 1998). On the high end of the scale De Leon found that it took over four months to see a reduction in drug use, criminal behaviour and unemployment, whilst other research has found that it takes either three months (Hubbard, Craddock et al. 1997), or on the low end as little as 50 days (Condelli 1994). Furthermore, De Leon found that drop-out rates are maximal within the first 30 days of treatment (De Leon 1991) and that rates decreased sharply after 30 days.

There has been extensive research into the factors that are likely to influence treatment completion and retention. Such studies have focused on client characteristics, such as demographic, drug use, and mental health status as predictors of treatment completion and retention, whilst other studies have focused on program characteristics.

1.3.1 Demographic characteristics and retention

Age

Studies examining the effect of demographic characteristics on program completion and retention have been inconsistent. A review of these inconsistencies was presented by Nielson and Scarpetti (2002). They found that some studies have found that age is a significant predicator of retention; some, however, have found that older clients are more likely to stay longer (Baekeland and Lundwall 1975; Condelli 1989), whilst other studies

have found that it is the younger clients that are more likely to stay longer (Wickizer, Maynard et al. 1994; Eisenberg and Fabelo 1996). Other studies have found no link between age and retention (Keen, Oliver et al. 2001; Mulder, Frampton et al. 2009). Stark (1992) found that older age was associated with methadone treatment, whilst drug-free treatment was more likely to produce mixed results.

Gender

Gender is another characteristic that has been associated with treatment retention and completion. There are, however, again, mixed results. Some research has found that males were more likely than females to complete treatment (Baekeland and Lundwall 1975; Mertens and Weisner 2000; Arfken, Klein et al. 2001); however, other studies have found that there was no gender difference in completion rates (Wickizer, Maynard et al. 1994; Green, Polen et al. 2002; Greenfield, Brooks et al. 2007). Whilst research into the effect of gender on treatment completion is inconsistent, research does seem to support the idea that there are gender-specific predictors of outcomes. In a review of the literature from 1975 to 2005, Greenfield and colleagues found that there were gender-specific predictors of retention, such as socioeconomic characteristics, and psychopathology (Greenfield, Brooks et al. 2007). Recent research found that dependence and higher employment were predictors of failure to complete in women, whilst for men it was psychiatric status and motivation for entering treatment. Stark argues that these findings suggest that, rather then there being a direct effect of gender on retention, there are a number of complex relationships between gender, social and personality factors (Stark 1992).

Socio-economic and living factors

Other factors that have been found to influence retention include societal factors such as marital status and socio-economic status (i.e. education, income and occupational status) (Stark 1992). Some studies have found that clients may leave treatment due to access of greater resources and higher levels of social functioning (Green, Polen et al. 2002; Mier, Donmall et al. 2006). Education, in some research, has been associated with a longer time in treatment (Sansone 1980; Condelli 1994; Eisenberg and Fabelo 1996). Some research has

found that living arrangements and caring for dependent children can influence retention (Scott-Lennox, Rose et al. 2000; Amodeo, Chassler et al. 2008). Other research has found that these are not significant predictors of retention (Condelli and Dunteman 1993). It can be seen that within this area, again, previous research findings have been inconsistent.

Criminal history and legal status

Again there have been some inconsistent results surrounding the influence of criminal behaviour on treatment retention. Pre-treatment criminal history has been associated with lower retention rates in methadone (Baekeland and Lundwall 1975) and alcohol treatment programs (Leigh, Ogborne et al. 1984). De Leon found that severe criminality was associated with shorter retention (De Leon 1985). Further studies have highlighted the influence of criminal history status on treatment drop-out (Knight, Logan et al. 2001; Beyon, Bellis et al. 2006; Evans, Li et al. 2009). De Leon, however, also argued that legal referral or involvement was one of the most consistent, non-client, non-treatment predictors of retention (De Leon 1991). This finding has been supported in a number of other studies (Beyon, Bellis et al. 2006; Perron and Bright 2008), though other studies have found no such relationship (Sansone 1980; Condelli and Dunteman 1993).

1.3.2 Drug use characteristics and retention

Prior treatment history

A history of previous treatment is associated with poorer treatment outcome (Anglin, Hser and Grella 1997; Darke et al. 2005; Hser et al. 1999). Why would this be the case? It might be assumed, for instance, that a first treatment is more likely to fail. The finding is a probable reflection of the more severe drug use characteristics of repeat treatment seekers, and is thus a marker for more severe drug problems. The data on treatment retention and completion are equivocal, however, having sometimes been positively associated with treatment completion (Leigh, Ogborne et al. 1984; Beckman and Bardsley 1986), but not in others. Stark, however, argues that such results are confounded by age and longevity and severity of drug use (Stark 1992).

Motivation for treatment and readiness to change

Other factors that have consistently been found to be associated with program completion and retention are readiness to change and motivation (De Leon and Jainchill 1986; Simpson and Joe 1993; De Leon, Melnick et al. 1997; Joe, Simpson et al. 1998; Evans, Li et al. 2009). Furthermore, as mentioned earlier, legal pressures have been found, consistently, to be positively associated with retention (De Leon 1991). It has also been found that clients that are referred to treatment, as opposed to voluntary admissions, have a higher retention rate (De Leon 1991). Stark argues that clients are more likely to remain in treatment if they see their drug use as more serious, if they have higher expectations of improvement and if they are more confident in their ability to complete treatment (Stark 1992).

Drug use history

The results here are ambiguous. Some studies have found a link between drug abuse history and whether clients completed treatment (Condelli and De Leon 1993; Mulder, Frampton et al. 2009), but this is not always the case (Ball, Lange et al. 1988; Keen, Oliver et al. 2001).

Recent drug use

Drug use prior to treatment appears to reflect retention. Some research has found that clients that reported more serious drug problems were more likely to complete treatment in a prison TC compared to those reporting less serious problems (Eisenberg and Fabelo 1996); this finding has been supported in previous research (Baekeland and Lundwall 1975; Steer 1983; Amodeo, Chassler et al. 2008). Furthermore, polydrug use has also been associated with treatment drop-out (Leigh, Ogborne et al. 1984; Wickizer, Maynard et al. 1994). Despite this, other research has found that there was no link between retention and poly-drug use (Keen, Oliver et al. 2001), whilst others have found that less severe problems predict retention (Mertens and Weisner 2000) in both men and women.

Primary use of drugs such as heroin (Choi and Ryan 2006; Evans, Li et al. 2009) and cocaine (King and Canada 2004) have been associated with treatment drop-out (Condelli and Dunteman 1993), and recent use of drugs such as heroin (Darke, Ross et al. 2005; Evans, Li et al. 2009; Zanis, Coviello et al. 2009) and sedatives (Mulder, Frampton et al. 2009) has also been found to be a major influence on retention; though again, these results are not consistent in the literature.

1.3.3 Mental health characteristics

Previous national studies in the United States, United Kingdom and Australia have documented high levels of psychological distress amongst drug users presenting for treatment (Hubbard, Craddock et al. 1997; Gossop, Marsden et al. 2002; Darke, Ross et al. 2007). Recently there has been much research surrounding retention that has focused on the influence of psychological distress. A recent review of the literature examined the effects that mental health problems had on retention rates (Meier and Barrowclough 2009). The authors found that a client's past history of mental health did not influence the likelihood of being retained in treatment. On the other hand, they found that the literature surrounding concurrent mental health problems was contradictory, and this finding was consistent with previous research (Broome, Flynn et al. 1999)

The authors found, that with regards to depression, whilst the vast majority of studies did not find a relationship between depression and retention (e.g. Ravndal and Vaglum 1991; Mier, Donmall et al. 2006), two studies found that retention was better for depressed clients and three studies found that depression predicted early drop-out. The authors concluded that the studies suggested that neither the presence nor severity of depression was likely to have an influence on retention (Meier and Barrowclough 2009).

The same pattern was found for anxiety, with the majority of studies finding that there was no relationship between anxiety and depression, though there were a smaller number of studies that found that anxiety was either related to retention or early drop-out. Only one study each looked at ADHD (Attention Deficit Hyperactive Disorder) and PTSD (Post Traumatic Stress Disorder) and found that there was no effect.

Meier and Barrowclough further found that whilst only two studies reported on the effect of psychosis, and one found no relationship, one study found a strong association between schizophrenia and early drop-out, even compared to clients with depressive, anxiety or personality disorders (Meier and Barrowclough 2009). Again, with regards to personality disorders such as Anti-Social Personality Disorder (ASPD) and Borderline Personality Disorder, only a few studies were able to report on the effect and, again, these were inconsistent (Meier and Barrowclough 2009). The effect of hostility on retention has been found to vary across treatment agencies and modalities (Broome, Flynn et al. 1999).

The overall conclusions of Meier and Barrowclough was that clients with mental health problems presenting to drug treatment services were retained as well as clients without such problems; however, as the review combined many different treatment services it is difficult to support this conclusion without further investigation into specific treatment modalities.

1.4 Study Aims

As seen above, while the predictors of retention have been often examined, there is not a great deal of clarity about which client characteristics are of clinical significance. If predictors of retention and completion can be ascertained, clearly this would be of great clinical benefit in identifying those at greatest risk of drop-out. The current study aimed to ascertain the association between baseline client characteristics, drug use and comorbid mental health on treatment completion, and early drop-out in WHOS. The study examined both drug free and medicated opioid-based services. Specifically, the study aimed to:

1. Determine the correlates of drop-out within the first week of treatment for residential drug-free and opioid-based TC services.
2. Determine the correlates of successful treatment completion for residential drug-free and opioid-based TC services.

2.0 METHODS

2.1 Procedure

Recruitment for this study occurred over a one year period from January 2009 and January 2010. Participants were clients admitted into a Sydney-based WHOS TC treatment service, i.e. WHOS Gunyah, New Beginnings, and MTAR. The Research Officer was notified by treatment staff of new admittance. To be eligible the participants needed to be a new admittance that had not been interviewed before, and were able to be interviewed within 48 hours of their admission.

Information on the project was conveyed to participants and informed consent was obtained from those willing to participate. All participants were informed that their participation would be voluntary and confidential. Interviews were conducted in a private space such as an office or a lounge room with no other occupants.

2.2 Sample

The sample consisted of 249 clients of WHOS Sydney-based treatment services: of that, 124 were recruited from the men's drug-free service WHOS Gunyah, 67 were recruited from the women's drug-free service, WHOS New Beginnings, referred to from now as the DRUGFREE services, and 58 were recruited from the mix-gender WHOS MTAR (Methadone to Abstinence Residential) TC service, referred to from now as the OPIOD services.

2.3 Questionnaire

Data were collected using a structured interview administered face-to-face, which took approximately 45 minutes to complete. The interview covered demographics, drug treatment history, recent drug use, criminality and psychopathology. Details on these follow.

2.3.1 Demographics

Demographic characteristics collected included: age, gender, Aboriginal and/or Torres Strait Islander status, level of school and tertiary education attained, source of income, whether the participant had engaged in sex work, accommodation and living arrangements, relationship status, sexuality, whether the participant had children, if they were in the care in previous month and if the child(ren) were under the age of five years old.

