THE ASSOCIATION BETWEEN SUBSTANCE ABUSE, PSYCHOSIS AND ACTIVITY PARTICIPATION IN ADULTS: A RETROSPECTIVE RECORD REVIEW

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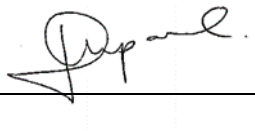
A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Master of Science in Occupational Therapy.

Johannesburg, 2017.

Declaration

I, Qulinta Nepaul declare that this research report is my own work. It is being submitted for the degree of Master of Science in Occupational Therapy at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.



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22nd day of November 2017

Dedication

For my fiancé, Kavi, who wiped the tears, shared the fears and joined in the laughter, thank you.

Abstract

Background: Co-morbid substance abuse and psychotic disorders result in decreased activity participation. However, the association between substance abuse and activity participation in psychotic disorders has not been explored. In this study, the activity participation on admission and discharge were compared between Substance Induced Psychosis (SIP) and Schizophrenia without substance abuse.

Methodology: A quantitative, descriptive, retrospective case study design with correlations was used. A database with demographic information and activity participation assessments of mental health care users (MHCUs) was used. Descriptive quantitative analysis, correlations and effect sizes was used to analyse the data.

Results: The largest age groups for the SIP group were the 20 to 29 and 30 to 39-year-old cases. Activity participation scores for both groups showed impaired functioning on the creative ability level of Self-presentation, with changes after intervention from patient-directed to the transitional phase for the SIP group and therapist-directed to patient-directed phase for the Schizophrenia group. In terms of cognitive functioning, the Schizophrenia group improved by one phase, for Process skills, matching the SIP group on discharge.

Conclusion: Activity participation is impaired in SIP but also in Schizophrenia without substance abuse. Concerning demographic data showed the prevalence of substance abuse in young adults and the disruptions of employment. Effect sizes showed clinically small changes but noteworthy improvements, as MHCUs move closer to independence.

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My supervisor, Professor D. Casteleijn, for her constant assistance, patience, emotional support and academic guidance, without which, this would not have been possible. Thank you for being my support, supervisor and statistician through this journey.

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Operational definitions

Substance abuse: The habitual misuse of a substance (American Psychiatric Association, 2013).

Substance dependence: The development of tolerance to the substance and the effects of withdrawal without the substance (American Psychiatric Association, 2013).

Dual diagnosis: A mental healthcare user who is diagnosed with a mental health illness as well as substance abuse. The substance abuse affects the primary mental health illness and prognosis of the MHCU.

Activity participation: An expression of creative ability, defining how an individual carries out activities of daily living.

Occupational Performance: "Act of doing and accomplishing a selected action, activity, or occupation that results from the dynamic transaction among the client, the context and activity" (The American Occupational Therapy Association, 2014, p. S43).

Neurocognitive function: An encompassing term of brain functions, including processing, working memory, decision making, information recollection.

Poly substance use: Use of more than one type of substance.

Co-morbid illnesses: A MHCU is diagnosed with a primary diagnosis, however any other illness that the MHCU may have acquired or developed, are then known as co-morbid illnesses.

Premorbid functioning: Refers to the level of functioning of a person, before the onset of an illness.

Retrospective data: Data that is collected and analysed thereafter.

Personality disorders: disorders characterised by deep, ingrained patterns of maladaptive behaviour. This causes long term difficulties in personal and social integration.

Intellectual disabilities: Disorder characterised by a significant deficit in intellectual functioning as well as adaptive behaviour within daily activities.

List of abbreviations

ADL – Activities of Daily Living

MHCU - Mental Healthcare User

SIP - Substance Induced Psychosis

UNODC – United Nations Office on Drugs and Crime

DSM - Diagnostic and Statistical Manual of Mental Disorders

GAF - Global Assessment of Functioning

APOM - Activity Participation Outcome Measure

VdTMoCA - Vona du Toit Model of Creative Ability

AusTOMs - Australian Therapeutic Outcome Measure

MOHOST - Model of Human Occupation Screening Tool

MPA - Meaningful Activity Participation Assessment

AMPS - Assessment of Motor and Process Skills

Chapter one: Introduction

1.1 Introduction

Substance abuse and dependency is a global growing concern with many implications for health care. In South Africa, services for people with substance abuse and dependency are provided by the Department of Social Development as set out in the Prevention and Treatment of Substance Abuse Act no 70 of 2008 (Republic of South Africa, 2009) and the National Drug Master Plan 2013 – 2017 (Department of Social Development, 2013). The prevention and treatment of substance abuse requires a multi-sectorial approach with involvement of many government departments, amongst other, Department of Health. As stated in the National Mental Health Policy Framework and Strategic Plan 2013 – 2010, the Department of Health committed itself to provide care, treatment and rehabilitation of people with mental health conditions and co-morbid substance abuse. This service is offered in designated psychiatric hospitals and not in substance or alcohol abuse centres of the Department of Social Development.

Once a mental healthcare user (MHCU) is diagnosed with a psychotic illness as well as substance abuse, the MHCU falls in the category of a co-morbid substance abuse disorder, or a dual diagnosis. A high prevalence of this type of co-morbidity has been reported in international research since the 1980s (Amminger, et al., 2002). The day-to-day functioning of these MHCUs are severely interrupted and they are seen in high numbers in psychiatric units and hospitals in South Africa.

Occupational therapy mental health service is concerned with the activity participation of the individual and aims to shift MHCUs to independence in daily living and employment, or as close to independence as possible (Creek, 2014). It is therefore important for occupational therapists to be aware of the deficits in activity participation and associated cognitive, perceptual, affective and dispositional impairments in MHCUs with a psychotic disorder and comorbid substance abuse, in order to guide effective intervention for these individuals. It has further been found that MHCUs with a mental illness and co-morbid substance abuse present with not only low occupational performance, but a deterioration in their neurocognitive functioning as well. This includes a deterioration in learning and memory, novel problem solving and abstract reasoning (Ashton, 1999; Allen & Landis, 1998; Rourke & Lorberg, 1998). It is therefore imperative to investigate further the activity participation and cognitive fallout in this group of MHCUs from an occupational therapy perspective.

Clinically, it is seen that MHCUs seldom use one substance in isolation, as there is usually poly substance abuse over many years. These MHCUs with co-morbid substance abuse are usually males from low socioeconomic circumstances who are unemployed, and in line with international trends, they are usually of the age that is associated with productive remunerative work (Barnes, et al., 2006). Furthermore, a study conducted at a Gauteng government institution, found nearly 40% of MHCUs were substance abusing in their youth and adulthood (Moosa & Jeenah, 2002).

Substance abuse in this age group is not only detrimental to the individual's daily functioning, but has a ripple effect on their community and the country's economy. Discussed in the annual report from the United Nation's office on Drugs and crime, was the economic sequelae of drug abuse. The report elaborates on the far-reaching effects of drug abuse not only in the health sector, but also in terms of public safety, crime, productivity and governance (United Nations Office on Drugs and Crime, 2013).

Research supports that substance abuse often triggers the onset of Schizophrenia but there is also evidence to the contrary, that people with a mental illness such as Schizophrenia are more likely to use substances (Dixon, 1999; Drake, et al., 1998; Smith, et al., 2015). This debate is ongoing but evidence exist that people using substances are at risk to develop Schizophrenia (Goerke & Kumara, 2013; Addington, et al., 2006; Amar & Potvin, 2007; Estrada, et al., 2011). When psychotic symptoms are present in a person with substance abuse, the diagnosis of Substance Induced Psychosis (SIP) is often made. Few studies report on the conversion of SIP into Schizophrenia but Niemi-Pynttäri, et al., (2013) found that there is a 46% risk of cannabis-induced psychosis converting into Schizophrenia.

A study in the United States of America (Caton, et al., 2007) showed that co-morbid substance abuse in MHCUs with symptoms of psychosis, had deteriorated from pre-morbid functioning and showed less insight into their condition. Occupational therapists are concerned with activity participation, which is an expression of an individual's functioning. The trends in the study above, are seen in the clinically as well, however, there is a scarcity of research in occupational therapy to support this clinical judgment.

Drug abuse affects the health sector adversely in terms of the increased cost to provide prevention and treatment interventions; it also increases the co-morbidity rates. People using drugs often present with co-morbid psychiatric illness, HIV, hepatitis B and other infectious diseases that are easily transmitted through sharing of needles. People who use substances are also often involved in drug related crimes including possession possess, manufacture, or distribution of drugs. Drug related injuries may occur at any stage such as domestic violence, injuries while intoxicated or

gangsterism activities. Thus, hospitals in South Africa that provide healthcare to this population are thus burdened with the additional problems that are caused by drug abuse.

Mortality rate is another major concern among people abusing drugs. Worldwide drug-related deaths account for between 0.5 and 1.3% of all mortalities in individuals in the age range of 15 to 64 years. There are also 211,000 drug-related deaths per year and the youth are confronted with an exceptionally higher risk (United Nations Office on Drugs and Crime, 2013). As people in this age group are meant to be the productive members of society, contributing to the prosperity of their communities and the economy, it is a dire situation when this population has the highest risk for drug related co-morbidities and death.

Occupational therapists offer services to this high risk population. Their activity participation is affected and prevents them from fulfilling essential roles such as a worker, family member or friend. When one cannot fulfil roles to sustain a living, one's balanced lifestyle is also affected (Creek, 2014). These are domains that occupational therapists address in their service delivery to clients with mental health challenges. Casteleijn, a prominent occupational therapist in South Africa, developed an outcome measure, the Activity Participation Outcome Measure (APOM) to track changes in activity participation in MHCUs (Casteleijn, 2010). The APOM allows occupational therapists to measure the deficit in activity participation when a MHCU is admitted, the change during and after intervention can be measured at the end. By doing pre- and post-assessments, occupational therapists can generate evidence of the effect of their services. Casteleijn invited occupational therapy clinicians to participate in a large scale study to investigate the effects of different mental disorders on activity participation, including those with substance abuse disorders and psychotic disorders. The APOM consist of eight domains namely Process skills, Communication/Interaction skills, Lifeskills, Role performance, Balanced lifestyle, Motivation, Self-esteem and Affect. Participating clinicians collected collect routine data using the APOM. Clinicians did a baseline assessment at admission and tracked the activity participation of the MHCUs throughout the hospitalisation period. Some clinicians followed MHCUs up after discharge. Casteleijn compiled a database of these MHCUs' which included, demographic data and scores on the APOM. Ethical permission was granted for this study (Ethical number M121170). To date, the database consists of approximately 700 cases with diagnoses such as Schizophrenia, Schizo-affective Disorder, Major Depressive Disorder, Bipolar Mood Disorder, Anxiety Disorders, Substance Induced Psychosis and Post Traumatic Stress Disorder.

The discussion above highlights the detrimental effects of substance abuse on mental health. Not only does it have consequences for an individual, but also on the country's healthcare services and

the economy. It is imperative to explore this topic in order to best equip occupational therapists to treat this population effectively and efficiently in healthcare settings, highlighting the importance of research in this area. The topics that were emphasised in this introduction will be elaborated and expanded in the chapters that follow.

Although a database of activity participation levels of MHCUs exists, no analysis has been done on the cases. The number of cases with Schizophrenia and Substance Induced Psychosis (SIP) is growing and should be analysed. If in-depth analyses are done, it could provide occupational therapists with valuable information on the success of their interventions and if it indeed effects change in the activity participation of people with SIP and Schizophrenia.

1.2 Statement of the problem

Substance abuse is a global concern; it places stress on the economy, communities and healthcare systems. Research shows that psychotic disorders and co-morbid substance abuse result in a decrease of functioning. However, the association between substance abuse and activity participation in psychotic disorders has not been explored. The age group of MHCUs, presenting with substance abuse and SIP, are young adults, who, at this stage of their lives should be settling (or have settled) into employment, family life and becoming productive members of their community. Investigating the relationship and quantifying the deficits of the activity participation will allow occupational therapists to target treatment programmes efficiently.

1.3 Purpose of the research

The purpose of the research is to explore the association between psychosis, substance abuse and activity participation of MHCU in an on-going data base.

1.4 Aim of the research

The aim of the study was to explore the deficits in activity participation in MHCUs with a psychotic disorder such as Schizophrenia, compared to those users with a psychotic disorder with substance abuse such as SIP.

1.5 Research objectives

1. To describe the deficit profile of the eight domains of activity participation for MHCUs with SIP and substance abuse and Schizophrenia without substance abuse on admission and discharge.
2. To explore associations between he independent variable of age in MHCUs with SIP and Schizophrenia; and the dependent variable of activity participation for admission and discharge.
3. To determine if a significant difference exists between the activity participation of SIP and Schizophrenia
4. To determine if cognition (as determined by the domain of Process skills) is significantly more impaired in SIP or Schizophrenia.

1.6 Justification and use of the results

The substance abuse problem is severe and is experienced worldwide. This trend is also seen in South Africa, with a large number of individuals who present to local hospitals because of substance abuse. Many individuals are seen with mental health complications due to substance abuse, which results in a decline of activity participation and cognition, as seen clinically in many psychiatric hospitals. This trend of mental health complications and decline in function are reported globally and are a major concern (United Nations Office on Drugs and Crime, 2015; Caton, et al., 2007). The study will provide information of the deficits of activity participation of MHCUs and may assist occupational therapists to develop targeted intervention plans. This study also highlights the usefulness of databases on activity participation and how retrospective data can provide evidence of service delivery.

1.7 Organisation of report

This report is organised into six chapters. The second chapter is the literature review, and contextualises the study and discusses recent findings in the areas of substance abuse, activity participation and psychosis. Chapter Three describes the methodology and the procedure in order to analyse data in order to meet the objectives of the study. Chapter Four gives an account of the results that were concluded from the study. Chapter Five relates the discussion of the findings and

the impact thereof, on clinical practice. Lastly, Chapter Six concludes the study with the important finding and the implications of the research.

Chapter two: Literature review

2.1 Introduction

In this chapter, the substance abuse problem will be discussed from an international, national and provincial perspective, as well as the role South Africa plays in the international substance abuse crisis and the affect it has on Gauteng will be illustrated. Literature sourced from databases such as CINHAL, Medline, Scopes, Psych online and Google Scholar were used. Time limits of 15 years were used, however seminal articles of the 1980s were also included. Key words included substance abuse, Schizophrenia, SIP, activity participation, occupational therapy, mental health care users, recovery and functioning. This chapter will also examine the implications that substance abuse has on mental health and psychosis in particular, as well as the affect psychosis has on an individual. Furthermore, this chapter will discuss how these variables negatively impact on an individual's day-to-day functioning and cognitive processes. Presenting these topics emphasises the context for this study and its importance.

According to Robertson (2001), the maladaptive pattern of substance use leads to a significant impairment in functioning or distress. The continuum of substance intake starts with use, followed by misuse, then abuse, ending up in dependency. Substance use disorders are further described as being chronic, episodic and often re-lapsing. The number and degree of symptoms arising over a 12-month period will determine the extent of abuse. Whereas substance use is not considered significant in a clinical setting, misuse of substances may be so. It becomes a disorder that is described in the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM IV), when there is abuse or dependence. There are various Substance-induced disorders described in the DSM IV and these include: "intoxication, withdrawal, delirium, persisting dementia, persisting amnesic disorder, psychotic disorder, mood disorder, anxiety disorder, sexual dysfunction disorder and sleep disorders" (Robertson, 2001).

The fifth edition of the DSM has recently been introduced. There are some differences between the fourth and fifth edition in terms of the diagnosis and classification of MHCUs who are using substances. Whereas DSM IV used the terms substance abuse and substance dependence to classify MHCUs, the DSM 5 phrases the diagnosis as substance use disorders. There are now quantifiers, which are attached to the diagnosis, which describe the severity of the disorder as mild, moderate or severe. The level of severity is determined by the number of diagnostic criteria met by a MHCU. Substance use disorders are diagnosed when the ongoing use of substances cause an impairment

that affects the MHCU clinically and functionally. This may include health complications, social and academic declines, cognitive fallout and a decrease in working abilities (Enomoto, 2015). Although there is a new classification of substance use disorders in DSM 5, this did not alter the study in any way.

2.2 International status of substance abuse

Globally the use of substances is described as a crisis, and rightfully so. In terms of reporting on international trends, one of the most comprehensive documents is the annual World Drug Report, compiled by the United Nations office on Drugs and Crime, the most recent of which was published in 2016 and describes statistics from 2006 - 2014 (United Nations Office on Drugs and Crime, 2016). Statistics from this report showed that approximately 247 million people use substances and of this number, 29 million people are estimated to suffer from substance use disorders. Due to the high prevalence of substance abuse, the burden placed on healthcare services is extremely high. The number of deaths resulting from substance was estimated at 207,400 in 2014, and included substance abusers who have died as a result of accidental overdose (United Nations Office on Drugs and Crime, 2016). On a global level, Cannabis is the most widely used drug (183 million people having used the drug in 2014). This is followed by amphetamine use, with an estimated 33 million users (United Nations Office on Drugs and Crime, 2016). Both of these substances remain the source of potential harm and have major health implications.

To illustrate the substance abuse crisis, Figure 2.1 illustrates the number of adults (aged 15 to 64) who have used substances during the period of 2006 – 2014.