2.3.2 Drug treatment history

Participants were asked who referred them to the current treatment service, and their main motivation for entering treatment. Clients of OPIOID were asked what opioid substitution treatment they were currently on and how long they had been on it for. All participants were asked about other treatment they had been involved in over the past six months, how many times they had been in a residential rehabilitation service and how many times they had completed treatment in a residential rehabilitation or TC service.

2.3.3 Drug use

Participants were asked:age of initiation into drug/alcohol use, and what the first drug they had used, whether they have ever injected, how old they were when they first injected, what the first drug they injected was, when they began to inject regularly, how often they had injected recently and their main drug of choice. Data was also collected on whether a drug had ever been used or injected, age of first use, whether the drug had recently been injected, how many days it had been used in the past six months and the main route of administration. Recent consumption of drugs and alcohol was estimated using the drug use section of the Opiate Treatment Index (Darke et al. 1991).

2.3.4 Criminal history

Information was collected on whether they had ever been in prison (not including remand) how many times, when they were last released, how long they were in prison the last time and what was the longest period of

time they had spent in prison. Data was also collected on whether the participant had been arrested in the past 12 months and what crime they had been arrested for.

2.3.5 Mental health treatment history

Participants were asked whether they had ever been diagnosed with a mental health problem, what that mental health problems was and also who diagnosed them. They were also asked if they had recently been diagnosed with a mental health problem, seen a mental health professional recently, been prescribed any medication, what that medication was, if they were currently on any medication and if they had ever been hospitalised for a mental health problem.

2.3.6 Mental health scales

Depression, Anxiety and Stress Scale (DASS 21)

The DASS is a scale designed to measure the three negative emotional states: depression, anxiety and stress of a person for the week prior (Lovibond and Lovibond 1995). The DASS 21 is a short version of the DASS 42 and has been found to have good reliability and validity properties (Henry and Crawford 2005). The DASS has been found to be reliable in both clinical (Brown, Chorpita et al. 1997) and non-clinical populations (Antony, Bieling et al. 1998; Crawford and Henry 2003).

Psychosis Screener

The Psychosis Screener (PS) uses elements of the Composite International Diagnostic Interview (CIDI) to assess the presence of characteristic psychotic symptoms (Degenhardt, Hall et al. 2005). The Psychosis Screener comprises of seven items. Items cover the following features of psychotic disorders: delusions of control, thought interference and passivity, delusions of reference or persecution and grandiose delusions. The final item records whether a respondent reports ever receiving a diagnosis of schizophrenia. The PS has

been found to be a useful in discriminating between those who meet diagnostic criteria for psychotic disorders (Degenhardt, Hall et al. 2005).

Brief Symptom Inventory (BSI)

The Brief Symptom Inventory (BSI) (Derogatis 1993) was developed to diagnose psychopathological distress. Symptoms were rated on a five point Likert scale of distress. Nine symptom dimensions are scored within the BSI (somatisation, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic, anxiety, paranoid ideation, psychoticism) as well as a global severity score. The BSI has been found to have good reliability and validity properties (Boulet and Boss 1991).

Traumatic event screen

Questions related to trauma were taken from the 1997 National Survey of Mental Health and Wellbeing (Rosenman 2002). The questionnaire consists of nine questions relating to specific events followed by two general questions looking at other events or if the participant suffered a shock as a result of what had happened to someone close to them. They were derived from a number of other instruments screening for traumatic events.

PTSD Checklist (PCL)

If the participant had answered yes to one or more of the traumatic events, they completed the PTSD Checklist. The PTSD Checklist (PCL) is a brief self-report rating scale for assessing post-traumatic stress disorder (PTSD). The PCL consists of 17 items which correspond to the DSM-III-R symptoms of PTSD. The PCL has been found to have good reliability (Weathers, Herman et al. 1993). Clients were given a diagnosis of PTSD based on the scores from the PTSD checklist.

Borderline Personality Disorder Screener

Participants were screened for potential ICD-10 diagnoses of Borderline Personality Disorder (BPD) using the National Survey of Mental Health and Wellbeing version of the CIDI (Andrews, Hall et al. 1999).

Short Form 12 (SF-12)

The Short Form 12 (SF-12) is a standardised, internationally used instrument that provides a general measure of health status (Ware, Kosinski et al. 1996). The 12 items on the SF-12 are summarised in two weighted summary scales, and generate a mental health and a physical health score. Lower scores are indicative of more severe disability. Cut-offs have been established for the mental health score to determine degree of disability (Sanderson and Andrews 2002). A score of less than 30 indicates severe disability, 30-39 moderate disability, 40-49 mild disability and 50 or higher no disability.

2.3.7 Suicide ideation and self harm

Participants were asked whether they had thoughts of suicide in the month prior to interview, whether they had ever attempted suicide, number of times, time since last attempt and age of first attempt. Participants were also asked whether they had ever self harmed (cutting/burning), number of times, time since last occurrence and age of first occurrence. If the interviewer had any serious concerns of recent suicidal ideation WHOS staff and the mental health nurse were informed, as per WHOS suicide policy.

2.3.8 Head trauma

Questions relating to head trauma were also asked. Participants were asked whether they had ever lost consciousness or had concussion due to a head injury, number of times, and largest amount of time they had lost consciousness and whether they were hospitalised afterward.

2.3.9 Readiness to change

Readiness for change was measured using The Stages of Change Readiness and Treatment Eagerness Scale SOCRATES (Miller and Tonigan 1996). The instrument yields three factorially-derived scale scores: Recognition, Ambivalence, and Taking Steps

2.4 Treatment retention and reason for cessation

The WHOS client codes were used to collect data on length of stay and reason for treatment cessation once a participant had left the service.

2.5 Statistical analyses

Means were reported, except for skewed distributions, where medians were used. T-tests were used for continuous data. Where distributions were highly skewed, medians and Mann Whitney U tests were reported. Dichotomous categorical variables were analysed using Odds Ratios (OR) and 95% Confidence Intervals (CI). Spearman rank order correlations were reported for correlations with skewed distributions. Logistic regressions were used to ascertain independent predictors of treatment completion and early drop-out.

3.0 RESULTS

3.1 Demographics

Demographic characteristics are presented in Table 1. The mean age of entrants to both services was in the early to mid-thirties, and approximately two-thirds were male. Mean years of education was approximately 10 years. Just over half had not completed any tertiary education. Under two-thirds had completed a trade or technical course and just over one-in-ten had completed a university degree. The vast majority were receiving their main source of income from a temporary benefit and approximately 10% reported that their main source of income was from full-time employment. Having ever engaged in sex work was reported by 8% of DRUGFREE clients, and 22% of the OPIOID clients.

Within the DRUGFREE services women were more likely than men to report no tertiary education (63% vs. 48%, OR 0.54, CI: 0.29-0.99). Men from the DRUGFREE services were more likely than women to have completed a trade (45% vs. 12%, OR 6.07, CI: 2.68-13.77), while women were more likely to have completed a university degree (25% vs. 7%, OR 4.34, CI: 1.82-10.0). Women in both the DRUGFREE (21% vs. 2%, OR 16.67, CI: 3.57-100) and OPIOID (60% vs. 3%, OR 50.0, CI: 0.16-100) services were more likely than men to report that they had ever engaged in sex work.

Table 1: Demographic characteristics

Variable	Drug-free services (n=191)			Opioid-based services (n=58)		
	Total (n=191)	Males (n=124)	Females (n=67)	Total (n=58)	Males (n=38)	Females (n=20)
Mean age in years	33.5	33.3	33.8	34.7	34.9	34.3
Male (%)	65	100	0	66	100	0
Aboriginal and/or Torres Strait Islander (%)	9	7	13	10	11	10
Mean years of school education	10.2	10.2	10.1	9.7	9.7	9.8
Tertiary education (%)						
None	53	48	63	57	61	50
Trade/technical	34	45	12	35	37	30
University	14	7	25	8	3	20
Main source of income (%)						
Full-time work	11	14	6	5	8	0
Part-time work	6	6	6	5	5	5
Temporary benefit	69	65	78	85	79	95
Pension	3	2	5	0	0	0
Dependant on others	3	2	2	2	3	0
Crime	3	5	0	2	3	0
No income	4	4	5	0	0	0
Other	3	4	0	2	3	0
Ever engaged in sex work (%)	8	2	21	22	3	60
Engaged in sex work in the past month (%)	3	0	8	0	0	0

Client's living arrangements and information on children are presented in Table 2. Over half of both samples reported that they were single. Approximately half reported living in their own or a rented house. Nine percent of the DRUGFREE group reported that they were either homeless or had no fixed address, as did 3% of OPIOID clients.

Approximately 60% of the samples reported that they had children. There was a mean of 2.2 (SD 1.2, range 1-10) children for those clients reporting that they had children. Of those that had children, a quarter reported that they were living with them in the month prior to their admission.

Table 2: Living arrangements and children

Variable	Drug-free services (n=191)			Opioid-based services (n=58)		
	Total (n=191)	Males (n=124)	Females (n=67)	Total (n=58)	Males (n=38)	Females (n=20)
Marital status (%)						
Married/de facto	16	16	16	28	24	35
Regular partner	13	10	19	14	13	15
Single	59	61	55	53	53	50
Separated/divorced	12	14	9	7	11	0
Widowed	0	0	0	0	0	0
Usual form of accommodation (%)						
Own house/flat (inc. renting)	47	44	52	52	55	45
Parents' home	20	23	15	26	21	35
Boarding house/hostel	7	10	3	9	13	0
Shelter/refuge	3	2	5	0	0	0
Drug treatment residence	7	4	12	9	8	10
No fixed address/homeless	9	11	6	3	0	10
Prison	3	3	2	2	3	0
Other	4	3	6	0	0	0
Living with (%)*						
Alone	19	18	21	11	11	13
Partner/spouse	15	18	9	16	14	19
Partner/spouse & child(ren)	8	7	11	14	14	13
Parent(s)	37	38	34	34	36	31
Friends/acquaintances	12	12	14	9	7	13
Other relatives	8	7	11	16	18	13
Have children (%)	57	53	64	66	66	65
Mean no. of children**	2.2	1.9	2.8	2.3	2.0	2.7
Had children in care in past month (%)**	29	29	29	28	29	27

* Of those who either lived in their own house/flat (inc. renting) or parents' home
**Of those that had children

3.2 Criminal history

A third of DRUGFREE clients reported that they had ever been in prison, as did two-thirds of OPIOID clients (Table 3). Men from both DRUGFREE (46% vs. 15%, OR 4.85, CI: 2.27-10.36) and OPIOID (79% vs. 45%, OR 4.58, CI: 1.41-14.87) services were more likely to report a prison history compared to women. Approximately half reported that they had been arrested in the 12 months prior to admission. The main types of crime they were arrested for were property crime, other crimes (such as breach bail/bond/AVO, offensive language, driving offences etc.) and violent crime.

Table 3: Criminal history

Variable	Drug-free services (n=191)			Opioid-based services (n=58)		
	Total (n=191)	Males (n=124)	Females (n=67)	Total (n=58)	Males (n=38)	Females (n=20)
Been in Prison (%)	35	46	15	67	79	45
Mean no. of times*	3.0	3.1	2.8	3.2	3.10	3.3
Mean no. months last released	57.8	55.3	71.7	38.9	44.2	21.3
Mean length of time last in prison– months*	10.7	11.1	8.7	16.9	20.6	4.4
Mean longest period of time in prison – months*	16.4	17.6	9.9	21.9	25.9	8.4
Been arrested in past 12 months (%)	47	52	36	50	47	57
Arrested for (%)**						
Property crime	27	29	19	59	36	89
Drug crime (dealing, supply, posses)	20	25	6	22	36	0
Fraud	6	6	6	13	7	22
Violent crime	33	27	50	13	7	11
Driving under the influence	11	10	13	9	7	11
Other***	37	38	31	22	21	22

* Of those that have been in prison
** Of those that had been arrested in the past 12 months
***Other included breaches (AVO, bail), public nuisance, offensive language, driving offences unregistered/unlicensed)

3.3 Drug use

3.3.1 Drug use treatment history

Approximately half the samples referred themselves to WHOS services, and approximately one-third reported they were referred by a health professional. Just over one-in-ten reported that they were referred by friends or family. The most common motivation for entering treatment was concern about their drug and/or alcohol use, followed by health concerns, with one in ten referred by the legal system.

Of those in the OPIOID treatment services, the vast majority were currently on methadone. Much fewer were either on buprenorphine or buprenorphine-naloxone. Clients reported that they were currently on their pharmacotherapy for an average of 38 months (SD 44.2, range 0.25-192), or just over three years.

Two-thirds of DRUGFREE clients had been in a detoxification unit in the six months prior to admission, as had a third of OPIOID clients, and a quarter reported that they had been to NA or AA meetings. Not surprisingly, 83% of OPIOID entrants had been enrolled in methadone in the predicting six months.

Over half of both groups previously had been in a residential rehabilitation program, on an average of 3.2 (SD 3.5, range 1-31) times. Clients that had been in a residential rehabilitation program before had completed one on an average of 1.2 times (SD 1.3, range 0-7).

Table 4: Drug treatment history

Variable	Drug-free services (n=191)			Opioid-based services (n=58)		
	Total (n=191)	Males (n=124)	Females (n=67)	Total (n=58)	Males (n=38)	Females (n=20)
Refereed to treatment by (%)						
Self	43	48	34	52	45	65
Friend/relative	11	14	5	16	21	5
GP/Health professional	37	28	52	29	32	25
Police diversion	1	1	0	0	0	0
Drug Court requirement	1	2	0	0	0	0
MERIT	3	4	2	2	3	0
Other	5	4	8	2	0	5
Motivation for entering treatment (%)						
Referred by the legal system	11	12	9	10	11	10
Pressured by family/friends	6	5	8	2	3	0
Pressured by health professionals	1	0	2	0	0	0
Child custody concerns	9	7	13	5	3	10
Health concerns	18	18	18	9	5	15
Employment concerns	2	2	2	2	0	5
Concerned about drug/alcohol use	49	52	45	67	71	60
No other treatments had worked	5	6	5	5	8	0
Currently on:	NA	NA	NA			
Methadone				83	78	90
Buprenorphine				12	16	5
Buprenorphine-naloxone				3	3	5
Other				2	3	0
Mean months been on pharmacotherapy				38.0	37.1	39.5
Other forms of treatment in past 6 months (%)						
None	9	11	8	0	0	0
Methadone	1	2	0	83	79	90
Subutex	1	1	2	19	24	10
Suboxone	1	1	0	3	3	5
Detoxification	67	70	61	33	29	40
Residential rehabilitation	25	26	24	9	5	15
Narcotics/Alcoholics Anonymous	29	33	22	22	21	25
Drug counselling	21	15	33	22	16	35
Other	9	7	13	3	3	5
Been in residential rehab before (%)	58	62	51	67	71	60
Completed resi. rehab before (%)	58	55	65	49	56	33
Mean no. times been in resi. rehab	2.8	2.9	2.5	4.7	5.3	3.3
Mean no. times completed resi. rehab**	1.0	1.0	1.1	1.1	1.1	1.2

*Of those that have ever been in a residential rehab

3.3.2 Lifetime and recent drug use

Mean age of first time intoxicated was in the early teens for both groups. Alcohol was reported to be the first drug that clients got 'under the influence of', followed by cannabis (Figure 1). Both groups reported extensive lifetime poly-drug use, and recent, poly-drug use (Table 5).

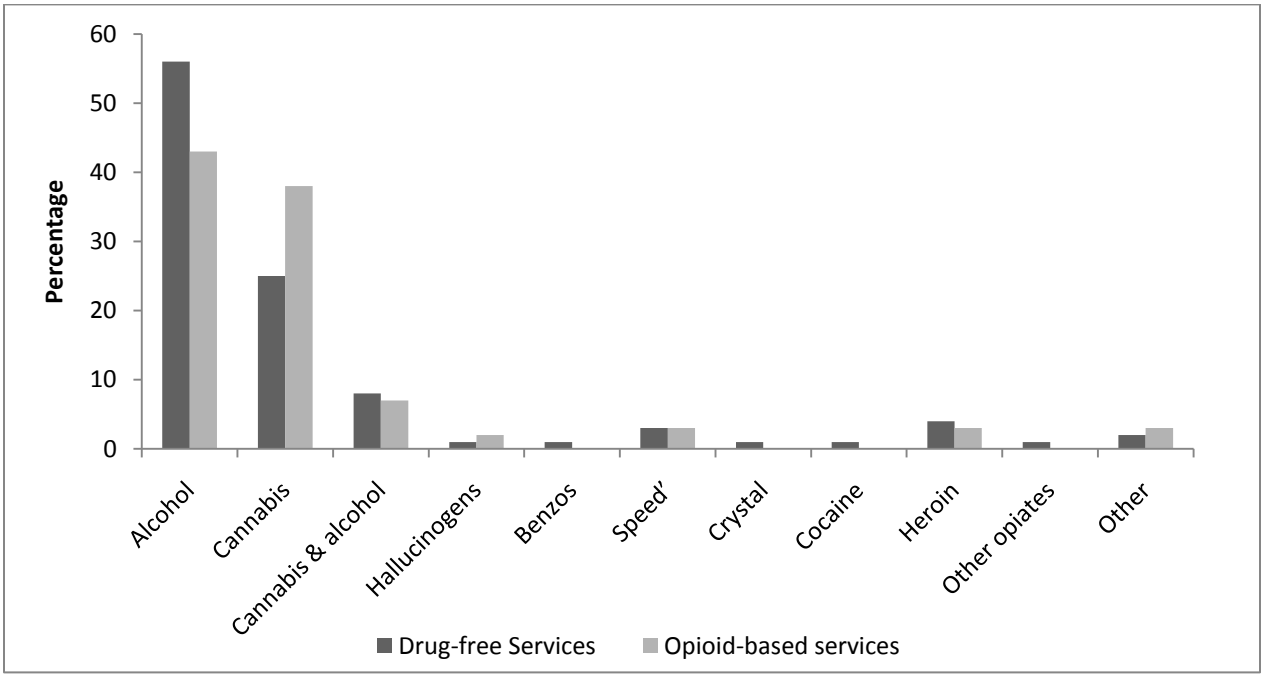
Men from the DRUGFREE services were younger the first time they became intoxicated compared to women (13.6 vs. 15.2 years, $t_{109}=2.42$, $p<0.05$) and had used more drug classes over their lifetime (7.4 v 5.8, $t_{188}=-4.23$, $p<0.000$). There were no gender differences for OPIOID clients.

Table 5: Lifetime use and main drug of choice

Variable	Drug-free services (n=191)			Opioid-based services (n=58)		
	Total (n=191)	Males (n=124)	Females (n=67)	Total (n=58)	Males (n=38)	Females (n=20)
Mean age first time under the influence	14.7	13.9	16.2	13.6	14.0	13.1
First drug under the influence of (%)						
Alcohol	56	52	61	43	40	50
Cannabis	25	27	19	38	40	35
Cannabis & alcohol	8	8	9	7	8	5
Hallucinogens	1	1	0	2	0	5
Benzodiazepines	1	1	0	0	0	0
Speed	3	2	3	3	3	5
Crystal	1	1	2	0	0	0
Cocaine	1	2	0	0	0	0
Heroin	4	3	5	3	5	0
Other opiates	1	0	2	0	0	0
Other	2	2	0	3	5	0
Mean no. drug classes						
Ever used*	6.8	7.4	5.8	8.3	8.2	8.4
Used in past 6 months*	3.4	3.5	3.1	3.6	3.4	3.9
Used in past month**	2.4	2.5	2.2	2.1	2.1	2.1

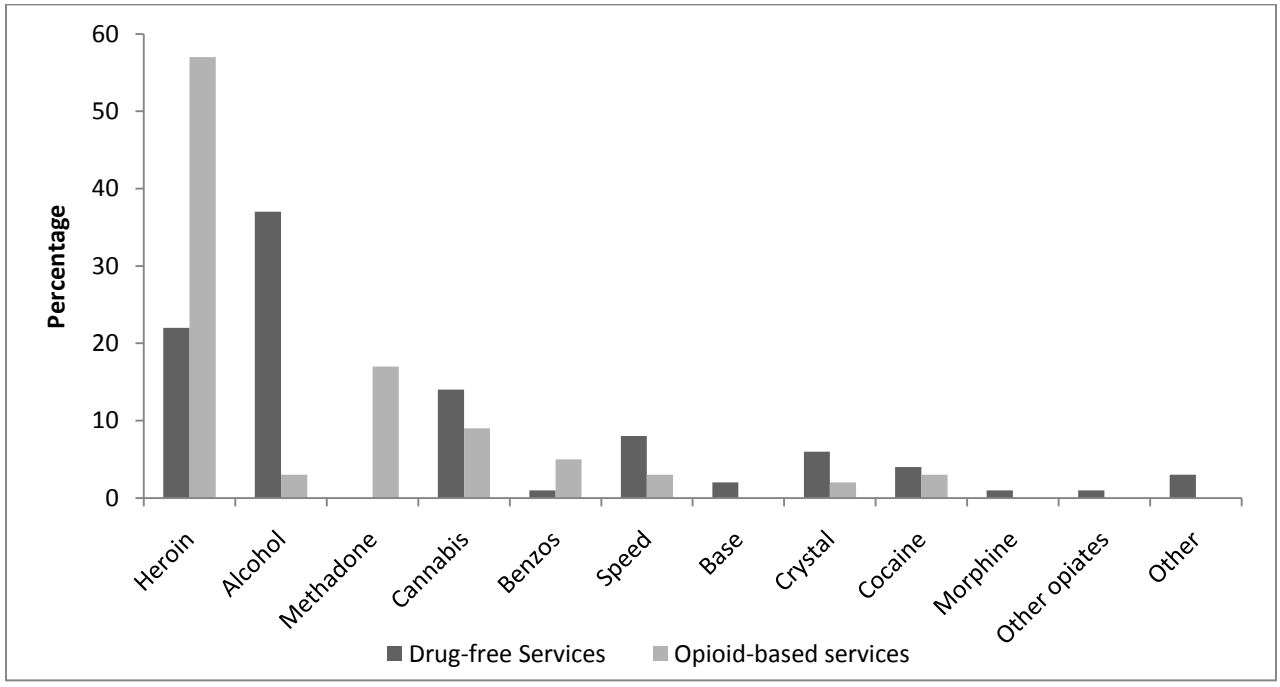
* Out of a possible of 10 drugs
**Out of a possible of 9 drugs

Figure 1: First drug 'under the influence of' by treatment service type



Heroin and alcohol were the most common drugs of choice, followed by methadone and cannabis (Figure 2). There were gender differences in the DRUGFREE service. Men were more likely than women to nominate heroin as their drug of choice (28% vs. 10% OR 3.37, CI: 1.41-8.09) and women to nominate alcohol as their drug of choice (51% vs. 30%, OR 2.43, CI: 1.32-4.55). There were no gender differences in the OPIOID service regarding drug of choice.