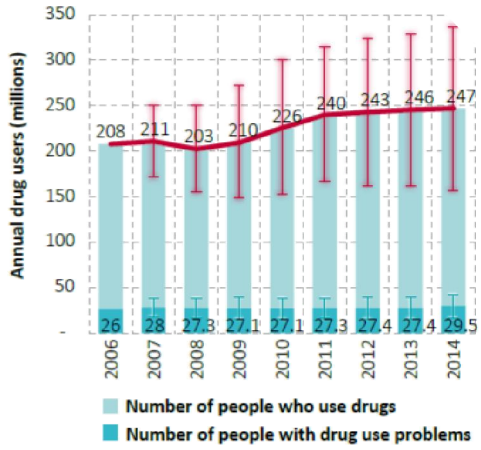


Figure 2. 1 - Global trends in the estimated number of drug users, 2006 – 2014 (United Nations Office on Drugs and Crime, 2016)

What is evident from this figure, is the steady rise in substance abusers since 2006; an increase of 38 million users in the world in the space of seven years. This drastic and steadily increasing number of substance abusers is also evident in South Africa and will be described in the following paragraph.

2.3 National status of substance abuse

The global trafficking of drugs is an area of concern and what is worrying, is that South Africa is a national hub on the drug trafficking route. This means there is a supply of drugs to the country, thus an easier access of drugs to people and in turn, an increase of substance abusers in the country (Parry & Pithey, 2006; Peltzer, et al., 2010). South Africa has an extremely high number of cannabis cultivators and cannabis users when ranked in the world, with more than 8% of the population using cannabis (Hall, 2009).

The figures below illustrate the drug trafficking route for substances and illustrate how South Africa fits into the global drug trafficking route. To further emphasise the national burden, South Africa is a trafficking hub, being affected by the global flow of, not only methamphetamines, but for cocaine and heroin as well (United Nations Office on Drugs and Crime, 2016).

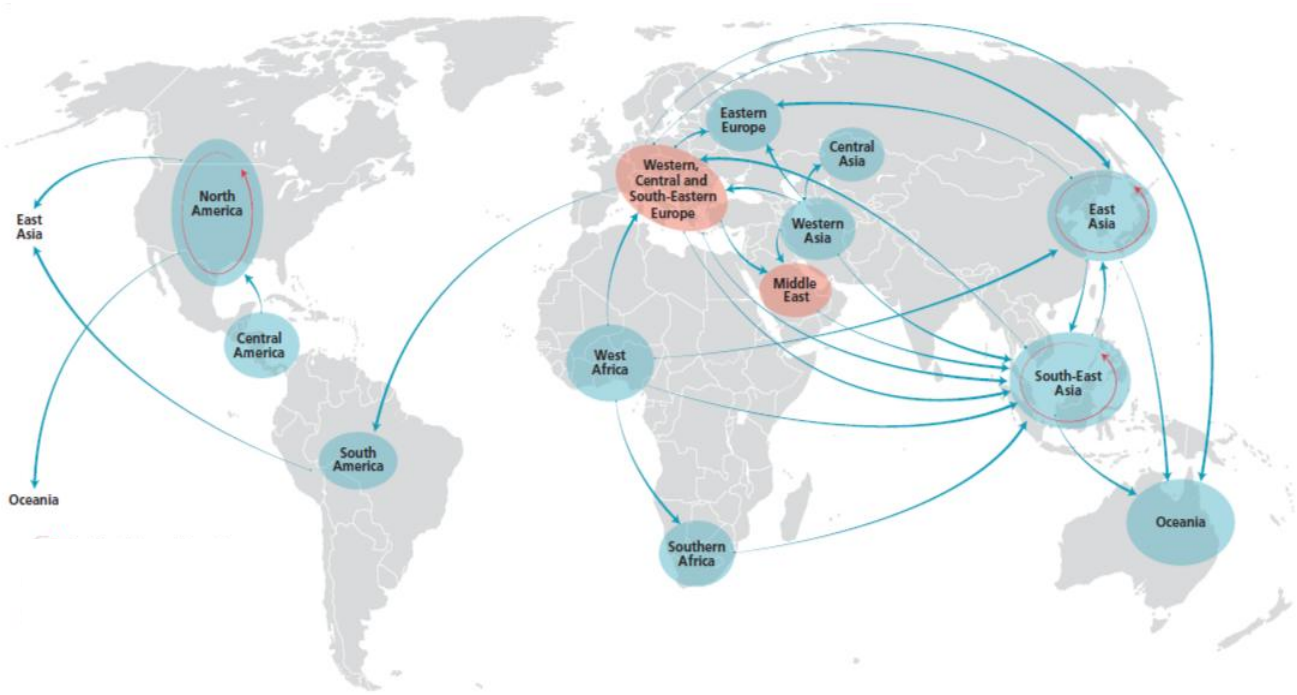


Figure 2. 2 - Methamphetamine flows as perceived by recipient countries, 2011-2014 (United Nations Office on Drugs and Crime, 2016).

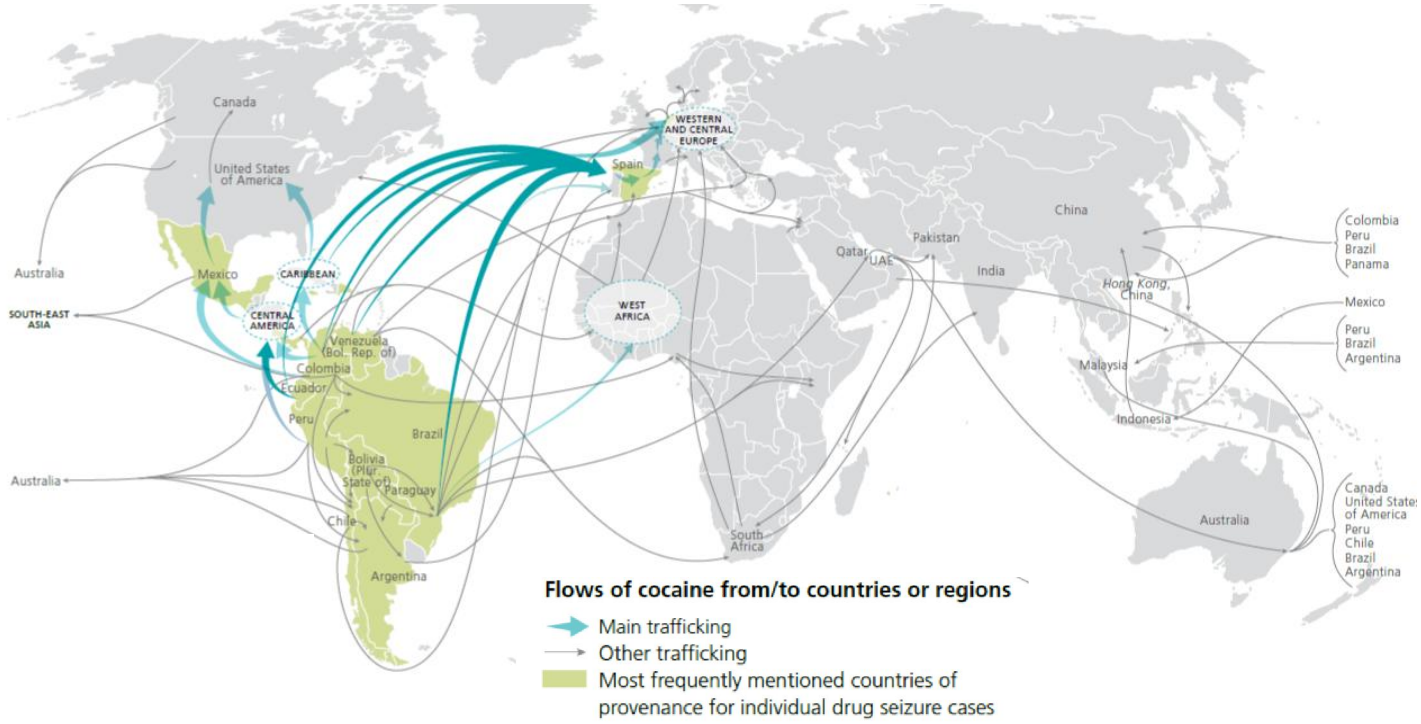


Figure 2. 3 - Main global trafficking flows of cocaine (United Nations Office on Drugs and Crime, 2016).

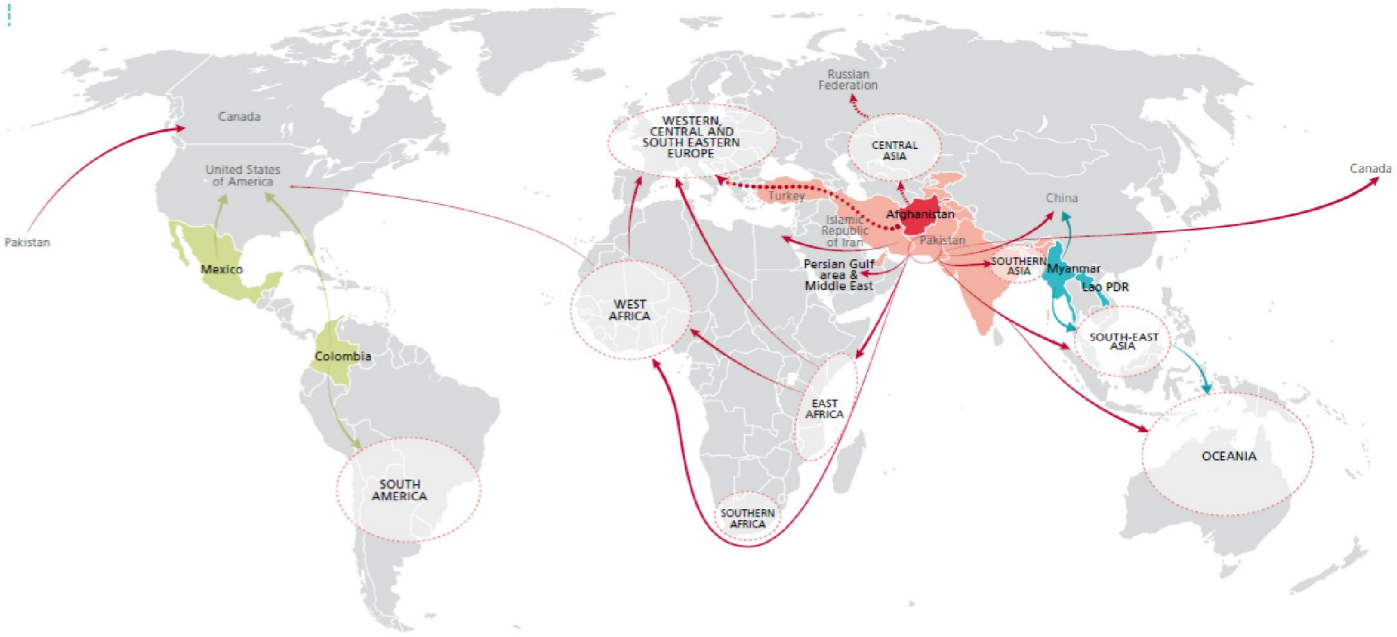


Figure 2. 4 - Main global traffic flow of heroin (United Nations Office on Drugs and Crime, 2016).

The Health Systems Trust (2016), in response to the United Nations Office on Drugs and Crime (UNODC) report, acknowledged South Africa to be a focus point for drug trafficking, which makes it a popular transit zone for illegal substances.

Since South Africa has access to different substances on the trafficking route, it stands to reason South Africans are using more than one substance (Magidson, et al., 2016). This is also seen in clinical practice, as MHCUs are very often admitted with poly substance abuse.

Cannabis, or Marijuana, is the most extensively used drug in South Africa, followed by methaqualone (known as Mandrax) and cocaine. An increase in heroin use, particularly amongst affluent school children, was also noted (Health Systems Trust, 2016). To further illustrate the extent of drug use in South Africa, the number of arrests for heroin use has increased eight-fold since the mid-1990s. Fifty-one percent of the people treated for heroin addiction report injecting the drug, as their preferred method of intake (Health Systems Trust, 2016), a method with grim implications for the rate of spread of HIV/AIDS in the country.

There is an increase not only in the use of drugs, but also in the manufacturing of drugs in South Africa. The foremost manufactured drug is Mandrax, reflected in the seizing of vast quantities of the raw chemicals used in its manufacturing during police raids throughout the country (Health Systems Trust, 2016).

Drug trafficking is not the end of the criminal acts, there are numerous subsequent illegal activities taking place including organised crime, the increase in immigrants and international trade links, the exchange of hijacked cars across South Africa's land borders in return for illicit drugs, from car hijackings and robberies, the smuggling of firearms, stolen cars, endangered species and precious metals. The increase of drug use not only is a burden to the judicial system, but also the economy of the country. The national status of substance abuse is dire and increasing, with an end nowhere in sight. In Gauteng, the province in which the study was conducted, the same trend can be seen (Lewinsohn, et al., 1995; Health Systems Trust, 2016).

2.4 Provincial status of substance use

A few studies have been conducted in Gauteng with MHCUs and substance abuse. One study conducted in Gauteng, explored the risk factors for relapse amongst substance abusing young adults. Their findings showed that young adults are functioning within environments that are not conducive to recovery and that the availability and accessibility of drugs are increasing evermore

within their communities (Swanepoel, et al., 2016). From this study alone, the impact and the perpetuating cycle of drug use and abuse can be envisaged.

There is a paucity of literature on the provincial status of substance abuse. A few studies have shown the prevalence of substance abuse at a government hospital in Gauteng. In one year, the most common diagnoses seen in the psychiatric ward were Schizophrenia (29%) and substance-related conditions (21%) (Janse van Rensburg, 2010). Another study conducted at the same hospital showed that there are unfavourable nursing to MHCU ratios negatively influencing intervention. The number of MHCUs that are admitted from other African countries are underrated. Furthermore, the numbers of admissions to the ward due to non-compliance in MHCUs who are abusing substances (Janse van Rensburg, 2007). Substance abuse was also found to be a cause for concern in forensic hospitals. A study was conducted at Sterkfontein forensic unit (Morgan, 2016), which is also situated in Gauteng. This study suggested that forensic MHCUs with co-morbid substance abuse were more likely to reoffend post discharge. The few studies above is a good representation of what is seen in the clinical settings but none of these studies include the problems in functioning or activity participation in the Gauteng provincial hospitals.

There is a distinct link between mental health and substance abuse, this topic will be discussed in the paragraph that follows.

2.5 Substance use and Schizophrenia

Substance abuse has a considerable impact on the course of mental illness and MHCU outcomes. However, study results are quite varied owing to the wide-range of research with different designs being completed in different geographic locations. There is also some difficulty in quantifying the results from different studies, because MHCUs tend to use poly substances and not purely one type. Some of the studies reported below are older than 10 years, yet the findings are still relevant and worthwhile to report.

Schizophrenia is a mental illness, with the main symptom being psychosis. Given the varied research, there is a general understanding that Schizophrenic MHCUs with comorbid substance abuse show a greater number of relapses than those who don't use substances. A study by Linszen et al. (1994), showed not only an increase in the frequency of relapses but also that the relapse rate was dosage dependant on cannabis intake (Dixon, 1999; Ngrete, et al., 1986). In a twelve month longitudinal study, the time taken for MHCUs to relapse increased significantly for those diagnosed with Schizophrenia and used cannabis, when compared to MHCUs diagnosed with Schizophrenia and did

not use cannabis (Linszen, et al., 1994). The findings thus showed that persons with Schizophrenia and co-morbid substance abuse had more relapses

The relationship between the onset of Schizophrenia and the start of substance abuse is not easily defined because it is difficult to distinguish which is the causative factor and which is the symptom. There is evidence supporting both - that MHCUs with mental illness are more likely to use substances and, that substance abuse leads to the onset of Schizophrenia (Dixon, 1999; Drake, et al., 1998; Smith, et al., 2015). In an older but pertinent research, it was found that alcohol abuse more often followed, rather than preceded the first symptom of psychosis. With regard to drug abuse, in 27.5% of MHCUs the drug abuse preceded the first psychotic symptom and in 37.9% of MHCUs, it followed the psychotic symptoms (Hambrecht & Häfner, 1996).

Recent studies, including epidemiological studies, have proposed that taking of substances indicate a significant risk factor in the development of Schizophrenia (Goerke & Kumara, 2013; Addington, et al., 2006; Amar & Potvin, 2007; Estrada, et al., 2011). From the research there is evidence for a significant relationship between substance abuse and Schizophrenia. With the use and distribution of substances being so great, the relationship between substance abuse and psychosis needs to be explored and the effect on functioning should be investigated.

2.6 Functional implications of substance use and Schizophrenia

To determine the functioning of an individual, occupational therapists assess holistically, critically reviewing performance in all performance areas, defined as: work, leisure, sleep and rest, personal management (The American Occupational Therapy Association, 2014). Although some literature can be found on certain aspects of functioning, there is a paucity of literature on activity participation deficits in all areas of an individual's functioning.

Although an older study, the trends found in this article still apply to the MCHUs treated in hospitals and clinics. This study describes substance abuse disorders being related to a variety of poor outcomes, including increased rates of relapse and rehospitalisation, homelessness, legal problems, violence, treatment noncompliance, HIV infection and family stress (Drake & Brunette, 1998).

Silaule (2017) measured the activity participation of MHCUs in a rural Gauteng government hospital. Thirty three percent of the sample were diagnosed with SIP and had substantial limitations in activity participation. Silaule used the APOM to track changes in this population from baseline to discharge. At discharge, the average level was Self-presentation: patient-directed to transitional level (score of 8 to 9 on the APOM). This is an insufficient level of functioning to cope with demands in the

community. This study showed that activity participation with substance abusing MHCUs is restricted and should be addressed in occupational therapy programmes (Silaule, 2017).