Figure 2: Drug of choice by treatment type



3.3.3 Injection history

Two-thirds of DRUGFREE clients and 97% of OPIOID entrants had ever injected a drug. The mean age of first injection for both groups was around 20 years. For both groups, methamphetamine was the most common first drug injected, followed by heroin (Table 6). The average age of regular injection was not that greatly different from that of initiation. Approximately a third of both groups reported that they had not injected in the preceding month.

Table 6: Injection history

Variable	Drug-free services (n=191)			Opioid-based services (n=58)		
	Total (n=191)	Males (n=124)	Females (n=67)	Total (n=58)	Males (n=38)	Females (n=20)
Ever injected any drug (%)	62	69	49	97	97	95
Mean age first injected*	20.7	20.5	21.2	19.2	19.1	19.2
First drug injected*						
Hallucinogens	1	1	0	0	0	0
Benzodiazepines	0	0	0	2	0	5
Ecstasy	1	1	0	0	0	0
Speed	53	51	58	43	43	42
Crystal	5	7	0	2	0	5
Cocaine	0	0	0	2	3	0
Heroin	35	35	36	50	51	47
Morphine	2	1	3	0	0	0
Other opiates	1	1	0	0	0	0
Other	3	2	3	2	3	0
Mean age began to inject regularly*	20.3	20.3	20.3	20.5	20.7	20.3
How often injected in past month*						
Not in the past month	39	36	46	39	38	42
Weekly or less	17	12	30	36	38	32
More than weekly, not daily	18	21	9	13	8	21
Once a day	5	6	3	4	3	5
2 to 3 times a day	12	14	6	7	11	0
More than 3 times a day	9	11	6	2	3	0

*of those who had injected

For the DRUGFREE services, alcohol, cannabis and tobacco were the most common drugs ever used, followed by methamphetamine, benzodiazepines and ecstasy (Table 7). Mean age for alcohol and cannabis use was in the mid-teens, and mean age for other drugs was late teens to early twenties. Of those who had used heroin, the vast majority had ever injected it, whilst just over two-thirds that had ever used methamphetamine had ever injected it. Tobacco, alcohol, cannabis and benzodiazepines were the drugs most likely used in the preceding six months. Alcohol had been used on an average of every second day basis. Alcohol, cannabis and benzodiazepines were the most likely drugs used in the preceding month and, of those

who had recently used alcohol average use was approximately eight standard drinks per day, whilst heroin use occurred once per day.

Table 7: Current drug use, drug-free services

Drug type	Ever used	Age first used (mean)*	Ever injected*	Injected past 6 months**	Used past 6 months	No. days used past 6 months (median)***	Used in past month*
Heroin	54	21.23 (6.36)	89	61	57	40	41
Other opiates	43	27.57 (14.18)	71	52	51	13	35
Meth/amphet (speed, base, crystal)	80	19.56 (5.51)	69	55	51	10	28
Cocaine	68	21.79 (5.39)	55	26	27	6	12
Ecstasy	73	21.63 (6.92)	33	15	29	3	11
Hallucinogens	65	18.63 (4.13)	12	27	9	2	1
Inhalants	31	16.88 (4.84)			10	6	
Benzodiazepines	74	23.76 (8.40)	15	29	69	10	53
Alcohol	99	14.05 (3.66)	4	13	86	90	73
Cannabis	95	15.34 (4.54)			67	30	52
Tobacco	96	14.86 (5.82)			97	180	

*Of those who had ever used
**Of those who had ever injected
***Of those used in past 6 months

For the OPIOID service, alcohol, lifetime cannabis and tobacco use was universal, followed by heroin. Ninety percent had ever used methamphetamine (Table 8). Mean age for alcohol and cannabis use was mid-teens, whilst mean age was late teens for other drug use. Lifetime injection of heroin was almost universal and 90% had ever injected methamphetamine. Heroin, cocaine and other opiates were the most common drugs

used in the preceding six months and heroin use had occurred on 30 days, or approximately just over once a week. Alcohol, cannabis and benzodiazepines were the most common drugs used in the past month, followed by heroin. On average approximately one standard drink per day was consumed by those who had used alcohol in the past month and heroin was used just over once a week by those who had used it in the preceding month.

Table 8: Current drug use, opioid-based services

Drug type	Ever used	Age first used (mean)*	Ever injected*	Injected past 6 months**	Used past 6 months	No. days used past 6 months (median)***	Used in past month*
Heroin	98	19.67 (4.413)	98	52	54	30	37
Other opiates	71	26.68 (6.75)	83	35	42	6	20
Meth/amphet (speed, base, crystal)	90	19.10 (5.63)	90	36	35	6.5	8
Cocaine	83	23.42 (7.13)	83	43	40	5	17
Ecstasy	74	21.26 (6.32)	28	8	9	4	5
Hallucinogens	78	16.93 (3.55)	16	0	0	-	0
Inhalants	41	18.71 (7.73)			4	4	
Benzodiazepines	93	22.19 (8.30)	22	25	80	20	44
Alcohol	100	13.67 (3.26)	2	0	64	20	47
Cannabis	100	14.17 (4.22)			67	46.5	41
Tobacco	100	13.07 (3.28)			98	180	

*Of those who had ever used
**Of those who had ever injected
***Of those used in past 6 months

Within the DRUGFREE services, males were more likely to have ever used heroin (63% vs. 39%, OR 2.64, CI: 1.43-4.87), other opiates (50% vs. 31%, OR 2.15, CI: 1.15-4.03), methamphetamine (86% vs. 69%, OR 2.85, CI: 1.38-5.89), cocaine (79% vs. 49%, OR 3.84, CI: 2.02-7.33), ecstasy (81% vs. 57%, OR 3.32, CI: 1.71-6.44) and hallucinogens (77% vs. 43%, OR 4.45, CI: 2.34-8.44). Within the six months prior to admission males were also more likely to have used heroin (37% vs. 19%, OR 2.45, CI: 1.21-4.97). Within the month prior to admission, males were more likely to use heroin (28% vs. 10%, OR 3.37, CI: 1.41-8.09) and females were more likely to use alcohol (81% vs. 67%, OR 2.04, CI: 1.01-4.17). There were, however, no differences between median days of use and past month use between males and females. Males were younger than females when they first used alcohol (13.5 vs. 15.0 years, $t_{186}=8.83$, $p<0.005$), but there were no other differences in age first commenced drug use.

There were no significant differences between males and females from the OPIOID service with regards to age of first use, lifetime use, past six month use and past month use.

3.4 Mental health

Over half had ever been diagnosed with a mental health problem. The most common mental health problems were depression, anxiety and bipolar. Just under two-fifths were diagnosed by a psychiatrist, followed by a GP (Table 9).

Women from both the DRUGFREE services (76% vs. 50%, OR 3.23, CI: 1.64-6.25) and OPIOID (75% vs. 40%, OR 4.54, CI: 1.39-14.29) were more likely to have ever been diagnosed with a mental health problem.

Table 9: Mental health history

Variable	Drug-free services (n=191)			Opioid-based services (n=58)		
	Total (n=191)	Males (n=124)	Females (n=67)	Total (n=58)	Males (n=38)	Females (n=20)
Ever diagnosed with mental health problem (%)	59	50	76	52	40	75
If yes: (%)						
Depression	62	58	67	83	93	73
Anxiety	15	10	22	20	13	27
Bipolar	17	13	22	7	7	7
Panic	4	0	8	0	0	0
OCD	3	0	6	0	0	0
Any personality disorder	6	3	10	7	7	7
Schizophrenia	4	7	2	0	0	0
Drug-induced psychosis	3	5	0	3	0	7
Other psychosis	2	2	2	0	0	0
PTSD	9	7	12	3	0	7
ADHD	7	11	2	10	7	13
Other	4	5	4	7	0	13
Diagnosed by: (%)*						
Self	1	1	0	3	0	7
GP	33	34	31	50	67	33
Psychologist	26	26	26	10	7	13
Psychiatrist	40	39	41	37	27	47
Other	1	0	2	0	0	0

*If ever diagnosed

3.4.1 Mental health history

Approximately a third of DRUGFREE clients and a quarter of OPIOID clients had recently (within the last six months) been diagnosed with a mental health problem (Table 10). The majority of those recently diagnosed were diagnosed with depression, followed by anxiety, PTSD and bipolar. More than a third were recently diagnosed by a GP or psychiatrist. Half of the DRUGFREE clients and a third of OPIOID clients had seen a mental health professional in the preceding six months. Approximately half the sample were prescribed a mental health medication in the preceding six months, with anti-depressants the most common prescribed drug. A third of DRUGFREE entrants, and a third of OPIOID clients, had been hospitalised at some point in their life due to a mental health problem.

There were, however, gender differences. Females from the DRUGFREE (72% vs. 46%, OR 2.94, CI 1.56-5.55) and OPIOID (75% vs. 34%, OR 5.88, CI: 1.72-20.0) services were more likely to have been prescribed mental health medication in the preceding six months and to have ever been hospitalised due to a mental health problem (48% vs. 23%, OR 3.03, CI: 1.59-5.56, and 40% vs. 16%, OR 3.57, CI 1.02-12.5, respectively). Women in the DRUGFREE service were also more likely to have seen a mental health professional in the preceding six months (66% vs. 44%, OR 2.50, CI: 1.33-4.55).

Table 10: Current mental health

Variable	Drug-free services (n=191)			Opioid-based services (n=58)		
	Total (n=191)	Males (n=124)	Females (n=67)	Total (n=58)	Males (n=38)	Females (n=20)
Recently diagnosed with mental health problem (%)*	36	36	37	28	29	27
If yes: (%)						
Depression	68	73	63	78	100	50
Anxiety	17	9	26	22	20	25
Bipolar	10	14	5	11	0	25
Panic	5	0	11	0	0	0
Any personality disorder	7	0	16	0	0	0
Schizophrenia	2	5	0	0	0	0
Drug-induced psychosis	2	0	5	11	0	25
PTSD	12	5	21	11	0	25
Other	2	5	0	0	0	0
Recently diagnosed by: (%)**						
GP	37	32	42	44	60	25
Psychologist	29	32	26	11	0	25
Psychiatrist	32	36	26	44	40	50
Seen a mental health prof. in past 6 months (%)	51	43	66	38	34	45
Prescribed mental health medication (%)	55	46	72	48	34	75
Medication prescribed past 6 months***						
Antidepressant						
Antipsychotic	83	86	79	89	85	93
Benzodiazepine	32	25	42	17	15	20
Other	8	7	8	7	15	0
	4	7	0	5	0	9
Currently on medication (%)***	82	79	86	72	73	71
Ever hospitalised due to mental health (%)	32	23	48	24	16	40

*If ever diagnosed
**If diagnosed in past 6 months
***If prescribed medication

A third of DRUGFREE clients and a quarter of OPIOID clients reported that they had attempted suicide in their lifetime (Table 11). Of those that had attempted suicide, their last attempt was a mean of 53 months ago, approximately 4.5 years (SD 74.1 range 0.25-384), and an average of 2.2 attempts had been made (SD 1.9, range1-10). Average age of first attempt was 24.4 years (SD 10.0, range 8-55). Just over one-third reported

that they had ever deliberately harmed themselves. This occurred an average of 79.7 months ago, or 6.5 years (SD 81.3, range 0.5-264), and had occurred on average 9.8 times (SD 45.2, range 1-400). Average age first time self-harmed was 21.4 years (SD 8.1, range 12-47).

Just over half the sample had ever lost consciousness as result of head trauma. This occurred on average 3.5 times (SD 4.1, range 1-24). Mean time lost consciousness was 22.6 minutes (SD 83.4, range 0.00-552). Two-thirds of those who had suffered a head injury had been hospitalised afterwards.

Females from DRUGFREE services (48% vs. 28% OR 2.30, CI: 1.23-4.35) and OPIOID (50% vs. 16%, OR 5.26, CI: 1.54-20.0) were more likely to have attempted suicide. Females from the DRUGFREE service were more likely than males to have ever self-harmed (54% vs. 24%, OR 3.70, CI: 1.92-7.14) and to have attempted suicide more often (2.7 vs. 1.8 times, $t_{63}=2.02$, $p<0.05$).

Men from OPIOID were significantly more likely to have ever lost consciousness (68% vs. 35%, OR 4.02, CI: 1.28-12.65), with no gender difference in the DRUGFREE services.

Table 11: Suicidality, self harm and head trauma

Variable	Drug-free services (n=191)			Opioid-based services (n=58)		
	Total (n=191)	Males (n=124)	Females (n=67)	Total (n=58)	Males (n=38)	Females (n=20)
Suicide						
Past month though about suicide (%)	30	28	34	17	13	25
Eve attempted suicide: (%)	35	28	48	27	16	50
Mean no. months since last attempt	50.2	58.4	41.3	48	54	48
Mean no. of attempts made	2.2	1.8	2.7	2	2	2
Age of first attempt (%)	25.2	25.3	25.1	21	24	19
Self harm						
Ever deliberately harmed self (%)	35	24	54	31	26	40
Mean no. months since last time	72.8	93.1	55.9	71	84	72
Mean no. of time self harm occurred	11.5	3.2	18.3	2	1	3
Age first deliberately harmed self (%)	21.2	20.6	21.8	22	21	23
Loss of consciousness						
Ever lost consciousness from head injury (%)	56	58	52	57	68	35
Mean no. time this occurred	2	2	1.5	2	2	1
Mean no. minutes unconscious	4.8	6.6	4.2	4.8	4.8	1
Ever hospitalised after head injury (%)	67	67	67	64	65	57

3.4.2 Current mental health status

Total scores for depression and anxiety (as measured by the DASS) were in the severe category, whilst overall stress scores were in the moderate category (Table 12). Just over one-in-ten obtained scores suggesting psychosis may be an issue. Clients in both groups had, on average, experienced more than four traumatic events throughout their lifetime and 43% met criteria for PTSD. Approximately half met criteria for BPD. Finally, whilst scores on physical health were in the normal range, scores of mental health for both groups (as assessed by the SF12) were low.

There were, however, a number of gender differences in the DRUGFREE services. Females were more likely to have psychosis (19% vs. 9%, OR 2.50, CI: 1.04-5.88), PTSD (55% vs. 39%, OR 1.96, CI: 1.06-3.57), and

had higher DASS anxiety (20.5 vs. 15.8, t_{187}=2.86, p<0.005) and depression scores (25.8 vs. 21.5, t_{187}=2.44, p<0.05).

Table 12: Current mental health

Variable	Drug-free services (n=191)			Opioid-based services (n=58)		
	Total (n=191)	Males (n=124)	Females (n=67)	Total (n=58)	Males (n=38)	Females (n=20)
DASS scores (mean)						
Stress	23.8	22.7	25.7	20.2	19.3	21.9
Anxiety	17.5	15.8	20.5	15.8	14.3	18.6
Depression	23.0	21.5	25.8	20.5	18.4	24.6
Psychosis caseness (%)	13	9	19	9	8	10
BSI caseness (%)	87	88	86	88	87	90
BSI dimensions (mean)						
Somatisation	64.0	64.3	63.3	64.2	64.7	63.4
Obsessive-compulsive	68.7	68.4	68.7	68.1	68.7	67.0
Interpersonal-sensitivity	65.9	66.5	64.8	65.2	65.9	64.0
Depression	69.4	70.7	66.9	66.4	68.2	63.1
Anxiety	67.7	68.7	65.9	63.6	64.5	61.9
Hostility	61.3	61.0	61.9	58.2	58.3	58.2
Phobic anxiety	65.4	65.3	65.7	63.1	63.0	63.4
Paranoid ideation	63.9	63.2	65.3	61.2	60.5	62.4
Psychoticism	70.0	69.9	70.2	67.3	67.6	66.7
Global Severity Index	70.1	71.1	69.4	68.4	69.0	67.3
PTSD						
Mean no. stressful life events	4.2	4.3	4.2	4.6	4.5	4.6
PTSD diagnosis (%)	45	39	55	38	34	45
Borderline Personality (%)	51	50	52	45	45	45
SF12 (mean)						
Physical health	49.1	50.1	47.4	47.2	48.1	45.5
Mental health	32.0	33.3	29.6	35.5	36.7	33.2

3.5 Readiness to change

Mean total scores for recognition of change and ambivalence were in the medium range for both the DRUGFREE and OPIOID-based services. Mean scores for Taking Steps were in the high range for both the DRUGFREE and OPIOID-based services. There were no differences between genders or services in readiness to change (Table 13).

Table 13: Readiness to change

Variable	Drug-free services (n=191)			Opioid-based services (n=58)		
	Total (n=191)	Males (n=124)	Females (n=67)	Total (n=58)	Males (n=38)	Females (n=20)
Recognition	32.9	33.1	32.8	33.8	33.7	33.9
Ambivalence	14.6	14.5	14.8	14.9	14.8	15.1
Taking Steps	36.0	36.0	36.0	36.9	36.5	37.6
Likeliness of completing treatment						
Very likely	38	42	32	47	45	50
Likely	26	27	26	38	37	40
Unsure	31	28	36	16	18	10
Unlikely	3	2	6	0	0	0
Very unlikely	2	3	0	0	0	0

3.6 Treatment completion and separation

Median length of stay for DRUGFREE clients was 39 days (range 2-407) and 93.5 days (range 4-371) amongst OPIOID clients. A third of DRUGFREE clients completed treatment, as did half of OPIOID clients (Table 15). Approximately a fifth left due to non-compliance. A third of DRUGFREE clients left against advice as did a fifth of OPIOID clients. Just over 16% left treatment within a week from the DRUGFREE services, as did 3% from the OPIOID services (Table 14).

In the DRUGFREE services, males were significantly more likely to complete treatment (39% vs. 21%, OR 2.39, CI: 1.20-4.77), though there was no difference in length of stay compared to females. There was no difference between males and females in the OPIOID services in length of stay or reason for treatment cessation. There was no relationship between age and length of stay in either of the treatment services.

Table 14: Length of stay and treatment completion

Variable	Drug-free services (n=191)			Opioid-based services (n=58)		
	Total (n=191)	Males (n=124)	Females (n=67)	Total (n=58)	Males (n=38)	Females (n=20)
Median length of stay	39	64	32	93.5	87.5	121
Reason for treatment cessation						
Treatment completed	33	39	21	53	50	60
Non-compliance	21	20	22	19	21	15
Left against advice	37	36	40	21	24	15
Left without notice	4	4	5	2	3	0
Referred	4	2	9	5	3	10
Other	1	0	3	0	0	0
Left within the first 7 days (%)	17	19	13	3	3	5

3.7 Correlates and predictors of treatment completion

Table 15 presents correlates of treatment completion for the DRUGFREE services. The main correlates of treatment completion were being male (77% vs. 59%, OR 2.39, CI: 1.20-4.77), those who were tertiary educated (58% vs. 42%, OR 1.92, CI: 1.04-3.55), those who had completed a residential rehabilitation program before (44% vs. 29%, OR 1.92, CI: 1.02-3.60), those who scored higher for Interpersonal Sensitivity, (i.e. those that scored higher for things such as self-doubt and personal inadequacy) (68.4 vs. 64.6 t score, t_{186}=2.29, $p<0.05$) and those clients that reported experiencing a mean lower number of stressful life events (3.7 vs. 4.5, t_{183}=2.19, $p<0.05$).

Variables that were significant at the bivariate level were entered into a multiple logistic regression model as well as the standard demographic of age. Gender (OR 2.56, 95% CI: 1.192-5.51) and number of stressful life events (OR 0.84, 95% CI: 0.72-0.97) were the only variables to remain significant. That is, males were more likely to complete treatment, as were clients that reported a mean lower number of stressful life events.

Table 15: Correlates of treatment completion, drug-free services

Variable	DRUGFREE	
	Completers (n=62)	Non-completers (n=129)
Demographics (%)		
Male	77**	59
Age (mean)	35.1	32.7
Homeless	11	8
ATSI	5	11
Tertiary education	58*	42
Employed full-time	13	10
On temp. benefit	69	69
Children in care past month	10	16
Ever been in prison	37	39
Recently released prison	16	25
Arrested past 12 months	34	35
Treatment (%)		
Referred self	42	43
Referred by legal system	10	12
Child custody concerns	10	9
Been in resi rehab before	60	57
Completed resi rehab before	44*	29
Drug use:		
Mean no. drug past 6 months	3.5	3.4
Mean no. drug past month	2.3	2.4
Heroin as drug of choice	24	21
Amphet as drug of choice	19	15
Alcohol as drug of choice	36	38
Recently injected	37	38
Mental health		
Ever diagnose mental health	53	62
Recent diagnose mental health	16	24
Ever hospitalised due to mental health	26	35
Ever attempt suicide	30	38
Recent suicide attempt	15	16
Past month thought about suicide	30	30

#=0.05
*p<0.05
**p<0.005

Table 15 cont….