The functional decline of MHCUs who use substances and schizophrenic MHCUs with comorbid substance abuse is evident in clinical practice but there is a paucity in the literature and few studies could be located to substantiate the evidence in clinical practice. Ikiugu, et al. (2017) conducted a meta-analysis on the clinical effectiveness of occupational therapy in mental health and found some studies where occupational therapy programmes successfully addressed social skills, life skills, Activities of Daily Living (ADLs), neurocognitive interventions as well as vocational training. However, none of these studies included substance abuse. This meta-analysis also found that occupational therapy have a small effect on well-being of mental health care users (Ikiugu, et al., 2017).

2.7 Cognitive deficits seen in substance abuse and Schizophrenia

Long term use of cannabis has been shown to be detrimental to an individual's cognitive functioning, physical health and wellbeing, as well as engagement with his or her physical environment. Cognitive functioning is impairments in memory and attention, which become more pronounced as the years of use increase, as well as an increased risk for motor vehicle accidents, impairments in respiratory functioning and cardiovascular disease (Hall, 2009; Jacobsen, 2004).

Bartley (2012), in his research on the use on alcohol and its longitudinal effects on cognition are, described deficits in the areas of working memory, problem solving, patterns of regional brain activity and grey and white matter volume. He also reported psychosocial problems that arise and become problems with the MHCU's primary and secondary social group, which include crime and violence, family, spousal and child abuse as well as legal predicaments such as driving while under the influence (Robertson, 2001).

Studies by Bowie (2005) and Tsang et al. (2010) showed the deficits experienced by MHCUs diagnosed with a psychotic illness include a variety of neurocognitive impairments including language skills, attention, executive functioning, verbal learning and memory, with these deficits and impairments negatively affecting the vocational and remunerative opportunities for those diagnosed with a psychotic illness.

A study by Wolhuter (2014), using the APOM to establish if there was a difference between the activity participation of MHCUs with Schizophrenia with no substance or alcohol abuse and MHCUs diagnosed with SIP, found that the SIP group had slightly higher activity participation levels in the first week of admission to the hospital. Although the activity participation levels were higher than the Schizophrenia group, it was still at a level of Self-presentation, transitional phase, which is not

sufficient to manage the demands of everyday life outside the hospital. De Rosse et al. (2010) found a similar trend when a Schizophrenia group without cannabis abuse was compared to MHCUs with psychosis and cannabis abuse. In this study the cannabis group performed better in processing speed, verbal fluency, verbal learning and memory and their Global Assessment of Functioning (GAF) score was also higher than the Schizophrenia group.

To further illustrate the effects on cognitive abilities, a study that examined at the effects of chronic cocaine abuse on memory and learning. Their findings proposed residual definite impairment in efficiency of verbal learning and suggested that the amount of cocaine used was significant. The research found that the higher the doses of cocaine used and the more frequent the usage, the more significant the decline in memory (Mittenberg & Motta, 1993).

More recently, similar findings illustrated that chronic abuse of poly substances impacts on the neural memory systems, which include the structures involved in the Papez circuit. This has a follow-on effect on cognitive impairments, in which memory dysfunction is most noticeable (Robbins, et al., 2008). Structures in the Papez circuit are important in the consolidation of memory; especially affected by substances is the nucleus accumbens. Researched identified that, the nucleus accumbens has the ability to form neural pathways for specific habits, if the reward is great enough, such as the use of substances. This reward pathway increases habit forming behaviour and addiction to the substances (Deadwylera, et al., 2004). Thus, addiction to substances can be understood as a pathological subversion of the brain's normal learning and memory processes. This subversion is reinforced by any stimuli that is related to the substance, and this leads to the creation and consolidation of habitual drug-seeking behaviour. The use and the habitual drug seeking behaviour leads to increases in substance intake, which leads to, amongst others, memory difficulties.

A study by De Rosse et al. (2010) explored the cognitive abilities of people diagnosed with Schizophrenia with and without cannabis abuse. Their test battery for memory deficits included a verbal learning test, a word association test (naming animals) and a processing speed test, which is part of the Wechsler Adult Intelligence Test. The MHCUs in the Schizophrenia with cannabis abuse group, performed better in this study which highlights the controversy of the therapeutic effects of cannabis on cognition.

However, Bahorik, et al. (2014) and Eakman (2010) found the opposite result when doing a similar study; their study revealed no positive outcomes for the group who used substances. In their article, written by Bahorik, et al., (2014) an extensive list of previous studies (in excess of 25 studies) was referred to, showing the inconclusive results of studies between neuro-cognition and substance abuse.

Studies measuring the cognitive deficits and activity participation in substance abuse groups show varying results. From the studies above, batteries of tests were used and sometimes parts of tests; the GAF was used in one of the studies to measure functioning. None of these tests are used by occupational therapists as they do not necessarily cover the comprehensive domain of occupational performance skills, such as memory in everyday functioning, or aspects such as role performance and balanced life style.

2.8 Measurement of activity participation and memory deficits in mental health

A number of assessments for activity participation have been published in occupational therapy literature. These include the Australian Therapeutic Outcome Measure (AusTOMs) (Perry, et al., 2004), the Model of Human Occupation Screening Tool (MOHOST) (Parkinson, et al., 2008), the Meaningful Activity Participation Assessment (MAPA) and the Assessment of Motor and Process Skills (AMPS) (Fisher & Jones, 1999). Although these assessments address aspects of occupational performance and are relevant for occupational therapists, they have not been validated for the South African population.

One assessment of activity participation validated for the South African population is the APOM, developed by Casteleijn (2010), specifically for the adult mental health population. Its theoretical foundation is the Vona du Toit Model of Creative Ability (VdTMoCA). Du Toit postulated several fundamental premises for the model of Creative Ability, for example that "the manifestation of creative ability, gives evidence of the level of the psychical development" (Du Toit, 1980, p. 7) of an individual. "The level and quality of an individual's psychical development will, and in fact must, determine the nature, quality and extent of his creative ability" (Du Toit, 1980, p. 7). Du Toit made it clear the term creativity should not be confused with the artistic meaning, or seen as in an individual who possesses a certain quantity of creativity. Her meaning of creativity refers to the motivation of a person to create something of himself in his everyday doing and being. For this reason, du Toit urged occupational therapists to use specific and functional terms such as creative capacity, creative response, creative act and creative participation (Du Toit, 1980). These terms have specific meaning and De Witt (1997) described them as the growth factors that are used to facilitate growth from one level of creative ability to the next.

The level of psychical development has two components; motivation and action. Motivation governs action and action is the manifestation (in the form of observable behaviours) of motivation. A table

with the levels of creative ability expressed in motivation and action was developed. It is these levels of motivation and action that are indicative of a person's level of activity participation. The table has undergone small changes but Table 2.1 is the most recent (De Witt, 2014).

Table 2. 1 - Levels of creative ability expressed in motivation and action

Motivation	Action
1. Tone	1. Purposeless, unplanned action
2. Self-differentiation	2. Incidentally constructive or unconstructive action
3. Self-presentation	3. Constructive, explorative action
4. Passive participation	4. Norm awareness, experimental action
5. Imitative participation	5. Norm compliant action
6. Active participation	6. Transcend norms, individualistic and inventive action
7. Competitive participation	7. Competitive centred action
8. Contribution	8. Situation centred action
9. Competitive contribution	9. Society centred action

Du Toit and colleagues developed descriptors for each level of motivation as well as for the action levels; a summary of these descriptions is available in De Witt (2014, p. 8). A person gradually moves from one level to the next. When a person is in the beginning of a level, it is called the therapist-directed phase; the person needs support from his/her therapist (or another person) to maintain this level. As soon as he/she does not need the support, he/she moves to the patient-directed phase. When the person shows signs of the next level, he/she moves to the transitional phase. Although the VdTMoCA is complex, it has many foundational premises from developmental, phenomenological and existential theories, it is a comprehensive model that addresses many aspects of a person's functioning in everyday life. It takes practice to *level* a person on the correct level, as well as establishing the phase in the level. A drawback is that the model is not well researched or disseminated. Its use is limited to clinical practice in South Africa and the United Kingdom.

Casteleijn (2012) used the first six levels of creative ability to develop a scoring system for the APOM. She also used the phases within the levels to determine a minimum score of 1 for a specific item and a maximum of 18. There are 53 items in the APOM and each item has descriptors. The

items are grouped into eight domains, namely Process skills, Communication/Interaction skills, Life skills, Role performance, Balanced lifestyle, Motivation, Self-esteem and Affect.

The psychometric properties of the APOM are reported by Casteleijn (2010) to be good. The APOM is a valid measure, with good content and construct validity for activity participation for the South African population of MHCUs. To date, several other validation studies have been done but mainly through MSc studies (Camp, 2015; Pillay, 2016; Silaule, 2017). These studies reported good responsiveness of the APOM to track changes in MHCUs as well as traumatic brain injuries. Brooke (2015) also tested inter-rater reliability among three raters and found no statistical difference between the three raters for the five MHCUs, whom they rated three times. The database used for this study is a compilation of APOM scores of MHCUs from different mental health care settings.

2.9 Conclusion

Substance abuse is a worldwide problem, with South Africa and Gauteng having rising numbers of people abusing substances and progressing to the stage of dependency. With the strong link between psychosis and substance abuse and the paucity of literature of activity participation deficits and process skills in all performance areas of a MHCU, this chapter illustrated the need for investigations into the association between activity participation, psychosis and substance abuse. Measurement of activity participation by means of the APOM in occupational therapy has been described to be beneficial, however not sufficiently researched. Research is therefore needed to highlight the association between these variables in order to optimise intervention for the widespread diagnoses that include psychosis and substance abuse.

Chapter three: Methodology

3.1 Introduction

This chapter describes the outline and considerations for the methodology of the study. It provides an overview of the research design, the process of data collection and methods for data analysis, and ends with the ethical considerations.

3.2 Research design

A quantitative, descriptive, retrospective case study design with correlations was used. A quantitative design was selected for this study as it was a systematic inquiry with predetermined objectives that focused on a specific concept namely activity participation in SIP and Schizophrenia. Data were collected with a formal instrument, the APOM, and analysed in an objective manner with descriptive statistics including, frequencies, comparisons correlations and effect sizes. The study was also retrospective as it analysed variables that occurred in the past; APOM data were collected by occupational therapists in the past and captured in a database. The case study design was added, as cases from a database were analysed (Brink, et al., 2007). A record review is a form of case study design as a MHCU record is the same as a case. Therapists classified MHCUs as per their diagnoses and recorded this onto the database. A MHCU was selected if he/she has the diagnosis of SIP or Schizophrenia. These diagnoses were chosen in order to compare functioning between psychotic MHCUs and psychotic MHCUs who also abuse substances.

3.3 Sample size and selection criteria

Participants in this study were both males and females, between the age of 16 and 75 years; a group diagnosed with psychosis and a co-morbid substance abuse disorder, substance induced psychosis, and a group diagnosed with psychosis without substance abuse, Schizophrenia. Seventy-five years of age was used as the cut-off age for the purpose of the study, as this age group between (sixty-five and seventy-five), is the average age of onset of cognitive deterioration and other old age-related memory disorders, which include a decline in occupational and social performance. (Fabbri, et al., 2016; Deary, et al., 2009).

3.3.1 Inclusion criteria

- MHCUs diagnosed with SIP.
- MHCUs diagnosed with Schizophrenia.
- Between the ages of 16 and 75

3.3.2 Exclusion criteria

- MHCUs with diagnosed intellectual disabilities.
- MHCUs with diagnosed general medical conditions, including traumatic brain injuries.
- Personality disorders.

These disorders were excluded as their activity participation is influenced by too many other factors such as cognition, medical conditions and defence mechanisms.

Intellectual disabilities present with cognitive dysfunction in terms of intellectual quotient (IQ), concept formation, learning, general knowledge and memory. General medical conditions were thus added to the exclusion criteria as these conditions may have symptomatology presenting in cognitive decline, confusion or delirium. Personality disorders present with defence mechanisms which may result in inconsistent activity participation. These factors would have skewed the results, showing greater deficits than there would otherwise be.

3.4 Measuring instruments

3.4.1 Activity participation Outcome Measure (APOM)

The database is a collection of APOM results that have been collected by occupational therapists at different facilities in South Africa between 2012 and 2017. Occupational therapists who are using the VdTMoCA in everyday practice and attended a one-day APOM training are eligible to use the APOM. This outcome measure allows an occupational therapist to record participant's level of creative ability. Although the APOM was designed to track change over time, it can also be used to establish a cross-sectional assessment of activity participation, as done by Wolhuter (2014) in a previous study. The outcome measure was developed and researched within South Africa and is therefore valid and reliable in the South African context (Casteleijn, 2010; Silaule, 2017; Brooke, 2015).

The APOM consists of eight domains of activity participation including; Process skills, Communication/interaction skills, Lifeskills, Role performance, Balanced lifestyle, Motivation, Self-esteem and Affect. The APOM scores allowed for accurate assessment of the level of activity

participation (Casteleijn, 2012). The scoring system is based on the levels of creative ability, as described in the VdTMoCA (Casteleijn, 2010). The first six levels of creative ability with the three phases within each level constitute the scores, with the lowest score being one and the highest score 18, as seen in Table 3.1. Appendix A contains the scoring structure of the APOM.

Table 3. 1 - The scoring structure of the APOM

Creative ability level	Low Creative Ability								
Motivation level	*Tone*			*Self-differentiation*			*Self-presentation*		
Phases	Therapist-directed	Patient-directed	Transition	Therapist-directed	Patient-directed	Transition	Therapist-directed	Patient-directed	Transition
Score	1	2	3	4	5	6	7	8	9
Creative ability level	Medium Creative Ability								
Motivation level	*Passive Participation*			*Imitative Participation*			*Active Participation*		
Phases	Therapist-directed	Patient-directed	Transition	Therapist-directed	Patient-directed	Transition	Therapist-directed	Patient-directed	Transition
Score	10	11	12	13	14	15	16	17	18

3.5 Data collection procedures

Ethical permission was granted to Casteleijn for the generation of the database (Ethical number M121170) (see Appendix B). Permission to conduct the study was first obtained from Casteleijn to analyse the existing database. The existing database was scrutinised to extract the cases that met the inclusion and exclusion criteria. Each selected case was recorded on a new Excel sheet with a research number, gender, age and APOM scores for admission and discharge.

As the study was a retrospective record review an ethics waiver application was sent to the University of Witwatersrand Research council. This waiver was granted and analysis of the database commenced. (See Appendix C)

3.6 Data analysis

Demographic profiles of age, gender and diagnosis were described in terms of means and frequencies. Descriptive analysis was used to describe the deficit activity participation profiles of all the cases. Medians and standard deviations was calculated per domain and per admission and discharge.

The programmes used for data analysis were Excel and Statistica version 13.2. Data for objective 1 (deficit activity participation profile) were all cases that have admission and discharge APOM scores. Data for objective 2 (correlation between age and activity participation) were the ages of cases and their APOM scores. Data for objective 3 (comparing SIP and Schizophrenia) consisted of the composite APOM scores (all eight domains) of the cases with substances (SIP diagnoses) as well as matching set of data of cases without substance abuse (Schizophrenia). The set of data for objective 4 (if cognition deficits are significant) was the scores for the Process skills domain only of the two diagnostic groups.

Test for normality of the data was done with the Shapiro Wilk test. This procedure was done to get an estimation if the data in the research resembles the population. A normal distribution allows the researcher to generalise results to the population described in the study.

Correlation coefficients (Spearman rank order) were calculated to determine if there are associations between age and admission and discharge APOM scores. Correlations between age and effect size was also done. The strength of the correlation was judged against criteria of 0 – 0.20 as negligible correlation, 0.20 – 0.40 as a low correlation, 0.40 – 0.60 as moderate correlation, 0.60 – 0.80 as high correlation and 0.80 – 1.00 as a very high correlation. Correlations were also interpreted in terms of statistical significance, with a p value <0.05 as significant.

Effect sizes (Cohen's d and Cohen's r) was calculated to determine the change in scores between admission and discharge. Cohen's r is a useful statistic to add to Cohen's d as Cohen's r is able to be interpreted as a percentage of change while Cohen's d can be an infinite number. Since the data were normally distributed, a paired t-test was done to determine the statistically significant difference ($p<0.05$) between the SIP group and the Schizophrenia group. It is important to note that a statistical difference with a p-value above 0.05 does not determine the effect size but showed that

the result did not happen by chance. Effect sizes (Cohen's d) of 0.2 are considered small, 0.5 as medium and 0.8 as high.

3.7 Procedures to ensure Ethical Considerations

An application for ethical waiver was submitted to the Human Research Ethics Committee of the University of the Witwatersrand prior to commencing data collection. There was no patient contact during this study. Patient information on the database is anonymous. The ethical waiver certificate was obtained, ethical number: M170764 (see appendix B)

3.8 Conclusion

This chapter has described the way the study was conducted and included information regarding the quantitative design, the sample of participants used, measuring tools and the analysis of the collected data. The following chapter will provide a description of these results.

Chapter four: Results

4.1 Introduction

This chapter illustrates the demographics of the sample and presents the results according to the objectives set for this study.

4.2 Demographics

The number of cases from the APOM database that fulfilled the inclusion criteria for this study was 240.