Variable	DRUGFREE	
	Completers (n=62)	Non-completers (n=129)
Scores		
Stress (%)	23.7	23.8
Anxiety (%)	16.1	18.2
Depression (%)	22.7	23.2
BSI caseness (%)	90	86
BSI dimensions (mean)		
Somatisation	64.1	63.9
Obsessive-compulsive	69.7	68.2
Interpersonal-sensitivity	68.4*	64.6
Depression	71.1	68.5
Anxiety	69.2	67.0
Hostility	59.4	62.2
Phobic anxiety	66.7	64.8
Paranoid ideation	63.6	64.1
Psychoticism	70.7	69.6
Global Severity Index	71.5	70.0
No. stressful life events	3.7*	4.5
PTSD diagnosis (%)	44	45
Borderline Personality (%)	45	54
Psychosis caseness (%)	11	13
Readiness to change		
Recognition (mean)	33.6	32.7
Ambivalence (mean)	14.6	14.5
Taking steps (mean)	36.4	35.9
Likely to comp treat (%)	68	61

#=0.05
*p<0.05
**p<0.005

Correlates of treatment completion amongst the OPIOID service are presented in Table 16. Overall, correlates of treatment completion in the OPIOID service were if the client were on a temporary benefit, (97% vs. 70%, OR 12.63, CI: 1.46-109.18), if they had ever been diagnosed with a mental health problem (65% vs. 37%, OR 3.09, CI: 1.06-9.04), if they had been arrested in the past 12 months (52% vs. 26%, OR 3.05, CI: 1.00-9.27) and Borderline Personality Disorder (32% vs. 59%, OR 0.33, CI: 0.11-0.96) was negatively associated with treatment completion; that is, they were less likely to complete treatment.

Age, gender and the variables that were significant at the bivariate level were entered into a multiple logistic regression model. There were no variables that remained significant.

Table 16: Correlates of treatment completion, Opioid-based services

Variable	OPIOID	
	Completers (n=27)	Non-completers (n=31)
Demographics (%)		
Male	61	70
Age (mean)	34.4	35.0
Homeless	0	7
ATSI	7	15
Tertiary education	36	52
On temp. benefit	97**	70
Children in care past month	16	15
Ever been in prison	61	74
Recently released prison	39	30
Arrested past 12 months	52*	26
Treatment (%)		
Referred self	55	48
Referred by legal system	7	15
Been in resi rehab before	68	67
Completed resi rehab before	32	33
Drug use:		
Mean no. drug past 6 months	3.2	3.9
Mean no. drug past month	1.7	2.4
Heroin as drug of choice	48	67
Recently injected	56	63
Mental health		
Ever diagnose mental health	65*	37
Recent diagnose mental health	13	19
Ever hospitalised due to mental health	26	22
Ever attempt suicide	26	30
Recent suicide attempt	7	0
Thought about suicide past month	19	15

#=0.05
*p<0.05
**p<0.005

Table 16 cont….

Variable	OPIOID	
	Completers (n=27)	Non-completers (n=31)
Scores		
Stress (%)	19.9	20.5
Anxiety (%)	16.5	14.9
Depression (%)	20.7	20.3
BSI caseness (%)	90	85
BSI dimensions (mean)		
Somatization	63.7	64.5
Obsessive-compulsive	67.2	69.1
Interpersonal-sensitivity	65.9	64.5
Depression	67.4	65.3
Anxiety	63.5	63.7
Hostility	56.0	60.1
Phobic anxiety	62.2	64.1
Paranoid ideation	61.8	60.4
Psychoticism	66.3	68.4
Global Severity Index	68.2	68.7
No. stressful life events	4.6	4.6
PTSD diagnosis (%)	36	41
Borderline Personality (%)	32*	59
Psychosis caseness	3	15
Readiness to change		
Recognition (mean)	34.0	33.4
Ambivalence (mean)	14.3	15.6
Taking steps (mean)	37.2	36.5
Likely to comp treat (%)	84	85

#=0.05
*p<0.05
**p<0.005

3.8 Correlates and predictors of early treatment drop-out

Correlates of leaving treatment within the first seven days for the DRUGFREE service are presented in Table 17. Correlates of leaving within the first seven days for the DRUGFREE service were hostility (65.1 vs. 60.6 t score, t_{186}=-1.96, p=0.05) and recently being released from prison (36% vs. 19%, OR 2.44, CI: 1.08-5.50). Perception of the likeliness of completing treatment (45% vs. 67%, OR 0.42, CI: 0.20-0.90) and completed a residential rehabilitation program before (18% vs. 37%, OR 3.8, CI: 0.15-0.98) were negatively associated with leaving within the first seven days.

Variables that were significant at the bivariate level were entered into a multiple logistic regression model, as were the standard demographics of age and gender. The only variables to remain significant were if the client was recently released from prison (OR 2.64, 95% CI: 1.08-6.42); and the perception of likeliness of completing treatment (OR 2.38, 95% CI: 1.01-5.46), that is, those clients that left within seven days were more likely to have recently been released from prison, and clients that had a greater perception of completing treatment were more likely to stay beyond the first seven days.

No analyses were conducted on the OPIOID service with regards to correlates of leaving within the first seven days as only two clients had left within the first week.

Table 17: Correlates of leaving treatment within the first 7 days, drug-free services

Variable	DRUGFREE	
	Left before 7 days (n=33)	Stayed after 7 days (n=158)
Demographics (%)		
Male	73	63
Age (mean)	31.7	33.8
Homeless	9	9
ATSI	12	8
Tertiary education	36	49
Employed full-time	9	11
On temp. benefit	76	68
Children in care past month	15	14
Ever been in prison	49	32
Recently released prison	36*	19
Arrested past 12 months	24	37
Treatment (%)		
Referred self	36	44
Referred by legal system	6	12
Child custody concerns	6	10
Been in resi rehab before	58	58
Completed resi rehab before	18*	37
Drug use:		
Mean no. drug past 6 months	3.4	3.4
Mean no. drug past month	2.6	2.3
Heroin as drug of choice	21	22
Amphet as drug of choice	15	17
Alcohol as drug of choice	33	38
Recently injected	39	37
Mental health		
Ever diagnose mental health	58	60
Recent diagnose mental health	18	22
Ever hospitalized due to mental health	36	31
Ever attempt suicide	38	35
Recent suicide attempt	9	17
Past month thought about suicide	43	27

#=0.05
*p<0.05
**p<0.005

Table 17 cont….

Variable	Total DRUGFREE	
	Left before 7 days	Stayed after 7 days
Scores		
Stress (%)	23.3	23.9
Anxiety (%)	18.0	17.4
Depression (%)	23.4	23.0
BSI caseness (%)	94	86
BSI dimensions (mean)		
Somatization	66.2	63.5
Obsessive-compulsive	71.1	68.2
Interpersonal-sensitivity	66.1	65.8
Depression	70.6	69.1
Anxiety	68.7	69.1
Hostility	65.1#	60.6
Phobic anxiety	65.9	65.3
Paranoid ideation	66.8	63.4
Psychoticism	72.4	69.5
Global Severity Index	72.0	70.2
No. stressful life events	4.6	4.2
PTSD diagnosis (%)	46	44
Borderline Personality (%)	58	49
Psychosis caseness	13	12
Readiness to change		
Recognition (mean)	32.1	33.2
Ambivalence (mean)	14.3	14.7
Taking steps (mean)	35.4	36.1
Likely to comp treat (%)	45*	67

#=0.05
*p<0.05
**p<0.005

4.0 DISCUSSION

4.1 Main findings

The main findings of the present study were, firstly, that current mental health status had a limited effect on treatment completion and retention; secondly, that client characteristics had a limited effect on retention; and finally, there were marked differences between males and females with regards to client characteristics, mental health, and treatment completion and retention in the drug-free services, but not in the opioid-based services.

4.2 Treatment completion and early drop-out

High proportions in both the drug-free and opioid-based services successfully completed treatment. A third of drug-free clients completed, as did a half of opioid-based clients. Given the average age of clients being in the early to mid-thirties, and their long drug use careers, these are highly respectable completion rates. Importantly, very early drop-out (within the first week of treatment) was confined to a minority. In the drug-free service, less than one in five dropped out in the first week. Again, given the clinical profile of the entrants to the service, a proportion of early drop-outs would be expected. Importantly, early drop-out in the opioid-based services was almost non-existent.

4.3 Effect of mental health on treatment completion and early drop-out

Consistent with previous research (Hubbard, Craddock et al. 1997; Gossop, Marsden et al. 2002; Ross, Teesson et al. 2005) this current study found that there were extremely high rates of psychopathology amongst clients entering treatment. Not only were there high levels of depression and anxiety, but PTSD, BPD and psychosis were at far greater levels compared to the general population (Slade, Johnston et al. 2009). Despite this, the current study found that there were very limited results with regards to mental health and treatment retention and completion. Indeed, in the drug-free services, *no* form of psychopathology was associated with either completion or early drop-out. Although much research has focused on the effect of mental health on treatment retention, the findings have been inconsistent and many researchers have found

that mental health has no effect on treatment retention (De Leon 1991; Condelli and Dunteman 1993). A recent review of the literature resulted in the authors concluding that mental health does not appear to affect treatment tenure (Meier and Barrowclough 2009). The data here are broadly consistent with these findings. Why would this be so? Two possible reasons are suggested. Firstly, the extremely high rates of psychopathology mean that almost everyone has some degree of psychological distress. There is, effectively, very little variance. Secondly, research has found that whilst there are high levels of psychopathology at admission amongst drug users, the levels of psychopathology decrease markedly with engagement in substance abuse treatment (Gossop, Marsden et al. 2006; Havard, Teesson et al. 2006). It has been found that these reductions in psychopathology occur rapidly, often within the first month of treatment. Any effects of psychopathology would thus be expected to rapidly dissipate.

Unlike the drug-free services, there was some, but inconsistent, data on psychopathology and completion amongst the opioid-based services. A lifetime diagnosis of a mental health problem was associated with a higher likelihood of completion. In contrast, a diagnosis of BPD was associated with a lower likelihood of completion. An association between BPD and poorer clinical outcome has been seen elsewhere (e.g. Darke et al. 2007). As with all research in this area, however, it should *not* be assumed that psychopathology equates to poorer outcome. As so few dropped out early of the opioid-based programmes, psychopathology was *not* related to drop-out in these services.