Table 4. 1 - Demographic data of SIP group Schizophrenia group

Age	Males - Number (%)			Females - Number (%)			Total - Number (%)		Total per age group
	SIP	Schiz	Total	SIP	Schiz	Total	SIP	Schiz	
≤ 19	5 (50 %)	5 (50 %)	10	0 (0 %)	2 (100 %)	2	5	7	12
20 – 29	65 (55.56 %)	52 (44.44 %)	117	3 (60 %)	2 (40 %)	5	68	54	122
30 – 39	12 (21.05 %)	45 (78.95 %)	57	1 (25 %)	3 (75 %)	4	13	48	61
40 – 49	1 (4.35 %)	22 (95.65 %)	23	0 (0 %)	2 (100 %)	2	1	24	25
50 – 59	0 (0 %)	13 (100 %)	13	0 (0 %)	2 (100 %)	2	0	15	15
60 – 69	0 (0 %)	2 (100 %)	2	0 (0 %)	2 (100 %)	2	0	4	4
≥70	0 (0 %)	1 (100 %)	1	0 (0 %)	0 (0 %)	0	0	1	1
Total	83	140	223	4	13	17	87	153	240

The 240 cases were divided into two groups: Substance Induced Psychosis (SIP, n=87) and Schizophrenia, n=153). The demographic information of the MHCUs are described, according to age and gender groups and presented in table 4.1. The largest age group was 20 – 29-year-old MHCUs (Category 2, n=122). The number of male MHCUs outweighed the number of female MHCUs in both SIP and Schizophrenia groups. From the sample 92.92 % were males (n=223) and 7.08 % were females (n=17).

Figure 4.1 illustrates the age range distribution per diagnostic group. Both groups peaked in the younger age groups but the SIP group showed a higher peak between 20 – 29 years. The findings suggest that SIP affects 20 – 29-year olds the most and Schizophrenia affects a wider age band, ranging from 20 – 49-year olds, and to a smaller extent, 50 – 59-year olds.

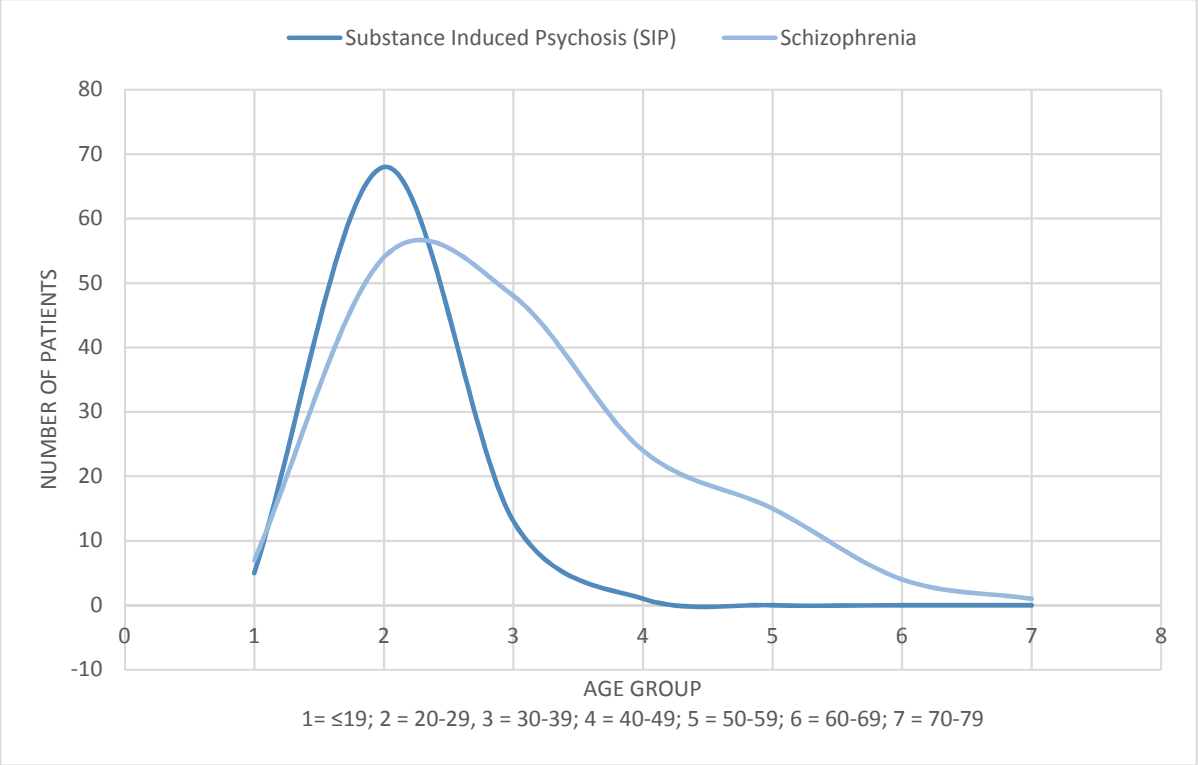


Figure 4. 1 – Age range distribution for diagnostic groups: SIP and Schizophrenia

4.3 Test for normality

The Shapiro Wilk test for normality for the APOM scores, for the total sample, showed the data were normally distributed, indicating that the distribution curve resembles the population described in

this research. The p value of 0.139 indicated the APOM data did not differ significantly from the requirements for normality. The histogram in Figure 4.2 illustrates the normal distribution curve.

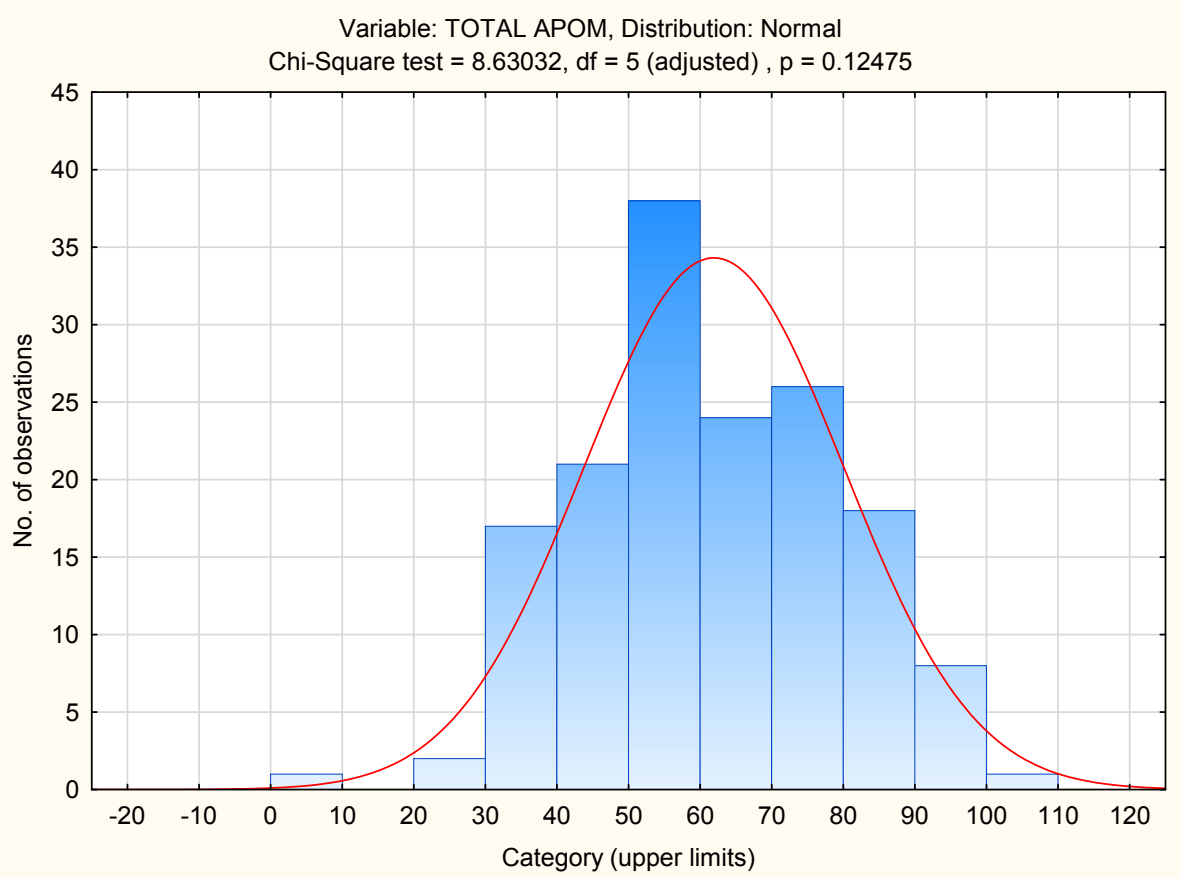


Figure 4. 2 - Normal distribution for the total sample of 240 on the APOM scores

4.4 Results for objective one

Objective one of the study intended to describe the deficit profile of the eight domains of activity participation, for both diagnostic groups, (i.e. SIP and Schizophrenia) on admission and discharge. Table 4.2 presents the measures of central tendencies for both these groups. Central tendencies were calculated on the composite scores of the domains of the APOM on admission as well as discharge. The composite score is calculated by using the mean and median of the items for each domain. This table shows that the average levels of activity participation is between seven and eight at admission and between seven and nine at discharge. These scores translate to creative ability levels of Self-presentation between therapist-directed (score of 7) and transitional phase (score of 9). Refer to table 3.1 for APOM scores conversion to levels of creative ability.

Table 4. 2 - Measures of central tendency for the domains of APOM on admission and discharge

Domains of APOM	Admission				Discharge			
	Valid n	Mean	Median	Lower	Valid n	Mean	Median	Lower
Process skills	240	8.310	8.000	7.000	77	9.221	9.000	7.500
Communication and interaction skills	240	8.190	8.000	6.500	77	9.136	9.500	7.500
Life Skills	240	7.650	7.000	6.000	77	7.870	8.000	7.000
Role performance	240	7.644	8.000	6.000	77	7.636	7.000	6.500
Balanced Life style	240	7.483	7.000	6.000	77	8.416	9.000	7.000
Motivation	240	7.713	7.000	6.000	77	8.558	8.000	7.000
Self-Esteem	240	7.804	8.000	6.000	77	8.260	8.000	7.000
Affect	240	7.917	8.000	6.000	77	8.987	9.000	8.000

The deficit profile is further illustrated in Figure 4.3 in terms of APOM scores on admission and discharge and is compared per groups (SIP and Schizophrenia).

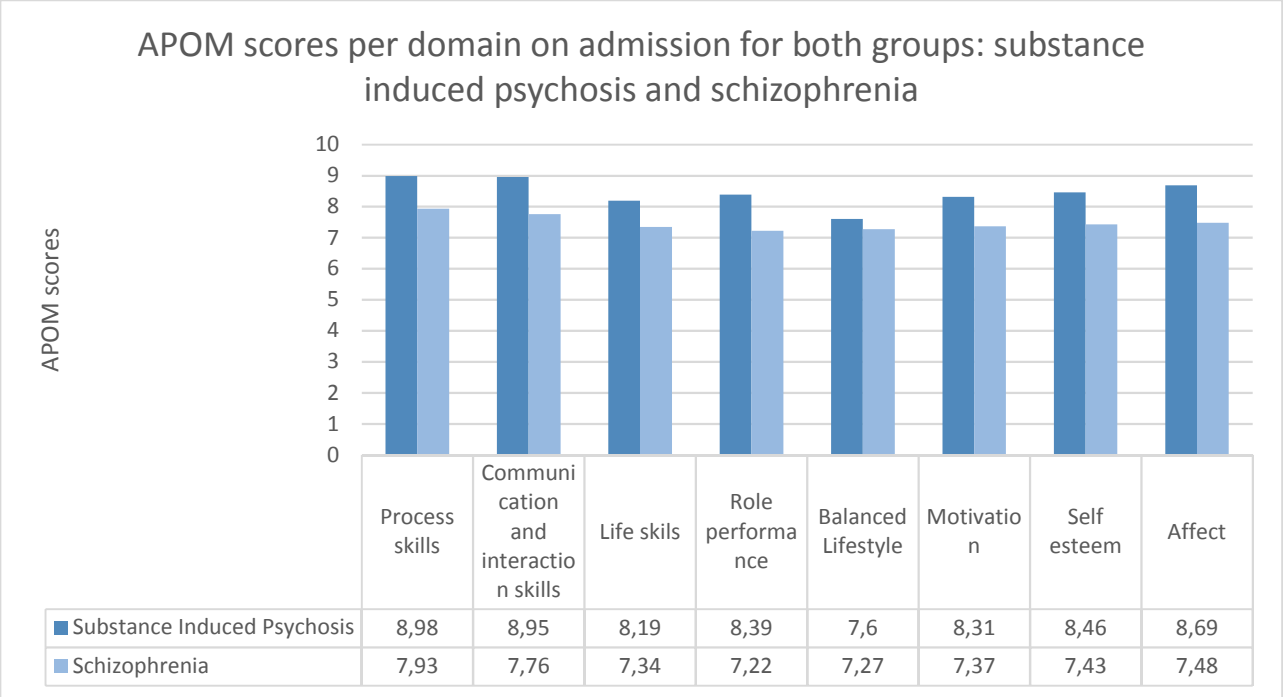


Figure 4. 3 APOM composite scores for both groups (SIP and Schizophrenia) on admission

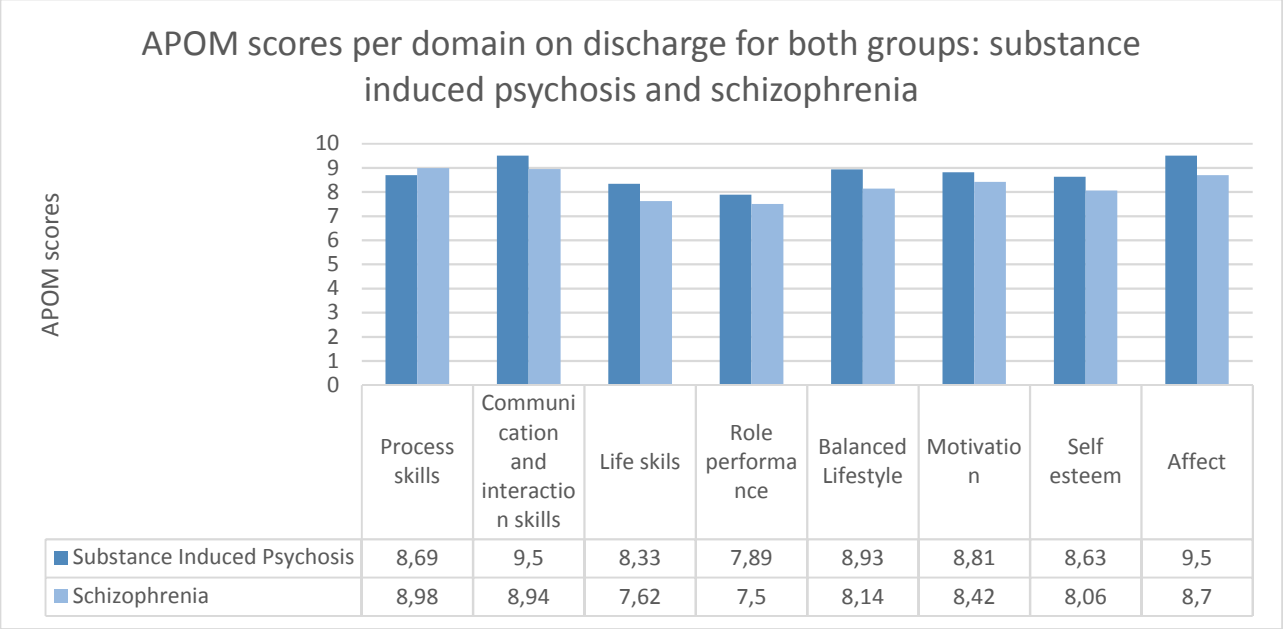


Figure 4. 4- APOM composite scores for both groups (SIP and Schizophrenia) on discharge

4.5 Results for objective two

Objective two intended to explore associations between independent variables of age and APOM scores for each diagnostic group, on admission and discharge. Table 4.3 shows the strength of the correlations (r) as well as the statistical significance (p value marked in red if significant).

For the SIP group, correlations on admission of three domains were statistically significant (meaning that the result did not happen by chance). The domains were Balanced lifestyle, Motivation and Self-esteem but they showed a low correlation with age groups, r = 0.343; 0.27 and 0.279 respectively. On discharge, the SIP group had significant results for four domains. Motivation showed a moderate correlation with age (r = 0.560). The correlation for Communication/Interaction skills and Self-esteem fell just within the high correlation category with r = 0.619 and 0.667 respectively. Role performance had a very high correlation of r = 0.825.

The Schizophrenia group had significant correlations for all eight domains on admission but with low correlations ranging between 0,201 and 0,302. There were no significant correlations on discharge.