Overall, the message from this study is that clients with psychopathology are able to be successfully treated for their substance dependence. Furthermore, there has been a recent trend amongst drug treatment services, such as WHOS, to not only provide treatment for substance abuse problems, but to also concurrently treat mental health problems. As drug use and psychopathology are two different, but related problems, this appears to be a responsible treatment approach. The current access to an on-site medical staff (doctor and nurses) at WHOS treatment services at the Rozelle campus should be continued and future research should examine the effect that such access has on the clients from the different treatment services.

4.4 Effect of other client characteristics on treatment completion and early drop-out

The current study found that there was a limited effect of client characteristics on treatment retention. This however, is consistent with previous research (De Leon and Schwartz 1984; De Leon 1991; Stark 1992; Condelli and Dunteman 1993; Nielsen and Scarpitti 2002). Amongst the drug-free services, those that left within seven days were more likely to have been recently released from prison and less likely to believe that they would complete treatment. Those that completed treatment amongst the drug-free clients were more likely to be male, and have a lower number of stressful life events. Amongst the opioid-based clients, there were no predictors of treatment completion. These findings have all been found to be important in predicting retention in previous studies, though as mentioned they are not consistent findings among the literature.

Interestingly, there was no consistency amongst the characteristics that predicted earlier drop-out and treatment completion. This finding suggests that there are many factors associated with retention and treatment completion and they may come into play throughout different stages of treatment. This makes good clinical sense. Those who do not drop out early will not necessarily complete treatment. After the first hurdle has been overcome, the clinical journey to a successful treatment completion continues, and may well be related to other factors than those that may cause an early drop-out.

Furthermore, previous research has found that there was some consistency with some aspects in predicting retention. These included being referred by the legal system, and treatment readiness and motivation. Despite this, only likeliness to complete treatment was a factor for the drug-free services in the first seven days of treatment. Directly targeting an improvement in the client's self-efficacy of successful treatment may well increase their chances of staying in treatment.

The current study found that there was no effect of past, current, frequency or quantity of drug use on treatment retention. WHOS is a non-drug specific treatment service, and these findings support the

effectiveness of the services to provide consistent treatment to all clients with a wide range of drug and alcohol issues

4.5 Differences between gender

A final major finding of this study was the vast differences between males and females in the drug-free services. Males and females differed significantly on demographics characteristics, drug use characteristics and mental health characteristics. Women were more likely to have a university degree, more likely to have ever engaged in sex work, less likely to have a prison history, and were suffering from more severe mental health problems. Women in the drug-free service also had lower completion rates than the males. A review of the literature found that that whilst women-only services may not necessarily be more effective than mixed-gender services, they have been shown to be effective in addressing problems more common to substance abusing women (Greenfield, Brooks et al. 2007).

It must be noted that with respect to the males and females in the opioid-based services, there were very few differences between the two in terms of demographics, drug use, current mental health and treatment retention. This similarity between the genders suggests that this is a more homogenous group and the presence of one treatment aim – in this instance, to reduce, stop or stabilise their pharmacotherapy dose – may result in fewer differences between the two genders.

4.6 Future research

The present study looked at the effect of client characteristics on retention and completion. Given the heterogeneity of programs being grouped together as residential rehabilitation or therapeutic communities, it is no surprise the there have been so many conflicting results. There are, however, other important factors that need to be considered when examining retention and completion rates. Past research has suggested that another important factor to consider is program factors (De Leon and Schwartz 1984; De Leon 1991; Stark 1992; Condelli 1994) and these are often much better at predicting retention.

Future research may focus on factors such as social cohesion (Dermatis, Salke et al. 2001), dimensions of the therapeutic community (Mandell, Edelen et al. 2008), and specific program factors such as staffing and treatment environment (Meier and Best 2006).

4.7 Limitations

As with any research, there are caveats that need to be noted. The data collected at admission was self-report. Whilst self-report data is believed to have problems associated with accuracy, research suggests that self-report data amongst drug users in research settings have acceptable levels of reliability (Darke 1998; Welp, Bosman et al. 2003).

Another important issue is the generalisability of the results. As previously mentioned, one of the major problems in this area of research is the comparability of results. It must not be assumed that the findings from this present study can be generalised to other TCs. With so much variation in treatment models and services, it may be that each treatment service needs to conduct its own research in order to understand the factors that may influence treatment completion and retention rates.

4.8 Conclusion

This current research has found that there are a limited number of client characteristics that predict treatment completion and retention. However, the results of the present study are important. The major finding was that psychopathology had no relation to either treatment completion or early drop-out in the drug-free services, and only a limited effect in the opioid-based services. Clients with psychopathology should be not be seen as treatment "risks". A continued non-discriminatory and non-judgmental approach to new admissions, and an equal effort applied to each new admit, is the best practice, which is the basis of the TC approach.

REFERENCES

Amato, L., S. Minozzi, et al. (2008). Psychosocial and pharmacological treatments versus pharmacological treatments for opioid detoxification. C. D. o. S. Reviews.

Amodeo, M., D. Chassler, et al. (2008). "Client retention in residential drug treatment for Latinos." Evaluation and Program Planning 31(1): 102-112.

Andrews, G., W. Hall, et al. (1999). The mental health of Australians: National Survey of Mental Health and Wellbeing. Canberra, Commonwealth Department of Health and Aged Care.

Antony, M. M., P. J. Bieling, et al. (1998). "Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales (DASS) in clinical groups and a community sample." Psychological Assessment 10: 176-181.

Arfken, C. L., C. Klein, et al. (2001). "Gender differences in problem severity at assessment and treatment retention." Journal of Substance Abuse Treatment 20(1): 53-57.

Australian Institute of Health and Ageing (2008). 2007 National Drug Strategy Household Survey: Detailed findings. Drugs Statistics Series: No. 22. Australian Institute of Health and Ageing. Canberra, Australian Institute of Health and Ageing.

Australian Institute of Health and Welfare (2009). Alcohol and other drug treatment services in Australia 2007–08: report on the national minimum data set. A. I. o. H. a. Welfare. Canberra.

Baekeland, F. and L. Lundwall (1975). "Dropping out of treatment: A critical review." Psychological Bulletin 82: 738-783.

Ball, J., W. Lange, et al. (1988). "Reducing the risk of AIDS through methadone maintenance treatment." Journal of Health and Social Behavior 29: 214-226.

Beckman, L. and P. Bardsley (1986). "Individual characteristics, gender differences and drop-out from alcoholism treatment " Alcohol and Alcoholism 21: 213-224.

Beyon, C., M. Bellis, et al. (2006). "Trends in drop out, drug free discharge and rates of re-presentation: A retrospective cohort study of drug treatment clients in the North west of England." BMC Public Health 6.

Boulet, J. and M. W. Boss (1991). "Reliability and validity of the Brief Symptom Inventory." Psychological Assessment 3: 433-437.

Broome, K. M., P. M. Flynn, et al. (1999). "Psychiatric comorbidity measures as predictors of retention in drug abuse treatment programs." Health Services Research 34(3): 791(1).

Brown, T. A., B. F. Chorpita, et al. (1997). "Psychometric properties of the Depression Anxiety Stress Scales (DASS) in clinical samples." Behaviour Research & Therapy 35(1): 79-89.

Brunette, M., K. Mueser, et al. (2004). "A review of research on residential programs for people with severe mental illness and co-occurring substance use disorders." Drug & Alcohol Review 23: 471-481.

Choi, S. and J. Ryan (2006). "Completing substance abuse treatment in child welfare: the role of co-occurring problems and primary drug of choice." Child Maltreatment 4: 313-325.

Collins, D. J. and H. M. Lapsley (2002). Counting the cost: estimates of the social costs of drug abuse in Australia in 1998-99. C. D. o. H. a. Ageing. Canberra.

Collins, E. D., T. Horton, et al. (2007). "Using buprenorphine to facilitate entry into residential therapeutic community rehabilitation." Journal of Substance Abuse Treatment 32(2): 167-175.

Condelli, W. (1989). "External pressure and retention in a therapeutic community " International Journal of Therapeutic Communities 10: 21-33.

Condelli, W. (1994). "Domains of variables for understanding and improving retention in Therapeutic Communities." The International Journal of the Addictions 29(5): 593-607.

Condelli, W. and G. De Leon (1993). "Fixed and dynamic predictors of client retention in therapeutic communites." journal of Substance Abuse Treatment 10: 11-16.

Condelli, W. and G. H. Dunteman (1993). "Issues to consider when predicting retention in Therapeutic Communities." Journal of Psychoactive Drugs 25: 239-244.

Crawford, J. R. and J. D. Henry (2003). "The Depression Anxiety Stress Scales (DASS): normative data and latent structure in a large non-clinical sample." British Journal of Clinical Psychology 42(Pt 2): 111-31.

Darke, S., N. Heather, et al. (1991). "Estimating drug consumption in opioid users: reliability and validity of a'recent use' episodes method." Addiction 86(10): 1311-1316.

Darke, S., S. Kaye, et al. (2008). "Major physical and psychological harms of methamphetamine use." Drug & Alcohol Review 27(3): 253-62.

Darke, S., K. Mills, et al. (2009). "Patterns of major depression and drug-related problems amongst heroin users across 36 months." Psychiatry Research 166(1): 7-14.

Darke, S., J. Ross, et al. (2004). "Attempted suicide among entrants to three treatment modalities for heroin dependence in the Australian Treatment Outcome Study (ATOS): prevalence and risk factors." Drug and Alcohol Dependence 73(1): 1-10.

Darke, S., J. Ross, et al. (2007). "The Australian Treatment Outcome Study (ATOS): what have we learnt about treatment for heroin dependence?" Drug & Alcohol Review 26: 49-54.

Darke, S., Ross, J., Mills, K.L., Williamson, A., Havard, A. & Teesson, M. (2007) Borderline Personality Disorder and persistently elevated levels of risk in 36 month outcomes. *Addiction, 102,* 1140-1146.

Darke, S., J. Ross, et al. (2005). "Factors associated with 12 months continuous heroin abstinence: Findings from the Australian Treatment Outcome Study (ATOS)." Journal.

Darke, S., J. Ross, et al. (2005). "The impact of borderline personality disorder on 12-month outcomes for the treatment of heroin dependence." Addiction 100(8): 1121-30.

Darke, S., G. Ward, et al. (1991). The Opiate Treatment Index (OTI) Manual. Sydney, National Drug and Alcohol Research Centre.

Darke, S., A. Williamson, et al. (2007). "Patterns of nonfatal heroin overdose over a 3-year period: findings from the Australian treatment outcome study." Journal of Urban Health 84(2): 283-91.

Darke, S., A. Williamson, et al. (2004). "Borderline personality disorder, antisocial personality disorder and risk-taking among heroin users: findings from the Australian Treatment Outcome Study (ATOS)." Drug & Alcohol Dependence 74(1): 77-83.

De Leon, G. (1985). "The Therapeutic Community: Status and evolution." International Journal of Addictions 20(6-7): 823-844.

De Leon, G. (1991). Retention in Drug-Free Therapeutic Communities. Improving Drug Abuse Treatment. R. W. Pickens, C. G. Leukefeld and C. R. Schuster. Rockville, National Institute on Drug Abuse. Research Monograph 106.

De Leon, G. and N. Jainchill (1986). "Circumstances, motivation, readiness and suitability (CMRS) as correlates of treatment tenure." Journal of Psychoactive Drugs 8(3): 203-208.

De Leon, G., G. Melnick, et al. (1997). "Motivation and readiness for therapeutic community treatment among cocaine and other drug abusers." American Journal of Drug & Alcohol Abuse 23: 169-189.

De Leon, G. and S. Schwartz (1984). "Therapeutic communities: what are the retention rates?" American Journal of Drug & Alcohol Abuse 10: 267-284.

Degenhardt, L., W. Hall, et al. (2005). Use of a brief screening instrument for psychosis: Results of an ROC analysis. Sydney, National Drug and Alcohol Research Centre.

Dermatis, H., M. Salke, et al. (2001). "The role of social cohesion among residents in a therapeutic community." Journal of Substance Abuse Treatment 21: 105-110.

Derogatis, L. R. (1993). Brief Symptom Inventory (BSI): Administration, scoring, and procedures manual Minneapolis, National Computer Systems, Inc.

Des Jarlais, D. C. and S. R. Friedman (1996). "HIV epidemiology and interventions among injecting drug users." International Journal of STD & AIDS 7 Suppl 2: 57-61.

Eisenberg, M. and T. Fabelo (1996). "Evaluation of the Texas correctional substance abuse treatment initiative: The impact of policy research." Crime and Delinquency 42: 296-308.

Evans, E., L. Li, et al. (2009). "Client and program factors associated with drop-out from court mandated drug treatment." Evaluation and Program Planning 32(3): 204-212.

Gossop, M., J. Marsden, et al. (2006). "Remission of psychiatric symptoms among drug misusers after drug dependence treatment." The Journal of Nervous and Mental Disease 194(11): 826-832.

Gossop, M., J. Marsden, et al. (2001). National Treatment Outcome Study (NTORS) - After five years: Changes in substance use, health and criminal behaviour during the five years after intake. N. A. Centre. London.

Gossop, M., J. Marsden, et al. (2002). "Change and stability of change after treatment of drug misuse: 2 year outcomes from the National Treatment Outcome Research." Addictive Behaviors 27: 155-166.

Green, C. A., M. R. Polen, et al. (2002). "Gender differences in predictors of initiation, retention, and completion in an HMO-based substance abuse treatment program." Journal of Substance Abuse Treatment 23(4): 285-295.

Greenfield, S. F., A. J. Brooks, et al. (2007). "Substance abuse treatment entry, retention, and outcome in women: A review of the literature." Drug and Alcohol Dependence 86(1): 1-21.

Gregson, R. A. M. and B. G. Stacey (1980). "Distribution of self-reported alcohol consumption in New Zealand." Psychological Reports 47: 159-170.

Havard, A., M. Teesson, et al. (2006). "Depression among heroin users: 12-Month outcomes from the Australian Treatment Outcome Study (ATOS)." Journal.

Henry, J. D. and J. R. Crawford (2005). "The short-form version of the Depression Anxiety Stress Scales (DASS-21): construct validity and normative data in a large non-clinical sample." British Journal of Clinical Psychology 44(Pt 2): 227-39.

Hesse, M. (2009). "Integrated psychological treatment for substance use and co-morbid anxiety or depression vs. treatment for substance use alone: A systematic review of the published literature." BMC Psychiatry 9(6).

Hser, Y.-I., C. Grella, et al. (2006). "Utilization and Outcomes of Mental Health Services Among Patients in Drug Treatment." Journal of Addictive Diseases 25(1): 73 - 85.

Hubbard, R., S. Craddock, et al. (1997). "Overview of one year follow-up outcomes in the Drug Abuse Treatment Outcome Study (DATOS)." Psychiatric Journal of Addictive Behaviors 11: 261-278.

Hulse, G., D. English, et al. (1999). "The quantification of mortality resulting from the regular use of illicit opiates." Addiction 94: 221-229.

Joe, G.W., Broome, K.M. & Simpson, D.D. (1999). Retention and patient engagement in models for different treatment modalities in DATOS. *Drug and Alcohol Dependence*, *57*, 113-125.

Joe, G., D. Simpson, et al. (1998). "Effects of readiness for drug abuse treatment on client retention and assessment of process." Addiction 93(8): 1177-1190

Keen, J., P. Oliver, et al. (2001). "Residential rehabilitation for drug users: a review of 13 months' intake to a therapeutic community." Family Practice 18(5): 545-548.

King, A. and S. Canada (2004). "Client related predictors of early treatment drop-out in a substance abuse clinic exclusively employing individual therapy." Substance Abuse Treatment 26: 189-195.

Knight, D., S. Logan, et al. (2001). "Predictors of program completion for women in residential substnace abuse treatment." American Journal of Drug & Alcohol Abuse 27: 1-18.

Leigh, G., A. Ogborne, et al. (1984). "Factors associated with patient drop-out from an outpatient alcoholism treatment service." Journal of Studies on Alcohol 45: 359-362.

Lovibond, S. H. and P. F. Lovibond (1995). Manual for the Depression Anxiety Stress Scales. Sydney, Psychological Foundation.

Mandell, W., M. Edelen, et al. (2008). "Do dimensions of therapeutic community treatment predict retention and outcomes?" Journal of Substance Abuse Treatment 35: 223-231.

Meier, P. and C. Barrowclough (2009). "Mental Health problems: Are they or are they not a risk factor for drop-out from drug treatment? A systematic review of the literature." Drugs: Education, Prevention and Policy 16(1): 7-38.

Meier, P. and D. Best (2006). "Programme factors that influence completion of residential treatment." Drug & Alcohol Review 25: 349-355.

Mertens, J. and C. M. Weisner (2000). "Predictors of Substance Abuse Treatment Retention Among Women and Men in an HMO." Alcoholism: Clinical and Experimental Research 24(10): 1525-1533.

Mier, P., M. Donmall, et al. (2006). "The role of the early therapeutic alliance in predicting drug treatment drop-out." Drug & Alcohol Dependence 83: 57-64.

Miller, W. R. and J. S. Tonigan (1996). "Assessing drinkers' motivation for change: The Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES)." Psychology of Addictive Behaviors 10: 81-89.

Mills, K. L., M. Lynskey, et al. (2005). "Post-traumatic stress disorder among people with heroin dependence in the Australian treatment outcome study (ATOS): prevalence and correlates." Drug & Alcohol Dependence 77(3): 243-9.

Mulder, R., C. Frampton, et al. (2009). "Predictors of 3-month retention in a drug treatment therapeutic community." Drug and Alcohol Review 28: 366-371.

National Health and Medical Research Council (2009). Australian guidelines: To reduce heath risks from drinking alcohol. N. H. a. M. R. Council., Attorney-General's Department.

Nielsen, A. L. and F. R. Scarpitti (2002). "Predicting retention in a Therapeutic Community for incarcerated substance abusers." Journal of Offender Rehabilitation 34(3): 47-65.

Perron, B. and C. Bright (2008). "The influence of legal coercion on treatment retention in substance abuse treatment." Drug & Alcohol Dependence 92(1-3): 123-131.

Ravndal, E. and P. Vaglum (1991). "Psychopathology and substance abuse as predictors of program completion in a therapeutic community for drug abusers: A prospective study." Acta Psychiatrica Scandinavica 83: 217-222.

Ravndal, E. and P. Vaglum (1998). "Psychopathology and substance abuse as predictors of program completion in a therapeutic community for drug abusers: A prospective study." Journal.

Ray, K. W. (2002). "Global epidemiology and burden of hepatitis C." Microbes and Infection 4: 1219-1225.

Rosenman, S. (2002). "Trauma and posttraumatic stress disorder in Australia: findings in the population sample of the Australian National Survey of Mental Health and Wellbeing." Australian and New Zealand Journal of Psychiatry 36: 515-520.

Ross, J., M. Teesson, et al. (2005). "The characteristics of heroin users entering treatment: findings from the Australian treatment outcome study (ATOS)." Drug & Alcohol Review 24(5): 411-8.

Sanderson, K. and G. Andrews (2002). "Prevalence and severity of mental health related disability and relationship to diagnosis." Psychiatric Services 53: 80-86.

Sansone, J. (1980). "Retention patterns in a Therapeutic Community for the treatment of drug abuse." International Journal of Addictions 15: 711-736.

Scott-Lennox, J., R. Rose, et al. (2000). "Impact of women's family status on completion of substance abuse treatment." The Journal of Behavioural Health Services and Research 27: 366-379.

Simpson, D., B. Brown, et al. (1997). "Treatment retention and follow-up outcomes in the Drug Abuse Treatment Outcome Study (DATOS)." Psychology of Addictive Behaviors 11(4): 294-307.

Simpson, D. and G. Joe (1993). "Motivation as a predictor of early drop-out from drug abuse treatment." Psychotherapy: Theory, Research, Practice, Training 30(2): 357-368.

Slade, T., A. Johnston, et al. (2009). The Mental Health of Australians 2. Report on the 2007 National Survey of Mental Health and Wellbeing. . D. o. H. a. Ageing.

Stark, M. (1992). "Dropping out of substance abuse treatment: A clinically oriented review." Clinical Psychology Review 12: 93-116.

Steer, R. (1983). "Retention in drug free counseling." The International Journal of the Addictions 18: 1109-1114.

Steer, R. and E. Kotzker (1978). "Correlates of methadone patients' length of stay for first and second admissions." Drug & Alcohol Dependence 3: 399-403.

Teesson, M., Mills, K.L., Ross, J., Darke, S., Williamson, A. & Havard, A. (2008) The impact of treatment on 3 year outcomes for heroin dependence: findings from the Australian Treatment Outcome Study (ATOS). *Addiction,* 103, 80-8.

Vickers-Lahti, M., F. Garfield, et al. (1995). "The relationship between legal factors and attrition from a residential drug abuse treatment program." Journal of Psychoactive Drugs 27: 17-25.

Ware, J., M. Kosinski, et al. (1996). "A 12-Item Short-Form Health Survey: construction of scales and preliminary tests of reliability and validity." Medical Care 34: 220-233.

Warner-Smith, M., S. Darke, et al. (2002). "Morbidity associated with non-fatal heroin overdose." Addiction 97(8): 963-7.

Warner-Smith, M., S. Darke, et al. (2001). "Heroin overdose: causes and consequences." Addiction 96(8): 1113-25.

Weathers, F., D. Herman, et al. (1993). The PTSD Checklist (PCL): Reliability, validity, and diagnostic utility. Trauma, Coping and Adaptation. Annual Meeting of International Society for Traumatic Stress Studies, San Antonio, TX.

Wickizer, T., C. Maynard, et al. (1994). "Completion rates of clients discharged from drug and alcohol treatment programs in Washington State." American Journal of Public Health 84(2): 215-221.

Zanis, D., D. Coviello, et al. (2009). "Predictors of drug treatment completion among parole violators." Journal of Psychoactive Drugs 41: 173-180.