Table 4. 3 – Correlation of age and APOM domains per diagnosis, on admission and discharge

APOM Domains	Values	Correlation Age with SIP baseline (n=87)	Correlation Age with Schizophrenia baseline (n=153)	Correlation Age with SIP discharge (n=27)	Correlation Age with Schizophrenia discharge (n=50)
Process skills	r	0.170	0.201	0.491	-0.033
Process skills	p value	0.149	0.018	0.089	0.851
Communication skills	r	0.198	0.302	0.619	-0.025
Communication skills	p value	0.093	0.000	0.024	0.887
Life skills	r	0.136	0.259	0.509	0.034
Life skills	p value	0.249	0.002	0.075	0.846
Role Performance	r	0.179	0.221	0.825	0.137
Role Performance	p value	0.129	0.009	0.001	0.433
Balanced lifestyle	r	0.343	0.223	0.470	0.001
Balanced lifestyle	p value	0.003	0.009	0.105	0.996
Motivation	r	0.270	0.280	0.560	0.029
Motivation	p value	0.021	0.001	0.047	0.868
Self-esteem	r	0.279	0.220	0.667	0.078
Self-esteem	p value	0.017	0.010	0.013	0.657
Affect	r	0.163	0.265	0.277	-0.075
Affect	p value	0.167	0.002	0.360	0.667

4.6 Results for objective three

Objective three was set out to determine if a statistically significant difference exist between the activity participation of MHCUs diagnosed with SIP and Schizophrenia at admission and discharge. This was done by using Mann-Whitney U test. Table 4.4 and 4.5 present the results for admission and discharge respectively. Significant results were found for seven of the eight domains on admission but only one significant result on discharge.

The Mann-Whitney U test showed if there are significant differences in activity participation between the two groups but does not show the extent of the difference. When there were pre-and post test scores, that is admission and discharge scores, effect sizes were calculated to determine the change. This illustrated the amount of change. Figure 4.5 displays the effect sizes of each domain

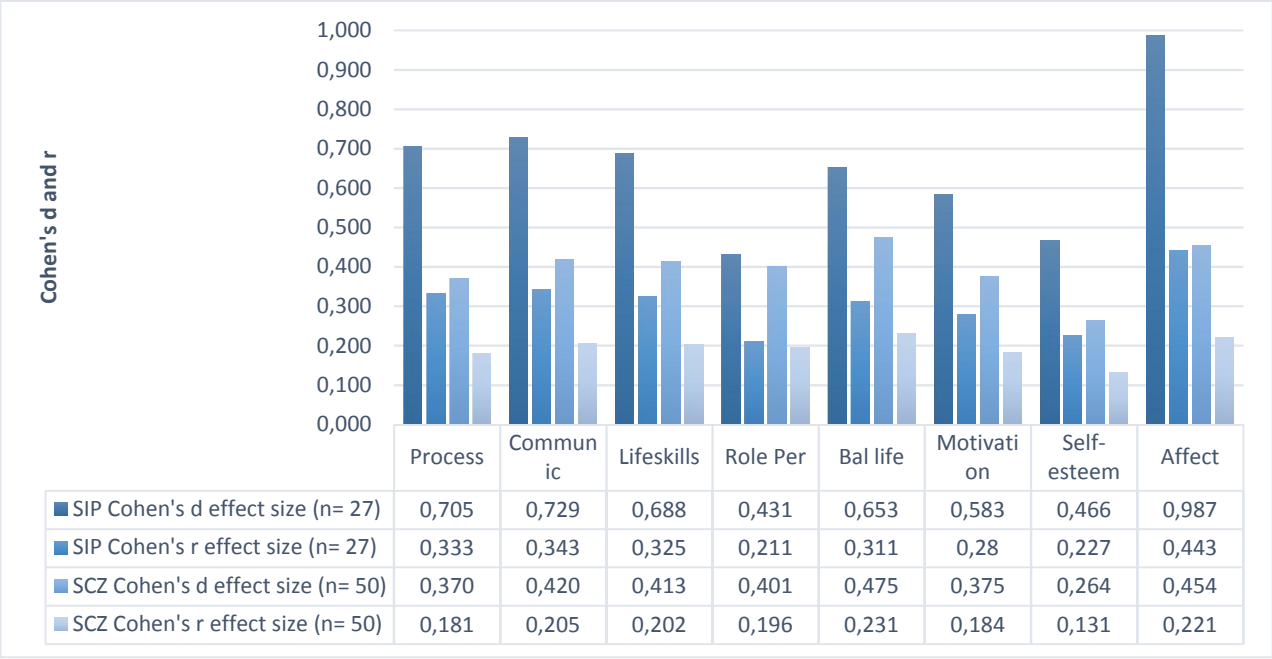
of the APOM. The y axis is a representation of Cohen's d and Cohen's r results. Both Cohen's d and r were included as Cohen's d gives the effect size using the mean difference divided by the standards deviation of the baseline scores. This number can be indefinite. Cohen's r converts the Cohen's d to a percentage thus varying between ±1 and 0. This makes comparing effect sizes between different samples more effective as percentages often gives a better indication of the magnitude of change. The effect sizes in Figure 4.5 generally showed medium change for the SIP group and small changes for the Schizophrenia group.

Table 4. 4 - Statistical significance between the diagnostic groups - SIP and Schizophrenia, on admission

APOM score per domains on admission	**Mann-Whitney U Test (w/ continuity correction) Marked tests are significant at p <.05000**						
	Rank Sum for SIP group	Rank Sum for Schiz group	U	Z	p-value	Valid n for Schiz group	Valid n for SIP group
Process skills	16963.00	11957.00	5182.000	-2.84892	0.004387	153	87
Communication/ interaction skills	16749.50	12170.50	4968.500	-3.26184	0.001107	153	87
Life Skills	17161.50	11758.50	5380.500	-2.46500	0.013702	153	87
Role performance	16741.50	12178.50	4960.500	-3.27732	0.001048	153	87
Balanced Life style	17981.50	10938.50	6200.500	-0.87904	0.379378	153	87
Motivation	16978.50	11941.50	5197.500	-2.81894	0.004819	153	87
Self esteem	17036.50	11883.50	5255.500	-2.70676	0.006795	153	87
Affect	16897.00	12023.00	5116.000	-2.97657	0.002915	153	87

Table 4. 5 - Statistical significance between the diagnostic groups - SIP and Schizophrenia, on discharge

APOM score per Domains on Discharge	Mann-Whitney U Test (w/ continuity correction) Marked tests are significant at p <.05000						
	Rank Sum for SIP group	Rank Sum for Schiz group	U	Z	p-value	Valid n for Schiz group	Valid n for SIP group
Process skills	1808.00	1195.00	533.000	-1.51054	0.130906	50	27
Communication/ interaction skills	1828.50	1174.50	553.500	-1.29170	0.196462	50	27
Life Skills	1754.50	1248.50	479.500	-2.08167	0.037374	50	27
Role performance	1846.50	1156.50	571.500	-1.09955	0.271531	50	27
Balanced Life style	1770.00	1233.00	495.000	-1.91620	0.055340	50	27
Motivation	1846.50	1156.50	571.500	-1.09955	0.271531	50	27
Self esteem	1836.50	1166.50	561.500	-1.20630	0.227703	50	27
Affect	1792.50	1210.50	517.500	-1.67601	0.093738	50	27



	Process	Communic	Lifeskills	Role Per	Bal life	Motivation	Self-esteem	Affect
SIP Cohen's d effect size (n= 27)	0,705	0,729	0,688	0,431	0,653	0,583	0,466	0,987
SIP Cohen's r effect size (n= 27)	0,333	0,343	0,325	0,211	0,311	0,28	0,227	0,443
SCZ Cohen's d effect size (n= 50)	0,370	0,420	0,413	0,401	0,475	0,375	0,264	0,454
SCZ Cohen's r effect size (n= 50)	0,181	0,205	0,202	0,196	0,231	0,184	0,131	0,221

Figure 4. 5 – Effect size of APOM domains per diagnostic group

To test for statistical significance of the effect size, a t test for paired samples was done. The results are recorded below. A p-value of 0.001 indicated a statistically significant difference between the changes in the Schizophrenia group compared to the SIP group. It is important to note that the sample sizes dropped from the previous objectives. This was expected as not all cases in the database has baseline and final scores. The SIP group had a sample of 27 and the Schizophrenia group a sample of 50.

Table 4. 6- Results for t-test

t-Test: paired two sample for means		
Mean	0,655216	0,39642
Variance	0,030034	0,004125
Observations	8	8
Pearson Correlation	0,580431	
Hypothesized Mean Difference	0	
Df	7	
t Stat	5,022794	
P(T<=t) one-tail	0,000763	
t Critical one-tail	1,894579	
P(T<=t) two-tail	0,001526	
t Critical two-tail	2,364624	

4.7 Results for objective four

Objective four proposed to determine if there is a statistically significant difference in cognition (as determined by the domain of Process skills) between the SIP and Schizophrenia group.

The Mann Whitney U test indicated a statistically significant difference with a p value of 0,004 in process skills. When referring back to Figure 4.3, the SIP group had higher scores in the Process skills than the Schizophrenia group at admission. Figure 4.4 showed a slightly higher score in Process skills for the Schizophrenia group at discharge but this difference was not statistically significant (p = 0,131).

Table 4. 7 - The p values of process skills on admission and discharge

Process skills	P value
Admission	0.004387
Discharge	0.130906

Figure 4.6 illustrates the correlations of the SIP group for process skills and age, on admission (1) and discharge (2). Table 4.3 showed a weak correlation coefficient of 0,170 at admission and a moderate correlation of r = 0,491 at discharge but none of these correlations were statistically significant. These results will thus not get much attention.

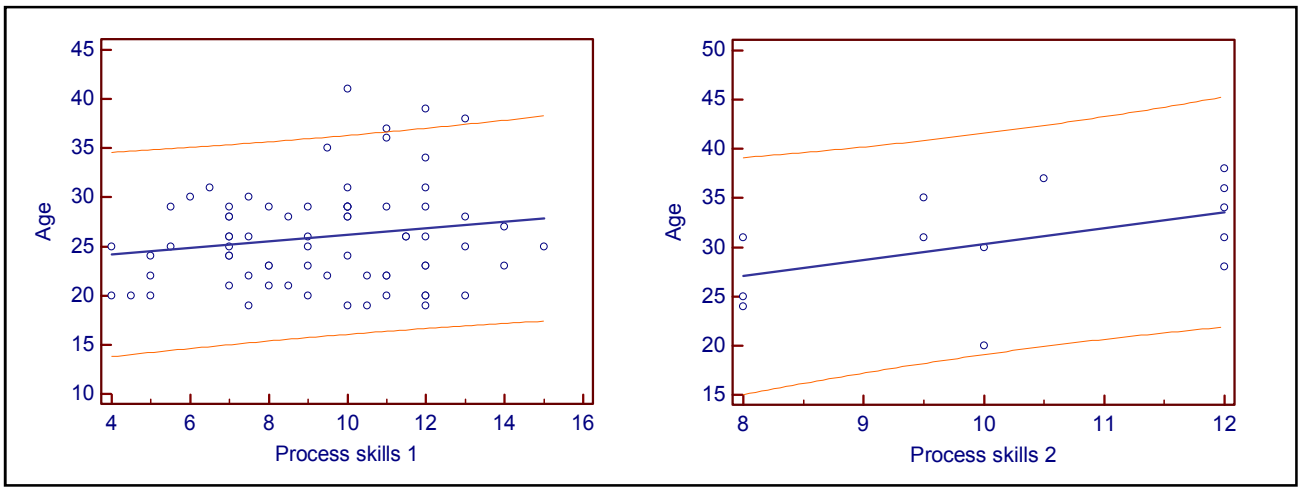


Figure 4. 6 – Correlation scatter graphs of age and process skills on admission and discharge for the SIP group

Figure 4.7 illustrates the correlations of the Schizophrenia group for process skills and age, on admission (1) and discharge (2). A low, statistically significant correlation coefficient of 0,201 was found on admission and a non-significant coefficient of -0.033 at discharge.

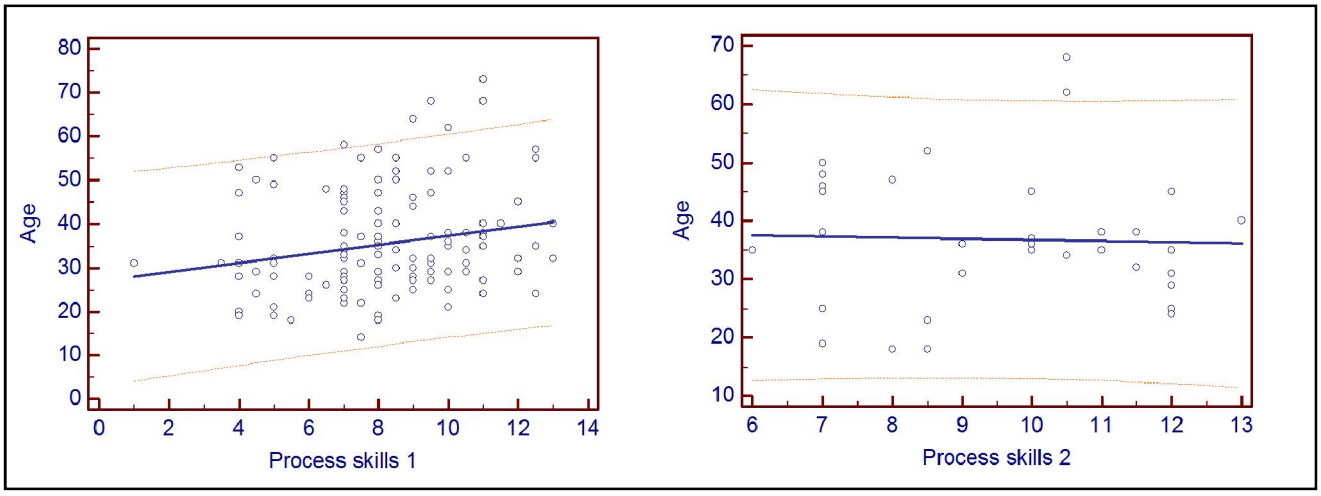


Figure 4. 7 - Correlation scatter graphs of age and process skills on admission and discharge for the Schizophrenia group

The result to determine the difference in cognition between the SIP and Schizophrenia thus only showed a significant difference on admission but inconclusive results for discharge.

4.8 Conclusion

In this chapter, the four objectives of the study have been achieved. Results for objective one illustrated the deficit and change profiles of the APOM. Objective two results showed that on admission, for the SIP group, there were correlations between age and balance lifestyle and on discharge, the SIP group showed low correlation for motivation; moderate correlations for Communication skills and Self-esteem and very high correlation for role performance. For the Schizophrenia group, on admission there was a low correlation between age and Communication skills, however there were no significant correlations on discharge. The third objective results showed a statistically significant difference between diagnostic groups and objective four showed statistical significance for process skills on admission only. In the chapter that follows, these results will be discussed.

Chapter five: Discussion

5.1 Introduction

In this chapter, the demographics and results of the study, per objective, are discussed and compared to recent studies nationally and globally. When comparing the findings to other studies similarities, differences and interesting aspects are highlighted.

5.2 Demographics

Using the database described in chapter three, 240 cases fitted the inclusion criteria. The sample was divided into two groups, the SIP group with 87 MHCUs and the Schizophrenia group with 153 MHCUs on admission.

From the demographics, the largest age group was 20 – 29-year olds (of the total sample) with 122 and the second largest group was 30 – 39-year olds. This is extremely concerning to note that hospitals are being filled with MHCUs in this age range. This group of people are meant to be the driving force behind career development and economic growth. Out of the 87 cases in the sample diagnosed with SIP, 81 (93.10%) are found in the age ranges from 20 – 29 and 30 – 39 years. Therefore the findings suggest that SIP affects 20 – 29-year olds the most and Schizophrenia affects a wider age band, ranging from 20 – 49-year olds, and to a smaller extent, 50 – 59-year olds.

The area of concern regarding the demographic data, is the prevalence of substance abuse in young adults. Wolhuter (2014) conducted a study in Gauteng and found the age of substance commencement was between 15 and 18 years. Magidson et al. (2016) conducted a study in Johannesburg and focused on substance abuse within the age group of 16 to 18 years. It was therefore not surprising to find the younger age groups in the sample of this study to have the highest number of participants.

Although the database did not indicate the employment status of the MHCU, we can deduct from the fact that the MHCUs required a hospital admission there was at least an interruption in employment. The relationship between unemployment and substance abuse was quite evident in clinical practice. From experience working in a public sector hospital, the researcher observed that MHCUs admitted to the ward with SIP, were very often unemployed, had never held a formal job or let go from their jobs due to substance abuse. The relationship between unemployment and substance abuse has been explored previously by Daghera and Green (2015). Their results showed

that young adults with mental illness and substance abuse show a greater probability of having periods of unemployment. The Daghera and Green study also illustrated a greater chance of being unemployed for a period of three or more years, as well as a lower household income in middle adulthood. Furthermore, a study by Leea et al. (2015) described the harmful influence of unemployment on substance use. Findings revealed that substance abuse is exacerbated in young adults whom are unemployed and further aggravated in those who lived their adolescence and childhood in a lower socio-economic community or household. The literature substantiates the clinical observation, that employment for both diagnostic groups are substantially affected.

The SIP group had 87 cases, 83 (95.4%) were male and only 4 (4.6%) were female. This distinct difference in gender ratio was seen once more in the Schizophrenia group where, of the 153 MHCUs, 140 (91.5%) were male and 13 (8.5%) were female.

In terms of Schizophrenia research has been done in terms of gender differences since the 1980's. Older research identified two types of Schizophrenia that become more overt when gender is taken into consideration. Early-onset Schizophrenia has a higher prevalence in males than females, whereas in late-onset Schizophrenia, the opposite was found (Seeman, 1982). The Seeman study also found that males show a generally poorer prognostic outcome and a slightly inferior response to treatment. Findings have been echoed in recent studies, which support that in early-onset Schizophrenia, gender differences in terms of greater premorbid deficits and an earlier age of onset in male MHCUs (Talonen, et al., 2017; Abel, et al., 2010). This finding was also reported by Talonen, et al. (2017), showing that the index presentation to psychiatry occurs at a slightly younger age for males, in early-onset Schizophrenia. The prevalence of Schizophrenia in males is higher, with the male to female ratio being 4:1 (Abel, et al., 2010). This would explain the higher number of males in the Schizophrenia group. For the current study the ratio of males to females with in the Schizophrenia group is 140:13.

As seen in table 4.1, there is also a great difference in the gender numbers for SIP. There are many studies that have been conducted on of gender differences in SIP, however there are conflicting results which are determined by the parameters of each study. Overall there are different factors that predispose adolescents to initiate drug use, which include parental monitoring, childhood adversity, geographical location and peer associations (Evans, et al., 2017; Svensson, 2016; Newcomb, et al., 2014). The gender differences in these studies are not as distinct as the results seen in chapter four. However, more recent studies show that adult males present with a greater risk of substance addiction, poly substance abuse and poorer follow-ups to treatment when compared to females (Foster, et al., 2016; O'Malley, 2015). This may also account for the higher

number of males in the sample. The conclusion of the O'Malley study was that prevention and intervention of substance abuse should target the specific problems in males and females.

5.3 The activity participation profiles of the sample – objective one

Objective one of the study was to describe the deficit profile of the eight domains of activity participation for the two groups. Differences were seen between the diagnostic groups. The SIP group showed higher APOM scores than the Schizophrenia group on admission and on discharge. A discussion of the eight domains follows.

Both the SIP group and the Schizophrenia group were functioning on the Self-presentation level from admission to discharge. Each level of creative ability has three phases, the therapist-directed phase, and the patient-directed phase and the transitional phase. Although all MHCUs did not show any improvement from one level of creative ability to the next, there were changes in the phases within the level. On admission, the SIP group performed better on all domains. On discharge the SIP group performed better on all domains, except one namely, Process skills. The SIP group, on admission was functioning on an 8 (Self-presentation patient-directed phase) for all domains except balanced lifestyle, which was a 7 (Self-presentation therapist-directed phase). The Schizophrenia group, on admission was functioning on the 7 level for all domains. The SIP group on discharge was functioning on an 8 for 4 domains, except for Communication skills and Affect which had improved to 9 (Self-presentation transitional phase) and Role performance dropped to a 7. The Schizophrenia group, on discharge improved for all domains to level 8, however Life skills and Role performance was still on level 7.

Process skills:

A study by Rojo-Mota et al. (2014) assessed motor and cognitive performance in an outpatient substance abuse setting. The Rojo-Mota et al. study illustrated that motor and cognitive performance was negatively affected by addiction and that the severity of the impact is related to time of addiction as well as the severity of the substance abuse. The results of the Rojo-Mota et al. study showed that 60% of the sample had suboptimal scores and 25% displayed scores in the category of significant deterioration with regard to cognitive processing skills. These findings are echoed with the results of the current study. Where process skills in substance abusing cases did not show any improvement in process skill scores, in fact the findings showed that from admission to discharge, these scores dropped.

However, the acute presentation of Schizophrenia is that of hallucinations, delusions, and disorganised thought processes, amotivation and poor self-care. Once a MHCU is stabilised with treatment, some aspects of functioning return. This return of function is evident in the results, as the process skill improved from a therapist-directed phase on admission, to a patient-directed phase on discharge. More will be discussed on Process skills in section 5.6.

Life skills and Balanced lifestyle:

Recent studies acknowledge that life skills and balanced lifestyle are affected by substance abuse. However, these studies focused on the use of life skills training as a preventative measure to populations who are at risk (Botvin & Griffin, 2002; Botvin & Griffin, 2004; Bühler, et al., 2007; Faggiano, et al., 2016). The population at risk for life skills deficits due to substance abuse is the same population used for this study. There is however, a dearth of studies quantifying the deficit in Life skills in MHCUs. Literature reports on several studies where life skills training was conducted with students (Moshki, et al., 2014; Barati, et al., 2011), and young adult male students affected by substance abuse (Moshki, et al., 2014). However, these students in the Moshki et al.'s study did not have a psychiatric diagnosis. In the results described in Chapter Four, the Life skills domain for the SIP group scored the lowest of all domains and showed very minimal improvement. This improvement that did not even translated into a change of the phase of the level and remained at a patient-directed phase in the Self-presentation level on discharge. Clinically, this means these MHCUs are unaware of norms for everyday living and need structure and support provided either by family or Non-Governmental Organisations (NGO) in the community. They are unable to independently initiate meaningful engagement in their occupations and will not seek employment. MHCUs on this level usually do not have sufficient pre-vocational and vocational skills to enter open labour market. However, they may be successful in supportive employment where the tasks are repetitive in nature and regular supervision is provided.

The Schizophrenia group, was also on a Self-presentation level from admission to discharge, in the therapist-directed phase. There was evidence of minimal improvement, but no change in the phase. In clinical terms, people on this level show inconsistent and often inappropriate behaviour. Similar to the SIP discussion above, they lack the skills to obtain and sustain full time employment and are unable to structure their daily lives meaningfully. Other recent studies use different terms to describe life skills and balanced lifestyle aspects. These studies showed similar results to those found with these scores. It suggests that cognitive fallout and decline in activity participation from the condition, affects the MHCU's social functioning, vocational performance and community functioning. Furthermore, it suggests that everyday functioning in activities are impaired (Strassnig, et al., 2015; Lepage, et al., 2014). A study by Subramaniam, et al. that showed improvement in

productivity in schizophrenic MHCUs, however tasks need to be repetitive, with structure and minimal abstract thinking demands (Subramaniam, et al., 2014). This is consistent with the creative ability level of Self-presentation in the therapist-directed phase.

Social skills:

Social skills are expressed as the communication and interaction skills in the APOM. As seen in the findings in Chapter Four, the SIP group improved by one phase within the Self-presentation level, from the patient-directed to the transitional phase. Although this was the highest score for the SIP group on discharge, clinically this means that the MHCU makes physical contact, which is usually inappropriate and to see reaction of others, uses gestures excessively or inappropriately, the MHCU does not manoeuvre body correctly to suit the situation or in relation to others, he/she articulates understandable speech but short phrases, not always clear, has an inability to modulate speech and volume for the situation and does not initiate interaction unless for egocentric reasons. Monti, et al. (2001) noted that social skills were affected by substance abuse and stated that by improving social skills, there can be a reduction in substance abuse and an improvement in functioning. Studies by Baker et al. (2013) and Lewis et al. (2015) supported the notion that improving social skills, may be a preventative measure to reduce substance abuse later in life.

The Schizophrenia group scored lower in social skills than the SIP group on admission, however showed improvement within the Self-presentation level, by one phase, from a therapist-directed phase to a patient-directed phase, on discharge. These deficits in social skills are noted by other research as well. Limited research was found that quantified the extent of the social skill deficit, however, a few studies report, psychotherapy, electronic programmes and medication help schizophrenic MHCUs deal with the social skill deficits (Kurtz, et al., 2015; Davis, et al., 2014; Ottavi, et al., 2013; Granholm, et al., 2013).

Role performance:

Role performance in the SIP group, on admission was on the Self-presentation level, therapist-directed phase, however, unexpectedly this score dropped by discharge to the patient-directed phase. The Schizophrenia group showed minimal improvement between admission and discharge, however remained on the therapist-directed phase of the Self-presentation level, implying that MHCUs are not aware of their roles and the tasks they are required to fulfil.

The 20 – 29 year old age group was the largest age group for both SIP (n=68) and Schizophrenia (n=54). One imperative role that this age group should be occupying, is the role of a student. Students should be aware of the role demands as well as have the competency to carry out the role. The role of students and substance abuse has been researched previously (Nigam, et al., 2016;

Paolini, 2016), and although the results are not surprising, the extent of the role performance deficits of students who are abusing substances is daunting. As seen in the results of the current study, the SIP group presented lower scores on their role performance, which is seen in other studies. A study by King et al. (2006) illustrated that role performance deteriorated in the age group 18 to 30 years. King et al. (2006) showed a decrease in efficacy within the role of a student, measured by their impairment in students' cognitive development, which in turn reduced the achievements and interrupted student's academic progression. More recent studies also showed due to substance abuse, students are unable to fulfil their roles. The inability to perform adequately in these roles was described as drug use due to stress, drug use due to peer pressure, drug use due to a non-authoritative climate, increase in truancy and decrease in academic potential (Paolini, 2016; Cornell & Huang, 2016; Nigam, et al., 2016).

Another role that is important for this age group seen in this sample is that of fulfilling productivity or work roles. By interpreting the scores, it is clear that MHCUs are unable to identify or perform within this role. For MHCUs with Schizophrenia a debilitating aspect of the condition is the lack of motivation to pursue these roles. A study by Barch, et al., (2014) illustrated this by investigating the willingness of MHCUs with schizophrenic to exert effort for a reward. They showed little effort even when the reward or benefit was increased. These finding are in line with the clinical interpretation of the debilitating effects of poor motivation in Schizophrenia.

Motivation, Self-esteem and Affect

In the SIP group, the scores for all these three domains on admission were on the patient-directed phase of the Self-presentation level. It is interesting to see that motivation and affect remained on the same phase on discharge and only affect improved to the transitional phase. Current research, as mentioned below, have studied the effects of Self-esteem and Motivation as a precursor to substance abuse (Luk, et al., 2016; Oshri, et al., 2017; Gupta & Sharma, 2016). The findings in these studies suggested that compromised or poorer Self-esteem causes associations between neglect and substance abuse. These studies also showed that poor Self-esteem and poor motivation lead to other negative predisposing factors, including peer pressure, bullying, victimisation and depression and thereafter, substance abuse. (Luk, et al., 2016; Oshri, et al., 2017). There is limited information on the Motivation and Self-esteem of a MHCU whom is already abusing substances. One study compared the Self-esteem and attachment patterns between substance abusers and non-substance abusers (Gupta & Sharma, 2016). These findings were similar to those described in Chapter Four, in which the SIP group showed no change in the phase.

The Schizophrenia group scored lower when compared to the SIP group. Both groups showed improvement, albeit small in all three domains between admission and discharge. The improvement for all three domains was within the Self-presentation level, from the therapist-directed phase to the patient-directed phase. As mentioned earlier, this level is viewed as impaired functioning by occupational therapists as a person on this level needs support and regular supervision to perform activities in every-day living.

5.4 The association between age and APOM scores for each diagnostic group, on admission and discharge– objective two

There was a very high correlation of 0.825 for age and role performance in the SIP group at discharge. The scores for this domain in the age group 20 – 29 years, ranged between 6.5 and 8, in clinical terms between the level of Self-differentiation and Self-presentation. Some studies (Hendrie, et al., 2015; Kandel & Logan, 2011; King, et al., 2006) showed that the age-related life events put people at risk for substance abuse, as they are fulfilling their role at the time, example adolescent, student, employee. Each age-related life event comes with its own stressors which may lead to poor coping mechanisms, such as substance abuse. One cohort study of drug use from adolescent to young adulthood, illustrated that age is a major risk for initiation of substance use and has a domino effect. If cannabis is used by age 20, it is more likely that the person will use cocaine by the age of 21, it also showed that the converse was true (Kandel & Logan, 2011). The high correlation between age and Role performance in this study is an alarming result and should alert occupational therapists that this age group needs intervention for Role performance.

For the Schizophrenia group, there was a low correlation on admission between age and Communication skills, however there were no significant correlations on discharge. For the SIP group, on admission there was found to be a low correlation of statistical differences for the domain, Balanced lifestyle. On discharge, the SIP group showed low correlation for motivation; moderate correlations for Communication skills and Self-esteem, and a very high correlation for Role performance. This very high correlation with Role performance should alert occupational therapists to ensure that they address role performance in treatment programmes with the age group 20 – 29 years with substance abuse.

5.5 Statistical differences between activity participation per diagnostic group – objective three

Objective three was to investigate the difference between APOM scores and the two diagnostic groups. As seen in Table 4.3, there was a statistical significant difference between the groups.

The SIP group showed better functioning on admission, than the Schizophrenia group for all domains, except Balanced lifestyle. This finding suggests that the effect of Schizophrenia on an individuals' functioning is worse than that of a substance induced psychosis. Since Schizophrenia is a long term, chronic and often relapsing condition, the functioning of a MHCU deteriorates with time as well as with each relapse. As seen in Figure 4.1 the age group of schizophrenic MHCUs was much broader than that of the SIP group, this means that MHCUs may have been assessed years after their index episode, which infers that their functioning level may have deteriorated. A few longitudinal studies have been conducted to show the deterioration of functioning in schizophrenic MHCUs. The results of these studies support the long-term deficits in functions and are described as poorer community outcomes, recreational activities, skill acquisition, episodic memory, working memory and vigilance (Green, et al., 2004; Ventura, et al., 2015; Milev, et al., 2005).

Balanced lifestyle, on admission was the only domain that was not significantly better for the SIP group. Balanced lifestyle includes the following items in the APOM; Time use and routines, Habits and Mix of occupations. The reason for the lower scores of the SIP group can be explained by the nature of a drug user and their lack of routine and structured productivity. Wolhuter's (2014)study also showed that this was the domain with the lowest score in SIP. Older but relevant literature describes substance abusers to participate in unhealthy behaviours which also constitute an unhealthy lifestyle (Castro, et al., 1987; Kandel, et al., 1986). This has not changed as newer literature shows very similar findings. Unhealthy lifestyle behaviours in MHCUs were found to be a risk factor for comorbid substance abuse, lifestyle habits become poorer, i.e. failure to enter roles of adulthood, continuous unemployment and delinquent behaviour (Kay-Lambkin, et al., 2016; Volkow, et al., 2016; Wallace & Bachman, 2014). The ability to engage in a balanced lifestyle is diminished, as seen in the findings and substantiated by literature. This is due to the actions of a substance abuser being directed to feed his addiction.

However, on discharge the SIP group was found to have better functioning, that was statistically significant, for the domain of Life skills only. The Life skills domain on the APOM includes thirteen items, Personal care /hygiene/grooming, Personal safety, Care of medication, Use of transport, Domestic skills, Child care skills, Money management and budgeting skills, Assertiveness, Stress management, Conflict management, Problem solving skills, Pre-vocational skills and Vocational skills.

Although there was improvement in these items, the change was not enough to ensure independent living for these cases.

MHCUs in the SIP group may be functioning slightly better because the sample is a younger age group than the Schizophrenia group. There is clinical evidence to show that substance abuse mostly affects neurocognitive abilities later in life, after long term abuse. Chronic use has adverse effects such as memory deficits that may or may not be reversible. In general, the difference in activity participation between the two groups range between one and two phases, which is relatively small.

In Figure 4.5, the effect sizes were measured for APOM scores between admission and discharge. Effect size is an expression of the amount of change between two assessments, in this case, admission and discharge. The sample for the calculation of effect size was smaller, since only 77 discharge recordings were captured (SIP n=27 and Schizophrenia n=50). The greatest effect size noted for the SIP group was for the domain of Affect, showing a change of 44% (Cohen's r = 0.443) and for the Schizophrenia group, the greatest improvement was Balanced lifestyle, 23% (Cohen's r = 0.231). The results showed small to medium changes in function for both groups. These small, but significant changes are seen in other occupational therapy studies, described below.

A meta-analysis done by Ikiugu, et al., (2017) showed that occupational therapy has a small effect on the well-being of MHCUs. This current study showed the same trends. Small improvement of only one to two phases in the levels of creative ability were found. However, even small improvements can be significant as it is a move towards independence and well-being.

Carter's (2013) study also showed relatively small changes in levels of activity participation; an average improvement of 2.7 points on the APOM. This also showed that improvement is small, between two and three phases. Silaule's (2017) study showed changes up to four points on the APOM but her population was admitted at a lower level to that of Carter's study. At this point it seems that occupational therapists that are tracking change with the APOM, achieve improvement of between two and four phases, which is small but still significant in terms of the occupational performance of MHCUs. These small clinical changes translated into significant effect sizes, which means that the occupational therapy interventions have an impact on MHCUs activity participation.

5.6 Deficits of process skills for both diagnostic groups – objective four

Process skills includes eight items, these are: Attention, Pace, Knowledge - tools & materials, Knowledge - concept formation, Skills - to use tools & materials, Task Concept, Organizing space and

objects and Adaptation. When interpreting the average APOM score of the Process skills domain, the SIP group showed a score of 8.98 on admission and 8.69 on discharge, thus a slight decline. These scores showed that MHCUs remained on the patient-directed phase of Self-presentation. The Schizophrenia group showed improvement from the APOM score of 7.93 to 8.98 and was the only domain in which the Schizophrenia group scored higher than the SIP group. The Schizophrenia group improved from the therapist-directed phase to the patient-directed phase, of the Self-Presentation level, with an average of 8.98 on discharge, which put them on the same level as the SIP group. Clinically there were no difference at discharge. The effect sizes showed a Cohen's r of 33% (Cohen's d = 0.705) of change in the SIP group and an 18% (Cohen's d = 0,370) change in the Schizophrenia group. These figures should be interpreted with care as effect sizes take the standard deviation into account. When comparing this to the clinical change, one should interpret Cohen's r values of 33% and below as no change. Cohen warned researchers that the criteria he set for interpreting effect sizes are arbitrary and should not be interpreted without clinical judgement. The study done by Carter (2013) showed that an improvement of between two to three phases on the APOM calculates to an effect size between 1.09 and 1.26.

Clinically, the scores on the APOM are aligned with the levels of creative ability which provides rich information to therapists on the expected behaviour of MHCUs. On the therapist-directed phase of the Self-presentation level, clinically the MHCU presents with focused attention for short periods but are easily distracted, an inconsistent pace or task execution with slow or poor rate and poor accuracy, the MHCU would present with basic knowledge of intrinsic properties of materials with poor selection and impulsive use of tools and materials for the task. The MHCU is able to identify elementary and combined concepts and knows functions of objects, will show appropriate handling but poor manoeuvring of tools, using tools and materials according to their intended purposes. The MHCU is able to engage in tasks to explore, but needs prompting to anticipate or correct for errors but there is no learning from the consequences of errors. These descriptions should guide treatment aims, requirements for activities, therapeutic relationship with MHCUs as well as the structuring and presentation of activities in treatment.

5.7 Retrospective review of cases in a database

Retrospective reviews of existing databases in healthcare are common. Advantages of this method is that large sample sizes are possible and useful clinical trends can be described in analysing the data (Wilkinson, 2016). In this study, the number of cases in the database was relatively small as the database only started in 2012 and not all therapists trained in the use of the APOM deposit their

data in the database. Nevertheless, analyses of the data of cases that adhered to inclusion criteria provided useful clinical trends in occupational therapy.

The validity of a database depends on the quality and completeness of the data entered by clinicians (Herrett, et al., 2010). The APOM database has several independent variables which need to be captured such as age, gender, length of stay, hospital/clinic and diagnosis. Some of these variables are not always captured which weakens analysis. During this study, the variable of employment status and type of substance abuse would have been valuable but were not captured. Accuracy of data is another factor that influences the validity and reliability of the database. Accuracy of diagnosis in MHCUs is sometimes difficult and initial diagnosis might change over time for example Schizophrenia may change to Schizo-affective disorder. In this study Schizo-affective disorders were not included to overcome the problem of possible inaccuracies of diagnosis. This did not guarantee correct diagnosis of Schizophrenia but the researcher had to assume that it was correct.

The chances further exist that clinicians might be bias and only capture the successful MHCUs on the database (Herrett, et al., 2010). This bias is impossible to detect in a retrospective record review and should be acknowledge in the interpretation of the results.

Notwithstanding these drawbacks of reviewing cases in a database, it does provide valuable insights and as the APOM database expands, other types of analyses will be possible.

5.8 Conclusion

This chapter discussed the results illustrated in Chapter Four. The largest age group for the SIP group was the 20 – 29 and 30 – 39-year-old cases. The area of concern regarding the demographic data, is the prevalence of substance abuse in young adults. Another area of concern around this age group is the disruptions of employment, since this age group is meant to be the productive, work force of the community. Significant gender ratios of the sample were noted. Gender differences, for both groups, showed the numbers for males were significantly greater than females. This displays evidence that prevention and intervention of substance abuse should be gender specific in order to be effective; targeting specific problems experienced by males and females.

APOM scores for all domains, for both groups showed functioning to be on the creative ability level of Self-presentation. There were increases within the level from the therapist-directed phase to patient-directed phase for the Schizophrenia group and from the patient-directed phase to the transitional phase for the SIP group. Cohen's effect sizes showed these improvements, however small, are still noteworthy as they move MHCUs closer to independence.

The Schizophrenia group had low correlations for all eight domains with age, on admission. There were no significant correlations on discharge. The high correlation, for the SIP group, between age and Role performance in this study is an alarming result and should alert occupational therapists that this age group needs intervention for Role performance.

The greatest effect size noted for the SIP group was for Affect, with a 44% improvement. The Schizophrenia group had greatest improvement in Balanced lifestyle with 23%. In spite of the results showing small to medium changes in function for both groups it showed that occupational therapy intervention results in a positive change in certain domain in MHCUs' activity participation.

In terms of Process skills, the Schizophrenia group improved from the therapist-directed phase to the patient-directed phase, of the Self-Presentation level, which put them on the same level as the SIP group. These levels provide guidance to therapists to plan and deliver individually targeted treatment at the right level of creative ability.

The next chapter presents limitations of the study, recommendations for further research as well as the final conclusion of the study.

Chapter six: Conclusion

6.1 Introduction

This study aimed at exploring the association between substance abuse and activity participation in adults with a psychotic disorder through a retrospective record review. This chapter concludes the study, describing the limitations and recommendations for future studies.

6.2 Limitations

A number of limitations need to be noted in this study. These are described below.

- The database was collected by different therapists. All therapists go through a day training session in order to be able to use the APOM, however each therapist may have different views or assessment techniques that may show up with different scores.
- Setting were not the same. There were different settings where APOM were recorded. This may also be a limitation as each setting has a different population. Some facilities may be a long term setting, where MHCUs are chronic, or an acute setting where MHCUs are severely ill.
- There were only a few settings that are using the APOM to score MHCUs functioning. For more accurate scoring more venues should be considered.
- Length of stay was not captured on the APOM. Sometimes the length of stay has in impact on the prognosis, functional outcome and relapse rate. Since the length of stay was not captured, comments on these aspects could not be made.
- Missing data decrease the sample size. As with any retrospective record review, there may be missing information that cannot be accounted for. On the APOM database, not all MHCUs had admission and discharge scores. This meant that there was a smaller sample to work with for discharge outcomes. Employment status was also not captured, which made it difficult to draw conclusions on Roles and productivity.
- Types of intervention that was delivered are not captured by the APOM. Therefore no information on which intervention provides better results can be determined by the database.
- There was a slight dilemma with interpretation of the average scores per domain when the Process skills were compared between the two groups. The average score for Process skills for the SIP group on admission was 8.98. The Schizophrenia group at discharge was also

8.98. If this figure is rounded off, it puts the groups on the higher phase of transitional phase. The dilemma was whether to strictly use to the decimal point scores when referring to averages per domain or rounding it off. In this study, the decimal points were considered strictly and no rounding off was done. When a decimal point is rather close to the next number (as in the case of 8.98) one could have decided to interpret the activity participation on the next phase but for the sake of consistency, this was not done in this research.

This was the first record review of the APOM database. Although there are a number of limitations that came up in this study it should be seen as lessons learned and ways to improve the quality of the database. Recommendations for the changes are noted in the section below.

6.3 Recommendations for future studies

For future studies, a recommendation will be that more facilities using the APOM to record MHCUs' functioning, both on admission and discharge. This information from more setting and larger numbers will be able to assist the occupational therapy community in proving evidence based treatment.

When therapists are recording data on the APOM there should be encouraged to have complete records in order to minimise missing data. They should also be encouraged to enter admission and discharge dates in order to calculate length of stay for future record reviews.

Longitudinal studies at different facilities will be able to track changes and progress or regression of MHCUs' functioning. Findings from a longitudinal study will produce valuable data, which would be able to inform therapists if treatment at mental healthcare settings has a lasting effect or not. It would also be able to measure the amount of improvement or deterioration in the MHCUs' activity participation and cognitive functioning. This information would be useful to motivate for better services at the community level, which would provide support to MHCUs once they are discharged from a tertiary level of care.

From clinical observation, it is clear that MHCUs, who have been abusing substances for longer periods, present with a poor prognosis in terms of their activity participation, cognitive capacity and their ability to stop drug abuse. This study did not measure severity and the extent of substance abuse. It would be interesting to be able to quantify the severity of substance abuse and compare this to the activity participation of the MHCUs.

6.4 Conclusions

This chapter concludes the research project. The results were informative on an empirical and clinical level. The discussion of the objectives and conclusions allow for evidence based treatment to occur.

Although small changes were found for both groups, these improvements were significant, both statistically and clinically. It showed that MHCUs display improvement and interventions are having a positive effect in moving MHCUs closer to independence.

Occupational therapists should focus treatment on the gender specific issues as there is a great difference in numbers for each gender. In the Substance abusing group, high correlations, between age and Role performance was found. This provides evidence for occupational therapists that this age group (20 -29 years) needs intervention in the Role performance domain.

Recommendations for further studies include a longitudinal study with follow-up of MHCUs after discharge, as well as correlations between deficits in activity participation and severity and extent of substance abuse.

The association between substance abuse and activity participation in adults with a psychotic disorder was the aim of the study. From the results, it seems that psychotic MHCUs that use substance abuse respond better to treatment, when compared to MHCUs who are psychotic without substance abuse. These results confirmed the detrimental effects of schizophrenia on engagement in everyday occupations.

Occupational therapists are concerned with activity participation in MHCUs and aims to improve independent engagement in everyday occupations. This study provided information to review existing interventions for SIP and Schizophrenia populations.

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Appendices

Appendix A – APOM description of scores

Process Skills described in Levels of Participation

ITEM	Tone (1, 2, 3)	Self differentiation (4, 5, 6)	Self presentation (7, 8, 9)	Participation		
				Passive (10, 11, 12)	Imitative (13, 14, 15)	Active (16, 17, 18)
Attention	Unaware of the task.	Fleeting attention to the task.	Focuses attention for short periods, easily distracted.	Focuses attention for duration of task performance but quality of attention sometimes poor, sometimes distracted.	Focuses attention for duration of task performance with good quality, not easily distracted.	Able to attend to task completely, quality of attention extremely good.
Pace	Not prepared to engage in a task.	No talk of pace or rate of work as actions are destructive or incidental.	Inconsistent pace or task execution, slow or poor rate and poor accuracy.	Pace starts to be consistent but still slow, accuracy sometimes poor.	Consistent pace, good rate of work according to the norm, good accuracy.	Consistent pace, good rate of work, sometimes exceeding the norm without risking accuracy.
Tools and materials	No evidence of knowledge of materials, tools or tasks.	Little evidence of knowledge of tools and materials with no attempt to select appropriate tools and materials for the task.	Basic knowledge of intrinsic properties of materials with poor selection and impulsive use of tools and materials for the task.	Appropriate knowledge of familiar materials and tasks. Selects appropriate and necessary tools and materials for the task if task is familiar and structured.	Sufficient knowledge of materials and tasks, knows where to find additional information if he does not know. Selects appropriate and necessary tools and materials for the task, even unfamiliar tasks.	Good knowledge, seeks out interesting facts or more advanced information. Selects appropriate and necessary tools and materials for familiar and unfamiliar the tasks.
Concept formation	Concepts are disrupted.	Identifies elementary concepts e.g. body, colour and numbers. Knows functions and characteristics of elementary concepts.	Identifies elementary and combined concepts and knows functions of objects.	Identifies combined concepts with ease. Abstract concepts are emerging.	Complex and abstract concepts are consolidated.	Complex and abstract concepts are extended and well developed.

Skills	No handling of materials or tools.	Poor or inappropriate handling of material and tools. Poor maneuvering of objects held in the hand.	Appropriate handling but poor maneuvering of tools. Uses tools and materials according to their intended purposes.	Skill starting to improve and handling of tools is improving but yet not according to the norm. Uses tools and materials according to their intended purposes.	Good skills and handling of tools, comply with the norm. Uses tools and materials according to their intended purposes.	Good skills and handling of tools, is able to learn new skills, tool handling is swiftly. Adapts tools or materials for better performance.
Task Concept	No task concept.	No task concept but able to follow an instruction or command.	Beginning to understand the task and could identify with task. Will begin with a task but not able to plan logical order of the task independently. Task concept unconsolidated.	Needs assistance in beginning the task, deciding when to do next step and when task is complete. Better performance with familiar tasks - might be able to complete familiar tasks. Task concept almost consolidated, avoids evaluation of the task.	Able to begin, order steps logically, continue and complete steps without hesitation. Shows satisfaction and evaluate the task. Task concept is consistent and consolidated.	Shows initiative and originality in task execution, able to improve on performance due to critical evaluation of a task.
Organizing space and objects	No ability to organize space and objects for task performance.	Actions in task performance aimless, incidental and sometimes destructive, no ability to organize space and objects.	Willing to explore with materials and tools but no intention to organize the workspace. Area to be structured by therapist. No attempt to restore workspace.	Beginning to organize own work space and objects for familiar tasks, needs assistance with unfamiliar tasks. Will restore if asked to.	Able to organize space and objects, follows/imitates the procedure as set out by others. Restores workspace without reminding.	Able to organize space and objects in own original manner. Willing to assist others. Always restores workspace and remind others to do so.
Adaptation	No engagement in tasks and therefore unable to anticipate or correct for errors.	Engagement in tasks incidental or destructive and no ability to anticipate or correct for errors.	Engage in tasks to explore, needs prompting to anticipate or correct for errors but no learning from the consequences of errors.	Anticipated one or two apparent, simple errors and able to correct these errors. Beginning to learn from the consequences of errors.	Anticipated a number of apparent, complicated errors and some complex errors and are able to correct these errors. Learns from the consequences of errors.	Anticipate and correct for errors to ensure good quality end product. Learns from errors and will come up with original solutions.

Communication/Interaction Skills described in Levels of Participation

ITEM		Tone (1, 2, 3)	Self differentiation (4, 5, 6)	Self presentation (7, 8, 9)	Participation		
					Passive (10, 11, 12)	Imitative (13, 14, 15)	Active (16, 17, 18)
Physicality (non-verbal)	Physical contact	Aware that someone is there, makes no physical contact.	Avoids physical contact or makes inappropriate physical contact.	Makes physical contact, usually inappropriate and to see reaction of others.	Limited physical contact but appropriate.	Makes appropriate physical contact, imitate correct behaviour.	Consistently makes appropriate physical contact.
	Eye contact	Stares into nowhere Might have fleeting eye contact.	Gazes and stares inappropriately, unable to use gaze to communicate.	Stares because of curiosity and seeking attention.	Beginning to use gazes correctly for communication.	Use gazes appropriately for communication.	Use gazes consistently and appropriately in communication.
	Gestures	No use of gestures.	Uses none or inappropriate gestures.	Uses gestures excessively or inappropriately.	Gestures becoming appropriate.	Gestures are appropriate. Orientates self correctly in relations to others.	Uses gestures consistently and appropriately.
	Using body	Does not use body to communicate.	Poor ability to use body to communicate, sometimes aggressive behaviour.	Does not maneuver body correctly to suit the situation or in relation to others.	Orientates oneself physically in correct position in relation to others.	Maneuvers body correctly to suit the situation or in relation to others.	Uses body effectively in communication, not unsure to show actions and maneuvers body well to others in a group.
Information exchange (verbal)	Use of speech	Limited to no use of speech to communicate.	Uses speech to communicate but usually incoherent and not able to modulate tone of voice or volume.	Articulates understandable speech but short phrases, not always clear. Inability to modulate speech and volume for the situation.	Beginning to articulates clear and understandable speech and modulates volume, but not consistent.	Consistently articulates clear and understandable speech and modulates volume.	Good articulation and modulates speech well.
	Exchanging information	No exchange of information.	Exchanges limited information, only articulate own immediate needs.	Tries to communicate and exchange information but superficially and not always appropriate.	Exchanges information in "safe" and known situations, usually appropriate but limited.	Exchanges a variety of information.	Exchanges relevant and interesting information.

ITEM		Tone (1, 2, 3)	Self differentiation (4, 5, 6)	Self presentation (7, 8, 9)	Participation		
					Passive (10, 11, 12)	Imitative (13, 14, 15)	Active (16, 17, 18)
	Expressing needs	Limited expression of desires, refusals seen in aggressive behaviour.	Needs to express desires and refusals immediately and inappropriately.	Expresses desires and refusals inappropriately, cannot select the right situation.	Unsure to express desires and refusals.	Still unsure to express desires and refusals but imitate others if necessary.	Expresses desires and refusals with confidence.
	Initiating	Does not initiate interaction.	Does not initiate interaction or sustain a conversation unless to defend self.	Does not initiate interaction unless for egocentric reasons. Unable to sense when to terminate a conversation.	Initiates interaction and terminates a conversation correctly.	Engages in interaction according to social norms. Keeps up a conversation and expresses affect towards others.	Seeks out interaction with others, warm and open approach to others. Is able to focus on relevant aspects in conversations.
Relations	Awareness of social norms	No awareness of others and no desire to form a relationship or adhere to social norms.	Fleeting awareness of others and no desire to form a relationship or adhere to social norms.	Awareness of basic social norms emerging but unable to conform to social norms, forms a relationship for egocentric reasons.	Aware of social norms and beginning to conform to explicit social norms. Dependent on others to initiate meaningful relationships.	Give and take emerges in relationships. Complies with social norms like others do.	Forms good relationships with others, seeks to give in relationships. Adapts own behaviour when situation changes.
	Establishing rapport	No interest to form rapport with others and unaware of others' needs and requests.	No interest to form rapport with others and unaware of others' needs and requests.	No interest to form rapport with others. Does not respond to the needs of others (might be aware of needs).	Is unable to but wishes for rapport with others, inconsistent giving in a relationship.	Is able to establish rapport with others, respect others' reactions and requests.	Is able to establish rapport consistently, responds to needs of others with ease.

Lifeskills described in Levels of Participation

ITEM	Tone (1, 2, 3)	Self differentiation (4, 5, 6)	Self presentation (7, 8, 9)	Participation		
				Passive (10, 11, 12)	Imitative (13, 14, 15)	Active (16, 17, 18)
Personal care, hygiene, grooming	Cared for by nursing staff or family.	Physical assistance and super-vision for bathing, toileting. Eating usually untidy and messy.	Shows interest in refined skills e.g. grooming, dressing, hair care but inappropriate with poor quality. Dental hygiene poor.	Self-care skills appropriate and with good quality, refined self care appropriate and good quality.	Independent and good quality in personal care skills.	Competent in all personal care skills, uses originality.
Personal safety	No sense of personal safety, in total care and needs constant supervision and assistance.	Needs constant supervision for personal safety.	Aware of personal safety but needs occasional reminders and supervision, dependent on others.	Is able to maintain personal safety but inconsistent.	Consistently maintains and takes responsibility for personal safety.	Competent in personal safety, takes responsibility for safety of others.
Care of medication	No sense of need for medication, in total care.	No awareness of need for medication, under constant supervision.	Aware of need for medication but needs occasional reminders. Dependent on other for medication.	Understands the need for medication. Able to take responsibility for medication most of the time.	Independent in care of medication.	Responsible and consistent use of medication, consults timeously when revision of medication is needed.
Use of transport	Transported by nursing staff or family when needed.	Dependent on others for transport.	Depending on others for transport and able to request assistance in transportation for own needs.	Is able to organize own transport, utilizes public transport or drive own vehicle.	Organizes own transport, whether public, self driving or lift club.	Organizes own transport and solve problems with transport in an original way.
Domestic skills	No skills evident.	Does not perform domestic skills, usually under constant supervision or care of others.	Performs aspects of domestic skills e.g. washing dishes, making tea. Quality still lacking.	Greater variety in domestic skills with improved quality but not consistently performing well in these skills.	Performs most domestic skills with sufficient quality and consistently. Imitate other role models.	Has a wide repertoire of domestic skills and performs them well and with originality, acts as role model for others.
Child care skills	No skills evident	Does not care for children, under constant supervision or care of others.	Is mostly unaware of the different duties and responsibilities in child care skills.	Is aware of the obvious child care duties but not consistently performing well in these skills.	Fulfils child care duties and responsibilities consistently. Imitate other role models.	Fulfils childcare duties and responsibilities with originality and acts as role model for others.

ITEM	Tone (1, 2, 3)	Self differentiation (4, 5, 6)	Self presentation (7, 8, 9)	Participation		
				Passive (10, 11, 12)	Imitative (13, 14, 15)	Active (16, 17, 18)
Money management and budgeting skills	No skills evident.	Does not handle money or do budgeting, usually under constant supervision or care.	Is unaware of value of goods or setting priorities for spending money.	Is aware of value of daily goods and needs but is not able to spend money consistently well.	Is aware of value of goods, has the ability to budget and spend accordingly in a consistent way, imitate other role models.	Is aware of value of goods, has the ability to budget and spend accordingly in an original way and acts as role model for others.
Assertiveness	No skills evident.	Is unaware of own or others' rights and feelings, acts with inappropriate response e.g. either aggression or withdrawal.	Puts own rights first, is unaware of others' rights and feelings, acts with inappropriate response e.g. either aggression or withdrawal.	Is aware of own and others' rights and feelings but responds passively, avoids conflict or immobilized by stress.	Responds appropriately to the rights and feelings of others but needs a role model to be assertive.	Responds appropriately to the rights and feelings of others. Sets the example for assertiveness.
Stress management	Is unaware of stress.	Is unaware of own stressors, acts with aggression or withdrawal.	Is aware of stressors but cannot identify own. Does not realise effect of stress on life. Is unaware of techniques for stress relieve.	Identifies own stressors with guidance, is aware of techniques for stress, uses techniques with guidance.	Identifies own stressors and manages stressors by following prescribed techniques and methods on own.	Creates own stress management programme with valuable techniques and methods. Sets the example for others.
Conflict management	Is unaware of conflict.	Handles conflict with aggression or withdrawal, often causes conflict without realising it.	Inadequate management of conflict situation, reacts inappropriately e.g. with either aggression or withdrawal. Causes conflict repeatedly.	Avoids conflict and often immobilized by conflict. Is aware of techniques the handle conflict but only uses it with guidance.	Uses a few techniques for conflict handling independently.	Is able to choose a technique from a variety of techniques. Assists others in conflict management.
Problem solving skills	Is unaware of a problem.	Is not able to identify the problem.	Is able to identify simple problems, no skills to perform other steps of problem solving.	Is aware of the steps of problem solving, identifies simple problems but needs guidance for complex problems.	More complex problem solving skills emerges but follows methods that others would suggest.	Good problem solving skills, a repertoire of methods are being used and Is able to assist others in problem solving.

ITEM	Tone (1, 2, 3)	Self differentiation (4, 5, 6)	Self presentation (7, 8, 9)	Participation		
				Passive (10, 11, 12)	Imitative (13, 14, 15)	Active (16, 17, 18)
Pre-vocational skills	No skills present.	Begins to show some skills e.g. performing one or two routine tasks in the ward (making own bed), washing tea cups.	Begins to use pre-vocational skills but inappropriately and with poor quality.	Performs pre-vocational skills with some quality. Is aware of the norms but not consistently complying. Needs re-assurance from others to perform consistently.	Performs consistently in pre-vocational skills and according to the norm.	Performs pre-vocational skills with originality.
Vocational skills	No vocational skills.	No vocational skills.	Vocational skills emerging, may have splinter skills e.g. filing, typing.	Some vocational skills present but needs assistance to perform the skills.	Sufficient vocational skills to enter open labour market.	Variety of vocational skills, usually successful in a job.

Role performance described in Levels of Participation

ITEM	Tone (1, 2, 3)	Self differentiation (4, 5, 6)	Self presentation (7, 8, 9)	Participation		
				Passive (10, 11, 12)	Imitative (13, 14, 15)	Active (16, 17, 18)
Awareness of roles	Not aware of roles.	Not aware of roles.	Aware of role in institution, tries to comply but need supervision.	Aware of roles in own situation and social standing.	Aware of roles in own situation and social standing.	Completely aware of roles, assist others to be aware of their roles.
Role expectations	Is unaware of role expectations.	Is aware of basic expectations but needs reminding of the expectations.	Needs reminding of expectations and tasks of a role. Has unrealistic expectations of roles.	Is aware of simple expectations that are obvious for a role.	Knows expectations of a role and will refuse additional expectations.	Is aware of all expectations and finer nuances of a role.

ITEM	Tone (1, 2, 3)	Self differentiation (4, 5, 6)	Self presentation (7, 8, 9)	Participation		
				Passive (10, 11, 12)	Imitative (13, 14, 15)	Active (16, 17, 18)
Role balance	Is unaware of role balance.	Is unaware of role balance.	No evidence of role balance, performs some tasks of a role under supervision.	Is aware of role balance but needs guidance to perform tasks of different roles at the same time.	Is able to balance roles by following a role model and set routine.	Is able to balance roles and adapt routine as expectations increases.
Competency	Unable to perform any roles.	Able to perform one or two tasks of a role in the institution or ward under constant supervision.	Able to perform minor tasks of a role in the institution or ward. Will execute certain tasks of the role to gain priviledges.	Perform some tasks of a role sufficiently.	Performs role as expected and according to the norm.	Competent in a variety of roles at the same time. Acts as a role model to others.

Balanced Life Style described in Levels of Participation

ITEM	Tone (1, 2, 3)	Self differentiation (4, 5, 6)	Self presentation (7, 8, 9)	Participation		
				Passive (10, 11, 12)	Imitative (13, 14, 15)	Active (16, 17, 18)
Time use and routines	Person requires total care. Not aware of concept of balanced life style or time use.	Not aware of concept of balanced life style or time use. Person in institution that provides routines that structure time use automatically.	Unable to organize own time use, needs a structured pre-planned programme, gets upset if routine changes.	Aware of the importance of balance in tasks and to have a routines but unable to allocate time use independently.	Able to organize time use into a routine that will improve own life style but finds it difficult to follow it consistently.	Organise own time use and follows it consistently, adapts time use when situation changes

ITEM	Tone (1, 2, 3)	Self differentiation (4, 5, 6)	Self presentation (7, 8, 9)	Participation		
				Passive (10, 11, 12)	Imitative (13, 14, 15)	Active (16, 17, 18)
Habits	Not aware of undesirable or good habits.	Inappropriate and destructive habits may be present e.g. begging, chain smoking, addiction to drugs, undesirable sexual activities. Not aware of good habits.	Inappropriate habits still present but beginning to be aware of negative effects of destructive habits. Useful habits emerging e.g. attending OT programme or protected workshop.	Habits not well established and easily disrupted by illness. Finds it difficult to replace undesirable habits with good habits but realizes the importance of it.	Aware of undesirable habits and able to change to good habits.	Avoids undesirable habits, assists others to change habits. Constantly striving for quality of life and will adapt habits to have a better life style.
Mix of occupations	Total care, follows routine of institution. Not aware of meaning of being occupied.	Preference to do as little as possible, unhealthy mix of occupations. Not aware of meaning of being occupied.	Beginning to develop preferences e.g. which tasks to do in ward, at home or in OT department. Meaningful occupations are usually self-centred.	Aware of the value of variety and meaningful occupations but finds it difficult to identify occupational preferences that provide meaning and satisfaction.	Has a set repertoire of preferred and meaningful occupations but no desire to explore more occupations.	Actively involved in a good repertoire of preferred occupations and often pursues new ones.

Motivation described in Levels of Participation

ITEM	Tone 1 , 2, 3	Self differentiation 4, 5, 6	Self presentation 7, 8, 9,	Participation		
				Passive 10, 11, 12	Imitative 13, 14, 15	Active 16, 17, 18
Active involvement	Makes no effort to engage in activity.	Makes minimal effort, incidental response, shows enjoyment for brief moments.	Puts in effort, willing to try out and present self. Effort usually ends abruptly and before activity is completed.	Muster courage and able to maintain effort if no problems are encountered. Shows enjoyment during the task.	Sustains consistent effort for a task. Enjoyment motivates him to participate in more challenging tasks.	Sustains consistent effort and generates originality. Enjoyment leads to more creative participation in future situations.

ITEM	Tone 1 , 2, 3	Self differentiation 4, 5, 6	Self presentation 7, 8, 9,	Participation		
				Passive 10, 11, 12	Imitative 13, 14, 15	Active 16, 17, 18
Motives and drives	Basic drive to maintain the body in homeostasis, no signs of will to live, quality of life dependent on nursing care.	Willing to participate if basic drives needs are satisfied.	Egocentric motives, belonging and approval from selected persons drive the person to action.	Approval and belonging to a group drive the person to action.	Positive self-esteem drives the person to action	Striving for self actualization and values drive action.
Shows interest	Shows no need for stimulation or participation in activities.	Shows interest in activities that will satisfy basic and immediate needs.	Shows interest in stimulation and activities, interest not sustained.	Shows interest in variety of activities, sustains interest in preferred and known activities.	Able to show interest in preferred and non-preferred activities, willing to learn new skills.	Interested in preferred and non-preferred activities, execution with originality, adapts to make non-preferred activities more interesting.
Goal directed behaviour	No signs of goal directed behaviour.	No signs of goal directed behaviour, participates in tasks with incidental action.	Beginning to work towards a goal with guidance from therapist, participates in task with explorative action.	Works towards a goal in well structured and well known tasks, action is passive and needs support and encouragement from therapist.	Able to plan goals for a task, imitate others and abide by rules and own structure.	Plans goals, adapt when problems arises, shows initiative in task performance.
Locus of control	External locus of control, dependent on total nursing care.	External locus of control, able to do self care but needs external rewards to participate in other tasks. Not able to see if activity was successful or not, incidental actions.	External locus of control, egocentric and participates for rewards. Needs to experience success to engage in activity again, impulsive actions.	External locus of control, waiting for therapist to structure environment, willing to participate in secure environment. Experience failure as traumatic, hesitant actions.	Internal locus of control emerging, set up a plan of action and beginning to take responsibility for own actions. Could handle negative effects of failure.	Internal locus of control, takes responsibility for own actions, changes behaviour or actions where necessary, failure is seen as a challenge to improve in future, believes he can influence outcomes of events.

Self-esteem described in Levels of Participation

ITEM	Tone (1, 2, 3)	Self differentiation (4, 5, 6)	Self presentation (7, 8, 9)	Participation		
				Passive (10, 11, 12)	Imitative (13, 14, 15)	Active (16, 17, 18)
Commitment to task or situation	Withdrawn, no awareness of situation or little reaction to a situation.	Reluctant to commit self to a task or situation.	Willingness to commit to some steps of a task and present self for a short period in a known situation.	Willingness to try out an entire task in a secure environment and known situation.	Confident to participate if norms are clear.	Assertive and confident in most situations.
Using feedback	Not aware of feedback.	Little reaction to feedback, sometimes gets aggressive towards feedback.	Unable to view feedback as means to improve self esteem, reacts to concrete positive feedback.	Unable to handle the negative aspects of evaluation or feedback from others.	Able to handle negative aspects of feedback.	Expresses opinions, judge negative feedback correctly.
Self worth	Unaware of self worth.	Unaware of self worth.	Sometimes unrealistic self worth, not able to select appropriate criteria to judge self worth against. Fragile self-esteem.	Self-handicapping behaviour sometimes evident, protect the self from failure and therefore no risk taking (anxiety for failure).	Anxiety for failure present when situations are risky.	Behaves and acts quickly and with confidence. Productive, get things done.
Self-assurance	Withdrawn and secluded.	Unpredictable changes in attitude and behaviour.	Hesitant if therapist or support is absent or unavailable.	Hesitant in unfamiliar situations and withdraws when frustrated.	Generally self- assured in all situations.	Cheerful and happy. Sought out for advice and reassurance.
Satisfaction with self	No evidence of an attitude towards self.	Do not express an attitude towards self.	Feels cheated and victimized by life.	Doubt own adequacy, self-defeating. Subtly negativistic.	Beginning to be confident to stand up for self. Usually a positive attitude towards self.	Satisfied with self and no signs of self-concern.
Awareness of qualities	Not aware of any qualities or characteristics about self.	Do not express any qualities or characteristics about self.	Self-pitying, timid, could express concrete characteristics about self.	Self-conscious and sometimes self-depreciative, pre-occupied with incompetencies, unsure if conformed to norms.	Imitate successful persons, able to name good and bad qualities.	Able to acknowledge poor qualities, usually attempts to improve on it.

ITEM	Tone (1, 2, 3)	Self differentiation (4, 5, 6)	Self presentation (7, 8, 9)	Participation		
				Passive (10, 11, 12)	Imitative (13, 14, 15)	Active (16, 17, 18)
Social presence	Unaware of social contexts.	Unaware of social contexts.	Dependent from social acceptance and attention.	Passive in social situations, not confident to participate.	Not isolated from others, confident to be part of a group.	Socially at ease, social poise and presence.

Affect described in Levels of Participation

ITEM	Tone (1, 2, 3)	Self differentiation (4, 5, 6)	Self presentation (7, 8, 9)	Participation		
				Passive (10, 11, 12)	Imitative (13, 14, 15)	Active (16, 17, 18)
Repertoire of emotions	Blunted, flat affect.	Evidence of basic emotions e.g. satisfied or dissatisfied, enjoyment or anger, distress or apathy.	Shows a greater variety of emotions e.g. fear, affection, envy but lacks appropriate level of intensity.	Anxious in unknown situations. Refined emotions like regret, pride, frustration, surprise.	Evidence of empathy, compassion and warmth. Anxious when creativity is required, needs an example to perform.	Whole spectrum of emotions e.g. compassion, tenderness, loyalty. Anxiety usually inspires achievement.
Control	No control over emotions, sometimes screaming.	Easily triggered, sudden outburst of emotions like anger or laughter, lacks control.	Limited control over emotions.	Easily immobilized by anxiety, controls emotions in secure situations. Externalization of emotions becomes socially acceptable.	Able to control emotions, immobilized by anxiety in new situations without a model to imitate.	Able to control emotions and negative effects of anxiety and not easily immobilized.
Mood	Apathetic and lethargic.	Unpredictable moods.	Fluctuating moods.	Mood is stable in secure situations but tend to be pessimistic in unfamiliar situations.	Mood is consistent and tends to be optimistic.	Mood is consistent and optimistic.

Appendix B – WITS Ethical clearance for APOM database

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

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Dr Daleen Casteleijn

CLEARANCE CERTIFICATE **M121170**

PROJECT Validation of the Activity Participation Outcome Measure (APOM) in Public and Private Health Care Settings for Those with a Mental Disorder

Cerebrovascular Accidents and HIV

INVESTIGATORS Dr Daleen Casteleijn.

DEPARTMENT Department of Occupational Therapy

DATE CONSIDERED 30/11/2012

DECISION OF THE COMMITTEE* Approved unconditionally

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

DATE 18/02/2013 **CHAIRPERSON** .....
(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable
cc: Supervisor :

DECLARATION OF INVESTIGATOR(S)
To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...

Appendix C – WITS Ethical Waiver for current study

R14/49 Ms Qulinta Nepaul

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M170764

NAME: (Principal Investigator)	Ms Qulinta Nepaul
DEPARTMENT:	Occupational Therapy University of the Witwatersrand
PROJECT TITLE:	The Association between Subtance Abuse and Activity Participation in Adults with a Psychotic Disorder; A Retrospective Record Review
DATE CONSIDERED:	Adhoc
DECISION:	Approved unconditionally
CONDITIONS:	Sub-study
SUPERVISOR:	Prof Daleen Casteleijn
APPROVED BY:	Professor P. Cleaton-Jones Chairperson, HREC (Medical)
DATE OF APPROVAL:	14/08/2017

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary in Room 10004,10th floor, Senate House/3rd floor, Phillip Tobias Building, Parktown, University of the Witwatersrand. I/We fully understand the conditions under which I am/we are authorised to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit to the Committee. **I agree to submit a yearly progress report**. The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. in this case, the study was initially review July and will therefore be due in the month of July each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature

Date 15/08/2017

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES