EVALUATING THE EFFECTIVENESS OF VIRTUAL BUDDY SUPPORT TO IMPROVE TREATMENT ADHERENCE FOR PATIENTS SUFFERING FROM SCHIZOPHRENIA IN KWAZULU-NATAL: A MODEL OF CARE.

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DECLARATION

I hereby declare that the work which is being presented in the Thesis entitled **"Evaluating the effectiveness of virtual buddy support to improve treatment adherence for patients suffering from schizophrenia in kwaZulu-Natal: a model of care",** in partial fulfilment for the award of a degree of **Doctor of Philosophy in Human Sciences** and submitted to Durban University of Technology is my own original work under the guidance of Professor F. Haffejee and Dr Y. Thandar, Durban University of Technology, South Africa. This work has not been submitted by me for the award of any other degree of any other University or any other institution.

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ABSTRACT

Background: Psychiatric patients that are suffering from schizophrenia disorder are prescribed antipsychotic medications which are the first line treatment strategy for this disorder. Research has revealed that schizophrenic patients struggle to adhere to their prescribed medication. Interventions to promote adherence to these medications are required. One intervention suggested, which is new in psychiatry, is the use of treatment buddy services. This study investigated the effectiveness of virtual treatment buddy support in improving adherence to antipsychotic medications amongst patient diagnosed with schizophrenia disorder.

Methods: A mixed methods approach was utilized. A total of 117 schizophrenic patients were recruited from a selected psychiatric clinic in KwaZulu-Natal to participate in this study. From this cohort of participants, 82 were allocated to an intervention group which was provided with treatment buddy support and the remaining 35 formed the control group and did not receive any treatment buddy support. A research assistant was employed to act as a treatment buddy; she sent text message reminders to the participants on a daily basis between 6am and 7am for a period of six months. She also attended to telephonic queries made by participants. Quantitative questionnaires and qualitative interviews were used to collect data. Quantitative data was analyzed using SPSS Version 20.0, and qualitative data was analyzed using thematic analysis.

Results: The implementation of treatment buddy support improved adherence to antipsychotic medication from 60.7% pre-intervention to 86.1% post intervention. Some of the reported obstacles to antipsychotic adherence included long duration of treatment (50%), having no cure for the disorder (39.3%), medication side effects (47.7%), not understanding the instructions regarding taking of medications (40.9%) and experience of odd feelings while continuing with treatment (45.5%). Themes that emanated from qualitative interviews supported the quantitative findings that virtual treatment “buddy services” had improved adherence to antipsychotic drugs. Other themes identified, were improved support from clinic, and alleviation of other schizophrenia related problems. The treatment buddy services were also supported by nurses and the research assistant.

Conclusion: Implementation of treatment buddy support to patients suffering from schizophrenia was accepted by the patients and nurses and have improved adherence to antipsychotic medications. Implementing treatment buddies can benefit health care institutions, communities, and the health care system at large.

Keywords: Compliance to antipsychotic medications, non-adherence to antipsychotics, Schizophrenia, Treatment buddy, antipsychotics.

DEDICATION

This thesis is dedicated to God almighty my creator, my strong pillar, my source of inspiration, wisdom and understanding, who makes the impossible possible. He has been the source of my strength throughout this project. I also dedicated this work to my family. My husband Simthembile Mvunelo who has encouraged me all the way and has made means to ensure that I complete the degree. My first daughter Nolitha who encouraged me to register whilst I was still having doubts, Thandeka and Mandisi who have been affected in every way possible and had supported me with their love and understanding. Lastly my mother Florida Nompucuko Mtshengu of her wise words of encouragement.

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LIST OF ABBREVIATIONS

DUT	DUT – Durban University of Technology
DOTS	DOTS – Directly observed treatment strategy
DOT	DOT – Directly observed treatment
HIV	HIV – Humman immunodeficiency virus
AIDS	Acquired immune-deficiency syndrome
WHO	World Health Organization
SMS	Short messaging system
IREC	Institutional Research Ethics Committee
KZN DoH	KwaZulu-Natal Department of Health
FRC	Faculty Research Committee
DSM	Diagnostic and Statistical Mannual, 5th edition
TB	Tuberculosis
ARV's	Antiretroviral drugs
ART	Antiretroviral therapy
BWP	Botswana Pula
USAID	United States Agency for International Development

CHAPTER 1: OVERVIEW OF THE STUDY

1.1 INTRODUCTION AND BACKGROUND OF THE STUDY

Non-adherence to treatment remains a major challenge in management of psychiatric patients. Some of the causes of non-adherence to psychiatric treatment are medication side effects, living in poverty, lack of family support, long duration of illness, stigma, alcohol consumption and smoking (Tareke *et al.* 2018). The consequences of non-adherence to treatment include relapse, inability to work, hospitalization, attempted suicide and imprisonment resulting from criminal offences undertaken during acute relapse episodes. The interventions currently used to manage non-adherence to treatment have improved adherence but have not successfully eradicated the problem of non-adherence to treatment, as it still exists. The interventions currently used include pharmacology drugs, and psychoeducation. The barriers to success of these interventions might be because the clinicians spend less time in assessing treatmemt attitudes and associated mental illness symptoms such as delusional belief against taking of medication, poor insight, substance abuse, depression and acute psychosis (Steinkamp *et al.* 2019). The purpose of this study is to develop a practice framework that uses a treatment “buddy system” as an intervention to enhance adherence to treatment by mental healthcare users.

Adherence to prescribed treatment is regarded by healthcare professionals as a key to recovery both in acute episodes and in long term management of mental illness (Stentzel *et al.* 2018). These authors also reported that adherence to treatment by patients with severe psychiatric diseases in Germany is generally low. The consequences of low adherence are critical (Bahrini, Damak and Cheour 2016), and include economic costs associated with relapses, re-hospitalization, chronic nature of the condition with decreased productivity of the patient, higher utilization of health care services and financial implications (Joe and Lee 2016).

This study introduced the use of treatment “buddy system” to improve the adherence rate to treatment for schizophrenia and minimize the consequences of non-adherence. A research assistant acted as a treatment buddy for the selected participants who were experiencing difficulties with taking treatment. The research assistant was sending text message reminders that were encouraging participants to take treatment and also responded to questions asked by participants. A similar system has been used and found to be successful in management of many diseases like cancer (Halter 2018), tuberculosis through the DOT system (Daily Observed Treatment) (Karumbi and Garner 2015), as well as antiretroviral therapy management in HIV (Hlophe 2010). Such a system has not been used for mental health patients either in this country or anywhere else in the world. The study elucidated whether treatment compliance is improved with the “buddy system”.

This study followed a mixed methods research approach, quantitative questionnaires were utilized to investigate compliance levels before and after implementation of the virtual buddy support. The qualitative interviews were conducted to gather the participant’s and nurse’s experiences of the virtually managed “buddy system”.

A theory of planned behavior was utilized to influence the intentions of the patients to adhere to their psychiatric treatment. The theory of planned behavior states that the likelihood of an individual engaging in a health behavior is correlated with the strength of his or her intentions to engage in the behavior (Kagee and Freeman 2017). Kagee and Freeman (2017), identifies the factors that directly influence intentions to engage in a health behavior to include a person’s attitude toward the behavior, the person’s perception of the subjective group norms concerning the behavior, and the extent to which the person perceives him/herself to have control concerning the behavior. This theory will help improve the patient’s intentions of complying with prescribed treatment regimens and will instill the sense of control to the patient over the whole process of adhering to treatment.

1.2 PROBLEM STATEMENT

Grove, Burns and Gray (2013) refers to the problem statement as identifying the specific gap in knowledge needed for practice. Adherence to treatment by psychiatric patients in South Africa is low and this impacts negatively on their health. In psychiatry, treatment adherence is of great value as it directly relate to the prognosis of mental illness (Lakshmann, Kalrav and Zankhanjetfire 2016).

The use of treatment “buddy system” in mental healthcare can improve the adherence rate to psychiatric treatment and its consequences. The literature search revealed fewer studies that have examined the use of treatment supporters for non-adherence to psychiatric treatment but not specifically treatment buddies. Mall *et al.* (2013), conducted a study at Cape Town in South Africa testing the use of a treatment partner and text messaging to improve adherence to psychotropic medication. The findings of their study revealed that the idea of treatment supporters was supported by most mental health-care users, however, a minority of participants were concerned that the treatment partners may potentially be too controlling and compromise their autonomy. Other two studies by Goetter *et al.* (2018) and Meis *et al.* (2019) both investigated the significance of peer interventions amongst the military veterans in Iraqi and America respectively. These studies also proved the effectiveness of the peer support in improving mental health care engagement. The use of treatment buddy provided a positive influence on the patient, improved engagement with the health services, and became a positive connection between the patients and health care services (Weir *et al.* 2017). Outcomes included improved treatment adherence, reduction of symptoms, prevention of relapse, and improvement in social functioning of schizophrenia patients (Rao *et al.* 2017).

1.3 AIM OF THE STUDY

The study aims to develop an intervention, with the use of text message managed “buddy system” to improve adherence to medication among patients suffering from schizophrenia.

1.4 OBJECTIVES OF THE STUDY

The objectives of this study were:

- To investigate compliance levels of schizophrenia patients who have been exposed to the intervention of virtual treatment buddy support.
- To explore experiences of the virtually operated “buddy system” from the perspectives of patients and health care professionals.
- To develop a practice framework that uses a treatment “buddy system” as an intervention to enhance adherence to treatment by patients suffering from schizophrenia in the province of KwaZulu-Natal.
- To outline the role and the scope of treatment buddies in mental health care.

1.5 STRUCTURE OF THE THESIS

Chapter 1: Overview of the study that introduces the research problem, discussing the background and purpose of the study, the aim of the study and its objectives are mentioned.

Chapter 2: In-depth literature review describing non-adherence, its causes and consequences. The “buddy system” and its potential advantages will be discussed.

Chapter 3: Outline of the theoretical framework describing its role in the research study and explaining the selected theoretical framework.

Chapter 4: The research methodology chapter will include study approach, design, population sampling, and ethical considerations.

Chapter 5: This chapter entails the presentation of collected data and the process of its analysis.

Chapter 6: Discussion of research findings and comparing them to those of other research studies.

Chapter 7: The chapter reports the summary and conclusion of the study, recommendations are made, and the limitations of the study are indicated.

1.6 CONCLUSION OF THE CHAPTER

This chapter introduced the problem addressed in the study and its background highlighting issues pertaining to non-adherence to antipsychotic medication and highlighted the proposed intervention of using treatment buddies to resolve the problem at hand. The problem statement identifies the gap in the literature in the management of non-adherence to medication for schizophrenic patients. It highlights the need for further investigation into this domain of healthcare that is widely used in both a global and South African context.

The next chapter is the in-depth review of literature that is related to the study.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter is a review of the literature on schizophrenia, its management, adherence to treatment and the exploration of the “buddy system” to improve adherence to treatment. Google search, Google scholar, EBSCO host and Curation were the databases used to retrieve the pertinent literature. Various keywords relevant to the research topic were used to guide the search, such as adherence / non-adherence/ compliance to psychiatric treatment/ antipsychotics, treatment buddy system, treatment supporters, and peer supporters.

2.2 SCHIZOPHRENIA

2.2.1 Definition

Schizophrenia is as a serious psychiatric disorder characterized by impaired communication and loss of contact with reality, deterioration from a previous level of functioning in work, social relations and self-care (Uys and Middleton 2014). According to Diagnostic and Statistical Manual (DSM-V), a diagnosis of schizophrenia is given to a person who exhibits both a psychotic episode and two additional symptoms associated with the disorder for a period of not less than one month, and the symptoms must have a significant impact on the individual’s social or occupational functioning for a period of at least six months (Townsend 2015) . A psychotic episode is a severe state of the condition in which the individual exhibits disorganization of personality, deterioration in social functioning and loss of contact with reality (Townsend 2015). The two additional symptoms that accompanies a psychotic episode could be delusions, hallucinations, disorganized speech, or severely disorganized or catatonic behaviour (Townsend 2015). Catatonia is distinguished by marked disturbance in psychomotor behaviour that occurs in different forms such as excitement, rigidity, stupor, or waxy flexibility (where a patient can be moulded into a position and they stay on it until you move them again to a different position), (Uys and Middleton 2014).

Schizophrenia disorder develops in a pattern of four phases which are premorbid, prodromal, active psychotic and residual phases. In the premorbid phase, the person is noticed to be very shy, has poor peer relationships, poor school performance, is antisocial and enjoys being alone. The prodromal phase is marked with obvious impairment in functioning with symptoms such as disturbed sleeping patterns, anxiety, irritability, poor concentration, fatigue, failure to perform expected roles and social withdrawal. The active psychotic phase is when the individual experiences the acute psychotic episode and it is at this stage that an individual gets diagnosed with schizophrenia. In the psychotic phase, the patient will experience at least two symptoms, which are delusion, hallucinations, or disorganised speech for about a month and more. The residual phase follows the active phase, during which the symptoms of the active phase may be absent because of treatment or may continue to occur but at a minimum level (Townsend 2015).

To make a proper diagnosis, the individual must not have any signs of schizoaffective disorder, major depressive or manic episodes and the disturbance must not be caused by the effects of a substance or another medical condition (Hurley 2021). The disorder often begins during adolescence and young adulthood (around mid-thirties), with the first onset earlier in males (mid-twenties) than in females (late twenties) (Hurley 2021).

2.2.2 Schizophrenia as part of the spectrum of mental disorders

Schizophrenia comprises a spectrum of psychotic disorders, including schizoaffective disorder, delusional disorder, schizotypal personality disorder, schizophreniform disorder, brief psychotic disorder, psychosis associated with substance use or a medical condition (Barch 2021).

Schizoaffective disorder refers to schizophrenia symptoms that are accompanied by an episode of major mood disorder, which could be a either a manic or depressive episode (Uys and Middleton 2014). The patient may experience hallucinations and / or delusions

for about two weeks with a mood disorder seen in majority of the patients (Townsend 2015).

Delusional disorder is when the individual presents with delusions that are bizarre for a period of at least one month. Delusions are regarded as bizarre when they are clearly unlikely, and persons within the same culture cannot understand them, neither could they have been derived from ordinary life experiences. An example of a bizarre delusion is when an individual believes that his or her organs have been replaced with someone else's without leaving any wounds or scars (Casarella 2020). Townsend (2015) identified subtypes of delusional disorder which include erotomaniac type (a belief that someone famous or of higher status is in a love relationship with him or her), grandiose (unreasonable high opinion of self-worth, talent, knowledge or power), jealous (thoughts revolving around the idea that the partner is unfaithful), persecutory (belief that they are ill-treated or malevolently treated in some way), somatic (an unfounded strong belief that someone suffers from a medical condition), and mixed type (the individual presents with dominant delusions but not of any single theme).

Individuals with schizotypal personality disorder present with a progressive social and interpersonal discomfort such that they appear aloof and isolated and behave in a dull, unexciting and uninteresting manner (Townsend 2015). Such people fail to make close friends or choose persons to confide with besides their first-degree relatives (Townsend 2015).

The schizophrenia spectrum includes schizophreniform disorder, a condition characterized by symptoms identical to those of schizophrenia, but the duration of the episodes last less than six months and do not meet the criteria of any other type of the schizophrenia spectrum (Uys and Middleton 2014).

Individuals with psychotic disorder present with sudden onset of psychotic symptoms which usually lasts for one day or less than one month without any preceding

psychosocial stressor, and the person immediately returns to the premorbid state of functioning as if nothing happened (Townsend 2015). Some of the common symptoms that often occur in this disorder, which indicate loss of contact with reality, are incoherent speech, delusions, hallucinations and disorientation (Townsend 2015).

When psychosis is associated with substance use, it means the symptoms of either delusion or hallucinations are experienced when the person is under intoxication by the substance being used (Townsend 2015). Psychosis may also be associated with a medical condition the individual is suffering from. The psychotic symptoms subside when the underlying condition is treated (Townsend 2015). The medical conditions that are known to cause either delusions or hallucinations are acute intermittent porphyria, cerebrovascular disease, central nervous system infections, renal disease, vitamin deficiency such as Vit B_{12} and endocrine disturbances of the thyroid hormone (Townsend 2015).

Schizophrenia is a heterogeneous disorder meaning that two different people may have the same diagnosis of diagnosed but may each present with very different symptoms (for instance; one may present with hallucinations and/ or delusions and the other disorganized speech and any other negative symptoms) (Barch 2021). Unlike other mental disorders such as anxiety, depression and bipolar disorder which are treatable, and the person can return to normal premorbid functioning; schizophrenia is a chronic disorder that requires lifetime maintenance treatment and causes a definite disability to social and work functioning (Charlson *et al.* 2018). In their comparison of diseases Charlson *et al.* (2018), ranked schizophrenia as the 12th most disabling disorder among 310 diseases and injuries globally. The disability occurs when symptoms of schizophrenia disorder such as hallucinations, delusions, disorganized catatonic behaviour, incoherent and illogical thinking hinder the person from obtaining and maintaining gainful employment and limits their ability to engage in normal activities of daily living. These symptoms qualify the individual for schizophrenia disability grant (Harvey *et al.* 2012).

2.2.3 Prevalence of schizophrenia.

It is estimated that 20 million of the global population are living with schizophrenia disorder (WHO 2019). The worldwide total number of new cases is 1.5 per 10,000 people per annum. Internationally, schizophrenia is regarded as a disorder with a low prevalence of about 1% (Fischer and Buchanan 2021). In the United States of America (USA) adults with schizophrenia disorder are estimated to be 1.5 million with and an estimated incidence 7.2 per 1000 people per year an incidence rate higher than worldwide (NAMI 2021). Spain reported an incidence rate of 6.2 per 1000 persons and the males had a higher prevalence rate of 75% in their study (Orrico-Sánchez *et al.* 2020). In India the incidence ranges between 1.5 -2.5 per 1000 (Mathew *et al.* 2020). In low- and middle-income countries like South Africa, there are no established data collection systems about mental illness such as schizophrenia disorder, hence making it difficult to estimate the prevalence (Charlson *et al.* 2018). However, Uys and Middleton (2014) reported that in South Africa, individuals suffering from schizophrenia disorder constitute 44% of psychiatric inpatients and 46% of outpatients. Mathew *et al.* (2020) in their study had more male participants 59.41% than 40.59% females in India.

2.2.4 Signs and symptoms

The signs and symptoms of schizophrenia are classified into three categories, positive, negative and cognitive symptoms. Positive symptoms reflect highly exaggerated ideas, perceptions, or actions/ behaviours where the person is unable to discriminate what is real from what is not. These include hallucinations, delusions, disorganized thinking and speech, as well as disorganized motor and sexual behaviours. Disorganized motor behaviours occur as repetitive stereotyped behaviours such as pacing up and down aimlessly. Some of abnormal sexual behaviours common in schizophrenic patients include exhibitionism and sexual aggression (Uys and Middleton 2014). Bizarre behaviours such as wearing multiple layers of clothes with no correlation to the weather, and swearing at others without a reason are not uncommon (Uys and Middleton 2014).

Hallucinations occur in different forms such as auditory, visual, tactile, gustatory and olfactory. Auditory hallucinations involve hearing voices which can be a single or sometimes multiple voices sounding like an instruction, whispering or murmuring (Smith 2021). Voices may sound angry or give urgent commands or make demands on the hallucinating person. Command hallucinations include instructions such as ‘shut the door’, but sometimes may be dangerous egging on the patient to harm himself or herself or to cause harm to others (Shear 2021) . Patients experiencing visual hallucinations often report seeing objects, people, lights, or patterns that are not actually existing (Smith 2021). Sometimes, the patient report seeing images of dead loved ones, friends or other people that they knew (Smith 2021). Olfactory hallucinations involve the sense of smell, whereas gustatory hallucinations affects taste, both senses interpreted either as good or bad, when such sensory experiences are not existing at all (Smith 2021). Tactile hallucinations are reported as feelings of movement or sensation on someone’s body as if insects are crawling around or inside the skin (Smith 2021).

Different forms of delusions identified in patients with schizophrenia are delusions of persecution / paranoid, erotomanic, grandeur, and somatic. Delusions of persecution or paranoid delusions occurs when a person holds a belief that someone, a group, or an organization is planning to have actually engaged in mistreating or harming them despite clear evidence that it is not true (Smith 2021). In erotomanic delusions, an individual believes that someone famous or in power is in love with them (Smith 2021). Somatic delusions are characterised by a belief that a person has an illness or their body is affected by a strange condition without any proof (Smith 2021). Delusions of grandeur involves an individual believing that they have superior abilities or qualities, they regard themselves as gifted, renowned, or prosperous individuals (Smith 2021). When the individual experiences the same theme recurring at intervals, they become convinced that it is really happening. Hallucinations are sometimes categorized as secondary delusions if they involve having a false belief in the voice that they are hearing or other sensation that they are experiencing (Smith 2021).

Negative symptoms are experienced as a form of reduced or decrease in normal behaviour or functioning and is exhibited as avolition, blunted affect, asocial, and anhedonia. Avolition is a feeling of not wanting to do anything demonstrated by a profound lack of self-motivation, initiative, or goal-directed behaviour (Smith 2021). Examples of avolition include emotional and social withdrawal, apathy, poor grooming or hygiene, and the inability to complete goal-oriented tasks like scheduling appointments, paying bills, or do shopping (Smith 2021). The negative symptom of blunted or flattened affect occurs when the person cannot express emotions and is having a face that is basically flat with lack of reactions to a conversation (Smith 2021). Blunted affect may be accompanied by lack of eye contact and minimal hand gestures (Smith 2021). Asocial behaviour is distinguished as having poor interpersonal relationships, few friends, and demotivated to make new friendships (Smith 2021). Anhedonia refers to the inability to have pleasure experiences from activities or relationships that used to be pleasurable previously (Smith 2021). A person who liked going out with friends shows no interest in these relationships any longer. Alogia is a reduced speech where the individual uses fewer words when communicating or totally avoids doing so (Smith 2021).

Most patients present with a mixture of categories of symptom types and usually one positive symptom dominates the others (Townsend 2015). Antipsychotic medications are known to control the positive symptoms whereas negative symptoms are difficult to treat as they respond less to antipsychotic medication. The negative symptoms also make it difficult to motivate the patient, even with the use of psychotherapy as these patients lack the ability or strength to move and are less interested in activities of daily living (Uys and Middleton 2014; Townsend 2015).

Cognitive symptoms include dysfunctions in memory, attention, thoughts, visual and verbal learning, and difficulty concentrating. The patient with cognitive disorder will show deficit in reasoning, planning, abstract thinking and problem solving (Tripathi, Kumar Kar and Shukla 2018; Valentine and Sofuoglu 2018).

2.2.5 Effect of the disorder on patients

Schizophrenia patients often present with impairment in physiological, social, and occupational functioning with resultant deterioration in general functioning (Lippi 2016). The physiological impairments in patients with schizophrenia include higher rates of obesity, related metabolic comorbidities such as dyslipidemia, insulin resistance, hyperglycemia, cardiovascular disease, type 2 diabetes, and hypertension (Harvey, Strassnig and Silberstein 2019). In addition, there is a failure to maintain activities of daily living with resultant untidy general appearance, fewer or total loss of social relationships, inadequate or incomplete education, inability to obtain or keep a stable job, and stigmatization (Patel *et al.* 2014). Social impairments displayed by their asocial behavior such as isolating themselves, talking to themselves, failure to establish or maintain interpersonal relationships. Difficulties in occupational functioning occur as a result of lack of fine and gross motor coordination that is usually caused by medication side effects, inability to establish or maintain a job due to poor social skills and cognitive defects, and poor education (Beyene *et al.* 2021).

As a result of these impairments, patients experience negative reactionary responses such as rejection by family or the public and may become homeless (Beyene *et al.* 2021).

2.2.5.1 Lack of family support

Schizophrenia patients require assistance, support and constant care from family members and caregivers for an extended period of time. This is due to the early age of onset , chronic nature of the disease, symptoms which prevent daily living activities and employment, as well as the need to take regular treatment (Lippi 2016). During acute episodes of the disease the patient experiences loss of contact with reality. They often exhibit behaviors that are embarrassing and traumatic to the family, such as walking half clothed or naked, having a body odour due to neglected personal hygiene, have uncontrolled anger leading to violent behavior such as threatening, swearing or even

attacking someone (Patel *et al.* 2014). Family violence committed by a schizophrenic patient may take the form of verbal insults to physical pushing, kicking and may end up in injuries and homicide (Kageyama *et al.* 2015). The most common victims are parents, with a greater perpetration of violence on mothers than fathers (Kageyama *et al.* 2015). When such aggressive behaviors occur, the family members become angry with the patient and may react by either punishing the patient or totally rejecting them. Female patients usually tend to attack people within the household, unlike male patients who become violent outside their homes (Kageyama *et al.* 2015).The family suffers psychological stress whereas the patient may be physically attacked sustaining injuries or get reported to police services with subsequent imprisonment (Kageyama *et al.* 2015).

2.2.5.2 Stigma experienced by schizophrenia patients

Stigma refers to a social phenomenon whereby the public has a negative view of individuals with attributes perceived by the general population as inferior, threatening, or having other negative connotations (Kamaradova *et al.* 2016). According to Egbe *et al.* (2014), psychiatric patients become exposed to both external stigma where they experience unfair treatment by others and internalized stigma or self-stigma. The latter occurs when individuals assume that they will be rejected by society and believe that they are not valued (Parle 2012). The self-stigma assumptions of discrimination prevents patients from talking about their illness experiences and discourages them from getting help (Parle 2012). In Poland, self-stigmatization of schizophrenia patients was common among people who had concealed their illness (86%), witnessed others passing unwelcome comments about the mentally ill individuals (69%), concerned about being viewed in an unfavorable manner (63%) and had been treated as less competent by others (59%) (Świtaj et al. 2009). Negative stereotypes related to stigma perceive mental illness as either a deliberate act or a kind of illness that is caused by witchcraft (Egbe *et al.* 2014). Psychiatric patients can be regarded as violent, dangerous, weak, dependent, unable to make proper decisions about their lives and unfit to keep a stable job (Egbe *et al.* 2014).

Effects of stigma on psychiatric patients can be manifold. These could be social, psychological or economic in nature (Egbe *et al.* 2014). Social consequences of stigma result in people avoiding medical assistance for their condition, self-isolating, exhibiting poor social skills. They may be neglected or maltreated, receive poor social support and be marginalized (Shrivastava, Johnston and Bureau 2012). Psychological outcomes of stigma include lowered self-esteem caused by prejudices held by society against the mentally ill individuals. They may also include fear of ridicule by others, depression, social anxiety and becoming suicidal (Shrivastava, Johnston and Bureau 2012). Economic factors include the cost of delayed treatment, difficulties in securing employment, discrimination by employers, which subsequently leads to loss of the job (Shrivastava, Johnston and Bureau 2012; Egbe *et al.* 2014). In Czech Republic, lower self-stigma levels were linked to better adherence to treatment (Kamaradova *et al.* 2016). Therefore, strategies are needed to keep stigma levels lower so that the psychiatric patients can effectively adhere to their treatment regimens. Velligan *et al.* (2017) confirm that support from family, friends and community members may alleviate stigma associated with schizophrenia disorder. Other measures to alleviate stigma of mental illness include empowerment of patients by educating them about their psychiatric conditions; supervision of health care providers to ensure that they provide appropriate care and integration of mental health services with primary health care services (Egbe *et al.* 2014).

Stigma levels have been found to be higher amongst males than females, and those having lower levels of education (Kamaradova *et al.* 2016). Males have higher levels of stigma because of societal gender norms that expect them to cope with their illness without professional help (Latalova, Kamaradova and Prasko 2014). In contrast, (Khan *et al.* 2015) reported that Pakistan women experience greater levels of internalized stigma than men. They tend to experience more discrimination and consequently withdraw from society. Such experiences are attributed to the patriarchal culture of Pakistan, which tends to tolerate men's problems more compared to those of their women (Khan *et al.* 2015).

Media, such as television, films, magazines, newspapers, and social media contributed to the spread of stigmatization of mental illness (Saleh 2020). Conditions such as

schizophrenia are often portrayed as being disruptive and requiring isolation from society (Saleh 2020). This further reinforces stigmatization.

2.2.5.3 Homelessness caused by schizophrenia

Homelessness refers to a lack of access to a safe shelter, including circumstances where individuals find themselves sleeping in public places or designated homeless shelters (where they pay tariffs per night) and the overcrowded marginal accommodations (Ayano, Tesfaw and Shumet 2019). The latter refers to a rental dwelling that is lacking basic or adequate facilities, usually overcrowded and does not meet minimum requirements of a safe house with fewer occupancy rights (Goodman *et al.* 2014). Schizophrenia homelessness is related to a general difficulty to find, sustain or obtain a permanent employment due to the cognitive and behavioral problems associated with the disorder (Tarr 2018). Loss of a home and other belongings, is the ripple effect thereof (Patel *et al.* 2014). The consequences for a loss of a home include worsened experience of mental illness distress, alcohol and drug abuse, and frequent exposure of the victims to criminal justice system. Victimization among homeless adults with psychosis, are higher than among housed adults with similar symptoms.

2.2.5.4 Co-morbid substance use

Comorbid substance use in mental health refers to a mental health disorder accompanied by substance addiction, a common occurrence in schizophrenia, where as many as 50% of patients have a substance addiction (Thoma and Daum 2013; Dyer 2018; Villa 2020). These substances include alcohol, tobacco, marijuana, cocaine, hallucinogens and prescription medication, and alcohol (Patel *et al.* 2014; Dyer 2018). These individuals often experience more severe symptoms, with the likelihood of developing resistance to treatment (Villa 2020).

Some individuals possess genes that contribute to the risk for both mental disorders and addiction, such as those that influence the action of neurotransmitters dopamine and

serotonin (NIDA 2020). The two neurotransmitters have a role in regulating emotions, sleep, memory, as well as metabolism; (Ekse 2019). Since dopamine is excitatory and serotonin inhibitory, it is critical to maintain a chemical balance of the two within the body, a failure of which may lead to psychological problems (Ekse 2019).

The neurobiological theory explains that tobacco smoking may alleviate certain symptoms associated with schizophrenia because nicotine relieves negative cognitive impairments such as withdrawal and craving (Lucatch *et al.* 2018).

Psychosocial factors associated with an increased risk for both substance use disorder and mental illness are chronic stress, trauma, and adverse childhood experiences (NIDA 2020). The individual claims to use substances to numb the feelings related to the stress, trauma and negative childhood experiences, or substances are used as an attempt to forget what they are going through (NIDA 2020).

Factors related to medication side effects are explained well by the self-medicating theory which states that individuals with schizophrenia disorder use substances to alleviate distressing psychiatric symptoms or the uncomfortable neurologic side effects of antipsychotic medications (Khantzian 2017). The addictive drugs provide short term relief of painful feelings and psychological distress (Khantzian 2017). The choice of the drug depends on its desirable effect discovered by the individual while he or she is experimenting with various drugs (Khantzian 2017). Individuals with schizophrenia abuse substances to alleviate symptoms such as auditory hallucinations, lowered self-esteem, loneliness, feelings of rejection by family or friends (Dyer 2018). Alcohol reduces discomfort of hallucinations, cannabis and other stimulants reduce the negative symptoms; and nicotine reduces cognitive deficits (Chakraborty, Chatterjee and Chaudhury 2014).

The negative consequences of comorbid substance use by schizophrenia patients are frequent relapses of psychosis, non-compliance of antipsychotic medication, acts of

violence committed by the patient, suicidal tendencies, vulnerability to injuries, poor treatment outcomes, high rates of inpatient and emergency service visits and experiences of more auditory hallucinations and paranoid delusions (Dyer 2018).

The effective management of comorbid substance use in schizophrenia disorder involves providing treatment for both schizophrenia and substance abuse disorder simultaneously (Villa 2020). There are however no facilities in South Africa that deal with management of both conditions simultaneously (Villa 2020).

2.2.6 Treatment for schizophrenia disorder

Treatment for schizophrenia disorder involves a combination of psychosocial treatments and antipsychotic medication (Chien *et al.* 2013). Psychosocial treatments include specialized therapies such as cognitive behavioral therapy, psychoeducation, family intervention, motivation interviews, social skills training, and assertive community treatment (Chien *et al.* 2013). It is important to note that psychological treatments are not used as a replacement or substitute for antipsychotic medication but are used as an additional treatment method, and both treatment strategies are usually used concurrently (Patel *et al.* 2014). During the acute phase of the disorder, medications are effective in controlling the symptoms and allow for implementation of rehabilitation programs at the same time (Patel *et al.* 2014). Antipsychotic medication is also used in the maintenance and chronic phase of the disorder (Townsend 2015). Antipsychotic medications are classified as either typical (first generation) or atypical (second generation) antipsychotics. These are elaborated on in the section below.

2.2.6.1 Pharmacological Treatment of schizophrenia

Schizophrenia symptoms are believed to be the result of overactivity of the chemical substance called dopamine in the brain (McCutcheon *et al.* 2020). Dopamine is a natural chemical found in the human body and is responsible for controlling movements and emotional responses of an individual. The excess of this chemical produces excessive uncoordinated movements and over rewards emotions, hence it is mostly responsible for

the positive symptoms of schizophrenia (McCutcheon *et al.* 2020). The antipsychotic drugs are used to control positive symptoms, they block the dopamine effect at the dopamine receptor sites in the brain (McCutcheon *et al.* 2020). The group of antipsychotic medications called typical antipsychotics or first-generation antipsychotics work as dopamine receptor antagonists by counteracting the excessive activity of dopamine (Chokhawala and Stevens 2021). Examples of typical antipsychotics are phenothiazines (trifluoperazine, perphenazine, prochlorperazine, acetophenazine, triflupromazine, mesoridazine), butyrophenones (haloperidol), thioxanthenes (thiothixene, chlorprothixene), dibenzoxazepines (loxapine), dihydroindoles (molindone), and diphenylbutylpiperidines (pimozide) (Chokhawala and Stevens 2021). First-generation antipsychotics are effective for treatment of positive symptoms of schizophrenia, such as hallucinations and delusions (Chokhawala and Stevens 2021).

The atypical or second-generation antipsychotics act as both serotonin-dopamine antagonists (Chokhawala and Stevens 2021). Serotonin is an inhibitory chemical that often works to balance the action of dopamine. The negative symptoms of schizophrenia disorder are a result of excessive serotonin action. The examples of second-generation antipsychotics are risperidone, olanzapine, quetiapine, ziprasidone, aripiprazole, paliperidone, asenapine, lurasidone, iloperidone, cariprazine, brexpiprazole and clozapine (Chokhawala and Stevens 2021). Unlike first generation antipsychotics that treat only positive symptoms, this generation is prescribed for both positive and negative symptoms of schizophrenia, and has reduced relapse episodes (Chokhawala and Stevens 2021). However, there is evidence that most classes of medication tested have not shown clinically meaningful effects on negative symptoms (Stroup and Gray 2018).

2.2.6.1.1 Side effects of antipsychotic medication

Antipsychotic medications of the first generation group are associated with extrapyramidal side effects that are embarrassing and disabling to the patient (Uys and Middleton 2014). The extrapyramidal side effects often involve motor functioning defects which can be fatal, if not managed (Uys and Middleton 2014). These include akinesia (slow robot-like

movements), akathisia (restless movements of hands or feet, or rocking movements), acute dystonic reaction (painful spasms of large muscles of the neck, back and eyes) and tardive dyskinesia (abnormal involuntary irregular movements of body parts) (Uys and Middleton 2014).

Antipsychotic drugs also present with anticholinergic side effects which include dry mouth, sleepiness or tiredness, constipation, difficulty urinating, blurred vision and hypersalivation (a paradoxical side effect of antipsychotics) (Panagiotidis *et al.* 2008). Dizziness, weight gain, decreased sexual interest and changes in menstruation are also reported as side effects (Uys and Middleton 2014). Other serious side effects which are rare but can be fatal if not managed include neuroleptic malignant syndrome (hyperpyrexia, perspiration, increase in pulse rate and blood pressure, muscle rigidity, dystonia and mutism), agranulocytosis (deficiency of granulocytes resulting to reduced immunity), cardiovascular effects such as myocarditis, cardiomyopathy and cardiac arrest have been reported (Uys and Middleton 2014).

The second-generation antipsychotic drugs are preferred as they produce less risk of extrapyramidal side effects compared to the first-generation drugs, however there are other side effects such as weight gain, hyperlipidemia, hyperprolactinemia and metabolic syndrome such as diabetes mellitus (Uys and Middleton 2014; Pisano *et al.* 2016; Fischer and Buchanan 2021). Patients receiving this group of drugs are monitored on admission and at six months intervals for signs of diabetes, family history of diabetes mellitus, dyslipidemia, weight and height, waist circumference, blood pressure, fasting plasma glucose, and fasting lipid profile (Chokhawala and Stevens 2021). Different side effects will occur in different people (Pisano *et al.* 2016)

2.2.6.2 Psychosocial treatment of schizophrenia

The main psychosocial treatments used in the management of schizophrenia are cognitive behavioural therapy, group therapy, psychoeducation, social skills training,

milieu therapy and family therapy (Townsend 2015). Cognitive behavioural therapy focuses on examining and reevaluating a person's thoughts and perceptions; and promote awareness of the link between thoughts, behaviors, and feelings (Townsend 2015). The intention is to implement cognitive remediation interventions targeting basic cognitive processes such as working memory, attention, and executive function (Townsend 2015). The expected outcome is modification of dysfunctional thoughts and self-defeating behaviors that cause symptoms of mental illness. The therapist establishes a trusting relationship with the patient followed by reality orientation, where the therapist educates the patient to identify sources of real or perceived danger. The patient is also taught to react appropriately (Turner *et al.* 2014; Townsend 2015). In the Netherlands, cognitive-behavioral therapy was efficient in the management of positive symptoms of schizophrenia such as delusions and hallucinations (Turner *et al.* 2014).

Group therapy involves introducing the patient to a group setting where they relearn social interactions; develop feelings of belonging, cohesiveness, identification and reality testing. Groups offer a supportive environment for schizophrenia patients where they can interact freely with others (Townsend 2015).

Psychoeducation provides information about the diagnosis with the aim of improving understanding and coping of the disorder (Turner *et al.* 2014). The patient is given information about the illness and its treatment, management of symptoms, problem-solving, coping skills, and procedures to access community mental health care services (Turner *et al.* 2014). Educational sessions are directed to the patient and his or her family (Chien *et al.* 2013). The goal is to establish effective collaborative relationship in order to share the burden of managing the illness and achieving better outcomes (Chien *et al.* 2013).

Social skills training aims to improve the person's ability to communicate and behave appropriately and acceptably in social situations, ability to engage meaningfully in daily

life tasks, and reduce social distress (McCutcheon *et al.* 2020). The emphasis of training is placed on verbal and nonverbal expressions together with learning appropriate perception and responses to social prompts (McCutcheon *et al.* 2020). The therapist uses role play to help the person learn basic social skills that are used in daily interactions. These include use of facial expression, gestures like head nod and loudness of voice (McCutcheon *et al.* 2020). Success is reached through use of reinforcers such as repetition and rewarding any improvement in use of social skills (Turner *et al.* 2014; Townsend 2015). Turner *et al.* (2014), found social skills training more efficient in improving negative symptoms of schizophrenia.

Milieu therapy involves modifying the environment such that it reinforces normalization of adaptation where rules, expectations, and goals are established to guide living (Townsend 2015). The five components of milieu therapy are Support, structure, validation, involvement and containment. Support is provided by allowing people receiving treatment time to adapt to the environment at their individualized pace. And the environments are structured to have regular, predictable routines that help in building trust, consistently allowing members to learn new behaviors. The environment is warm and welcoming, a safe space for those who might feel vulnerable. Participants are involved in decision making and encouraged to socialize and these are often regular routines that encourage socialization and various limiting rules still applied. These rules are consistent and communicated clearly to people enrolled in the therapy treatment (Ratini 2021).

Family therapy begins with acknowledgement of the role that family plays in taking care for their sick relative and stimulating the interest of family members in caregiving activities (Caqueo-Urizar *et al.* 2015). Challenges in caregiving otakes place when families are unsure of the diagnosis, treatments prescribed for the patient and prognosis, all of which may trigger some distress among family members (Caqueo-Urizar *et al.* 2015). Effective family therapy requires the therapist to augment the caregivers with infprmation about the condition and continuously engage them in planning of interventions for their sick relative

(Caqueo-Urizar *et al.* 2015). In western countries such as Spain, about 50% to 80% of patients with schizophrenia had their relatives as the main support system on returning home following admission to a mental health institution (Caqueo-Urizar *et al.* 2015).

2.3 ADHERENCE TO TREATMENT

Adherence to medication is defined as the extent to which patients take their prescribed medication (Verloo *et al.* 2017). It is the most essential aspect in the management of major psychiatric disorders because psychiatric medications are known to reduce and control symptoms of mental illness (Kane, Kishimoto and Correll 2013). People with schizophrenia can be considered adherent if they take more than 80% of prescribed medications and partial adherence is regarded as taking 50% of prescribed medications (El-Mallakh and Findlay 2015). However, there are extensive problems in medication adherence, leading to non-adherence to treatment (Kane, Kishimoto and Correll 2013). Reasons for difficulties in managing chronic mental disorders include side effects, high frequency of medication dosage, where patients are required to take medicines many times a day compared to once or twice a day and the prescription of many drugs. Patients also forget to take the drug, are often unwilling to continue drugs when they have been prescribed for a long period, and often find the cost of treatment exorbitant (Kane, Kishimoto and Correll 2013).

Adherence to treatment is determined by factors related to the patient, environment, medication, and disease (Cuevas *et al.* 2017). Patient related factors include demographic factors which have been reported to affect adherence. For instance, youth and menopausal age can result in forgetfulness (Cuevas *et al.* 2017). The male gender tends to be negligent whereas females are more vigilant (Cuevas *et al.* 2017). Adherence is also lower in those who are not married as there is a lack of a supporting partner (Cuevas *et al.* 2017). Lower education levels also negatively impact on adherence. In addition, physical and other mental disabilities decrease the level of adherence to medication (Semahegn *et al.* 2020).

Factors that improve adherence are a supportive family, friends, supervised medication by a healthcare worker or family members and a good financial status (Semahegn *et al.* 2020). Single dose medication taken once a day and oral intake with little side effects and symptom relief also improve adherence (Semahegn *et al.* 2020). Insight to the condition and health beliefs promote compliance (Semahegn *et al.* 2020). The therapists have a responsibility to strengthen these factors in order to promote adherence to treatment (Cuevas *et al.* 2017).

2.4 NON-ADHERENCE TO SCHIZOPHRENIA TREATMENT

Non-adherence to treatment is described by (Aldridge 2012) as the failure to follow the instruction given by the healthcare provider, either partially or completely defaulting treatment. This description corresponds with that of the World Health Organization's which describes non-adherence to medication as "a case in which a person's behaviour in taking medication does not correspond with agreed recommendations from health personnel" (WHO 2013). Partial adherence is defined as taking 50% of prescribed medications (El-Mallakh and Findlay 2015). Velligan *et al.* (2017) describes non-adherence to treatment as defaulting medication for at least one week.

Haddad *et al.* (2014), further distinguishes non-adherence to psychiatric medication as either intentional or unintentional. Intentional non-adherence occurs when a patient makes a deliberate decision not to take the prescribed medication, usually because of disadvantages, such as side effects, of the medication outweighing the benefits as perceived by the patient. Unintentional non-adherence occurs when practical problems interfere with adherence, these include forgetfulness, not understanding the instructions or having problems with collecting the medication (Haddad, Brain and Scott 2014).

The acts of non-adherence may include failing to collect medicines from the pharmacy, discontinuing a medication before completing the course of therapy, taking more or less

of the medication than prescribed or taking it at the wrong time (Semahegn *et al.* 2020). Bastakoti *et al.* (2013) also identified loss of attending to medical needs, and missing appointments either deliberately or unintentionally.

2.4.1 Reasons for non-adherence

The most critical factor is a lack of support from family members, since a family member is usually the primary caregiver for mentally ill individuals (Velligan *et al.* 2017). In a systematic review of 36 studies these authors identified intentional and unintentional reasons for non-adherence. Intentional reasons included factors such as poor insight, a negative attitude towards the medication, distressing medication side effects, poor therapeutic alliance, and stigma. Unintentional reasons for non-adherence included substance abuse, cognitive impairments, depression, lack of family/social support, limited access to mental health care facilities, and poor psychological functioning (Velligan *et al.* 2017)**.** The reasons for non-adherence to treatment for schizophrenia are elaborated upon below.

2.4.1.1 Lack of family support

Caring for a mentally ill patient from home has become common in recent times (Mokgothu, Du Plessis and Koen 2015). The Mental Health Care Act (Act 17 of 2002) introduced the 72-hour hospital admission for the assessment, monitoring and stabilisation of psychiatric patients (Gazette 2002). Once stabilised, the patient can be discharged to continue with treatment at home. This potentially reduces unnecessary long-term admission of the patient at a health institution and make the family responsible for the care of the patient. This reduces costs of institutional care in limited mental health care (Mokgothu, Du Plessis and Koen 2015).

Family support is thus a cornerstone for mental health sufferers during their treatment and recovery process (Waller *et al.* 2019). Family members can provide love(Gazette 2002) support, empathic feelings, positive encouragement during the recovery,

assistance with childcare, household chores and transport to the treatment facility for the patient (Waller *et al.* 2019). Others may rely on family support to provide housing and / or financial assistance. Patients taken care of by their families reported better outcomes from psychological therapies and pharmacological treatments leading to less frequent inpatient admissions, shorter inpatient stays and a better quality of life (Eassom *et al.* 2014). A study in Ethiopia, revealed that participants without social support were less likely to adhere to their medication (Gebeyehu *et al.* 2019). However, families of mentally ill patients often experience psychological problems and impaired quality of life as they usually have to support their family member alone and without formal training or guidance (Mokgothu, Du Plessis and Koen 2015). Capacity building is required for family care givers to learn about the mental illness condition of their relative, identification and avoidance of triggers of acute episodes. They would also need to identify signs indicating the type of support required throughout the treatment process (Waller *et al.* 2019).

Many patients with schizophrenia disorder are socially isolated and do not have relatives, friends, or caregivers to remind them to take their medication (Haddad, Brain and Scott 2014). The support that families provide depends on the phase of illness (either acute or chronic) and types of symptoms (positive or negative) experienced. Acute positive symptoms of schizophrenia (which include hallucinations, delusions, and psychomotor agitation) are successfully managed by the use of psychotropic medication, with the family assisting in taking these medications timeously. Negative symptoms are difficult to manage and could steer the caregiver away from the patient. Strategies used to manage these include the use of atypical antipsychotics to control positive symptoms, at the lowest possible dose, as high doses can induce negative symptoms (Remington *et al.* 2016). Remediation therapy and social skills training may also be useful (Remington *et al.* 2016).

2.4.1.2 Stigma

Worldwide, schizophrenia remains one of the mental disorders rated high for causing stigma in patients (Świtaj *et al.* 2017). The main perpetrators of stigma are neighbours, family members, friends, employers, community members, health care providers of the

patient, and the media (Egbe *et al.* 2014; Singh, Mattoo and Grover 2016; Nxumalo and Mchunu 2017; Świtaj *et al.* 2017). The stigmatizing experience does not affect patients only but also their close relatives, who also experience shame and embarrassment as they are questioned and ridiculed by the public (Nxumalo and Mchunu 2017). This results in patients and relatives becoming reluctant in seeking help from mental health services, which impedes their recovery (Singh, Mattoo and Grover 2016). South African mental health professionals are less optimistic about prognosis and long-term outcomes for people with mental illness compared to those with general health conditions (Egbe *et al.* 2014). This lack of optimism among mental health professionals is a symbol of stigma, which can negatively impact on treatment adherence (Egbe *et al.* 2014).

2.4.1.3 Side effects of antipsychotic medications

Antipsychotic medication including first generation and second-generation antipsychotics play an important role in treatment and control of symptoms (Higashi *et al.* 2013a). The challenge is the occurrence of side effects associated with these drugs. Theses side effects have been elaborated upon in section 2.6.2 above. Most schizophrenia patient's reluctance to take medication is due to the side effects of the medication. Effective management of these unwanted side effects of antipsychotics has the potential to improve patient's compliance, quality of life and possibly the prognosis and ultimate outcome (Lucca *et al.* 2015). Some of the strategies to reduce impact of side effects and promote adherence to antipsychotics are symptom specific such as taking a sedative at night for insomnia, sipping water when experiencing a dry mouth, engaging patients who are gaining weight into a weight management program, changing to another drug when serious disabling side effects occurs, and simplifying treatment regimens to at least once or twice daily (Haddad, Brain and Scott 2014).

2.4.1.4 The chronic nature of the disease

A chronic illness is a condition that lasts for a long time and usually cannot be cured completely, although some illnesses can be controlled or managed through lifestyle

modification and certain medication (DerSarkissian 2019). The course of schizophrenia disorder is characteristically chronic and mentally disabling, with recurrent relapses and indefinite continuation of treatment to sustain remission and prevent unnecessary relapses (Chaundari *et al.* 2017).

Convincing patients and their caregivers that schizophrenia is a lifetime disorder is critical in promoting adherence. Consistent monitoring for signs and symptoms of the disorder, with appropriate adjustments of therapy to improve long-term outcomes are crucial (Bosworth 2018).

2.4.1.5 Positive symptoms of schizophrenia

Some symptoms of schizophrenia may inhibit the patient's ability to cooperate during the treatment process (Higashi *et al.* 2013a). Schizophrenia is characterized by symptoms that affect thoughts, feelings and behaviours such as hallucinations and /or delusions which are not part of the normal, day-to-day experience for most people. Some patients may respond to command hallucinations that may instruct them to stop taking treatment as they may believe the voices as real. They do not accept the explanation from the therapist that the voices should be ignored. A patient with paranoid delusion may possess a strong belief that medicines are used to fulfil the plan of killing him or her, with resultant refusal to comply. Intensive psychotherapy focused on reality orientation can be effective to bring the patient back to actuality (Uys and Middleton 2014)

2.4.1.6 Relationship with the therapist

A good working relationship between the therapist and the patient is important for adherence to medication in patients with a chronic disorder such as schizophrenia (Widschwendter *et al.* 2016). Such a relationship is characterized by an understanding of each other, reaching agreements together and developing a bond (Johansen *et al.* 2013). The therapist may promote therapeutic alliance by displaying genuineness,

trustworthiness and empathy; and the patient may contribute to this alliance by sustaining therapy, complying with given homework, and keeping to scheduled appointments (Shattock *et al.* 2018).

Therapeutic alliance is of particular importance for people with schizophrenia because these patients often have a history of interpersonal trauma and relationship difficulties which may extend to mental health professionals (Johansen *et al.* 2013). Therefore, fostering a strong therapeutic relationship is critical in promoting adherence to medication (Browne *et al.* 2019). A positive therapeutic alliance may produce significantly better compliance with medication, lower treatment drop-out rates, reduced use of emergency departments, fewer rehospitalizations, improved symptom levels, and better outcomes (Johansen *et al.* 2013). Inclusion of a family member in the establishment of a therapist-client therapeutic alliance is ideal because when relatives develop a positive therapeutic alliance with the mental health therapist, patients become less likely to relapse and the relatives become more cooperative to treatment regimens (Smerud and Rosenfarb 2011). In trying to improve therapeutic alliance, therapists need training for qualities that foster good alliance whereas the patients and family may benefit from psychoeducation (Shattock *et al.* 2018).

2.4.1.7 Lack of insight

Rakitzi *et al.* (2016) describes insight to mental illness as the ability to recognize and accept the existence of a mental disorder. The patient with complete insight possesses both clinical insight, which is the awareness of the clinical manifestations associated with the specific condition and cognitive insight, which is the awareness of defects in thought processes (Rakitzi, Georgila and Efthimiou 2016). Lack of or poor insight in patients with schizophrenia has been associated with more negative attitudes toward medication (Bitter *et al.* 2015; Rakitzi, Georgila and Efthimiou 2016).

Improving insight can be achieved by using mental health professionals to establish the level of awareness of the disorder, its nature, its symptoms, and the necessity to take treatment during their interaction with schizophrenic patients (Crisan 2018). Mental health

professionals can provide psychoeducation to patients and / or families / caregivers to promote better understanding of the illness, appropriate medication intake and potential side effects. They can target individuals or groups of patients, sometimes families, using planned counselling sessions, and written/audio-visual materials (Eticha *et al.* 2015a). Strategies such as individual cognitive behavioral therapy and various rehabilitative programs can also be effective to promote insight (Rakitzi et al. 2016).

2.4.1.8 Unemployment

Generally, employment in people with schizophrenia is relatively low ranging between 14.5–17.2% in the United States (USA), 11.5% in France, 12.9% in the United Kingdom (UK) and 30.3% in Germany (Bouwmans *et al.* 2015; Carmona *et al.* 2017). There is a lack of data on employment statistics of schizophrenic patients in South Africa. Recurrent hospitalization, and poor social functioning, undermine employment opportunities of people living with schizophrenia. (Evenson *et al.* 2016). Other characteristics of schizophrenia that are negatively associated with employment include negative and cognitive symptoms of the disease, lower levels of education, the availability of welfare benefits such as disability grant and the scarce vocational services (Bouwmans *et al.* 2015). According to Carmona *et al.* (2017), unemployment of individuals with schizophrenia has a considerable economic burden on them, their families and health systems. These individuals are disadvantaged to an extent that they cannot own a house, car, or partake in leisure activities and generally do not have a sense of control over their own life. Their families have to constantly take care of their financial needs and they are mainly dependant on state disability grants (Carmona *et al.* 2017). The financial implications brought about by unemployment of schizophrenia patients contributes to lack of adherence to treatment as they cannot meet the financial costs (Chaundari *et al.* 2017). The lack of money impacts their ability to visit the health institutions to collect treatment packages and to attend scheduled psychological intervention sessions (Firth *et al.* 2016).

Access to employment may play a critical role in adherence, recovery and general functioning of people with schizophrenia (Carmona *et al.* 2017). Being employed

increases one's self-esteem, fosters a sense of belonging, achievement and physical well-being, and provides a normative context that allows the patient to develop control over his/her life (Evenson *et al.* 2016). Generally, employed individuals enjoy a better quality of life.

To improve employment rates among people with schizophrenia, participation in rehabilitative vocational training and use of prescribed treatment remains crucial (Bouwmans *et al.* 2015; Evenson *et al.* 2016; Carmona *et al.* 2017). Health and social services can conduct assessments and link the patient to a potential employer (Carmona *et al.* 2017).

2.4.1.9 Queues at psychiatric out-patient departments

In Southern Africa, large patient volumes and shortage of staff cause long queues at health care facilities, which increases the waiting time for patients (Aeenparast *et al.* 2013; Mokgoko 2013). This decreases patient satisfaction and discourages attendance (Ahmad, Khairatul and Farnaza 2017). Patient waiting time is defined as the total amount of time a patient spends waiting for services in a health facility either a hospital outpatient clinic, primary healthcare clinic or specialist clinic (Joseph *et al.* 2015; Egbujie *et al.* 2018b). Patients are less likely to be dissatisfied if their waiting time is within 30 minutes (Ahmad, Khairatul and Farnaza 2017). Unlike private care, long queues appear to be more common in public outpatient departments and clinics where patients and their relatives often wait for longer hours than anticipated (Mokgoko 2013). It has been reported that the most waiting time takes place before the physician actually comes to the health centre and this causes anger, anxiety, worry, frustration, and disappointment among patients (Mokgoko 2013). Patients are often not informed about the doctors' whereabouts, which causes a conflict between patients and health workers. Reichert and Jacobs (2018) postulated that a longer waiting time discourages the newly diagnosed patient who has just begun treatment, possibly resulting in non-adherence to treatment. It contributes to patients skipping their appointments or moving from one clinic to another in search for one with a shorter waiting time (Egbujie *et al.* 2018a). To reduce patient waiting time in public health facilities the South African National Department of Health

(NDoH) has introduced the ideal clinic model which focuses on activities like facility reorganisation, staff training and infrastructure upgrade (Egbujie *et al.* 2018b).

2.4.2 Impact of Non-adherence

2.4.2.1 Relapse

Relapse is a return or worsening of symptoms following a period of remission (Iliades 2014; Tareke *et al.* 2018). It is estimated that 40% of relapses are caused by poor adherence to treatment, which is a major problem for individuals suffering from schizophrenia (Ayano and Duko 2017). Relapse in patients with schizophrenia is likely to cause worsening of symptoms, impaired functioning, cognitive deterioration and reduced quality of life and increases the cost of care for service users (Olivares, Sermon and Hemels 2013; MacEwan *et al.* 2016). This progressive decline in a patient's level of functioning worsens the burden of illness on them and their families (Olivares, Sermon and Hemels 2013). Relapse may also result in resistance to antipsychotic medication and to the development of chronic psychotic symptoms (Higashi *et al.* 2013a). Emsley (2013) added that relapses may disrupt friendships, limit independent functioning, contribute to stigma and impact negatively on education (Emsley 2013). It is imperative that a relapse resulting from non-adherence be clearly established to prevent the incorrect assumption that an antipsychotic drug is ineffective, which may result in an inappropriate change of treatment or an increase in the dose of the antipsychotic drug (Haddad, Brain and Scott 2014).

Prevention of relapse is critical in the management of schizophrenic patients. Mental health doctors continuously use antipsychotic medications as a preventive strategy despite the substantial adverse effect associated with these medications (Emsley 2013). Selecting the best tolerated antipsychotic for the patient, use of the lowest effective dose, and considering newer antipsychotic medications including long-acting injectable formulations can be an effective strategy in prevention of a relapse (Emsley 2013).

2.4.2.2 Attempted suicide

Nonadherence to antipsychotic medication is one of the risk factors for the development of suicidal behaviour in patients with schizophrenia (Higashi *et al.* 2013a). It has been noted that the risk of suicide among schizophrenic patients is nearly four to seven times higher in patients who are admitted in hospitals for poor adherence to treatment (Gibson *et al.* 2013; Higashi *et al.* 2013a).

2.5 STRATEGIES OF IMPROVING ADHERENCE TO TREATMENT IN MENTAL HEALTH PATIENTS

It has been reported that a combination of psychoeducational interventions, together with drug optimisation is more effective in improving adherence to treatment than psychoeducational approaches alone (Phan 2016b). Psychoeducation is a therapeutic approach in which clients are taught positive emotional and behavioural skills to improve life adjustment, management of emotions and self-awareness (Belmont 2020). Psychoeducation approaches may be implemented in the form of one-on-one individual counselling or a group therapy approach that involves groups of patients or and their families (Belmont 2020). Motivational interviews have improved adherence among patients with schizophrenia (Dobber *et al.* 2018). This intervention establishes a trusting relationship with the patient. It influences the patient to develop a desire towards behaviour change and medication adherence (Dobber *et al.* 2018). Fostering a therapeutic alliance, using reminder systems, and addressing substance use disorders have also been reported to improve adherence (Dobber *et al.* 2018). Positive therapeutic alliance which involves an ongoing collaboration between patient and therapist has also been proven to increase adherence (Arnow and Steidtmann 2014). An example of reminder systems that has been used effectively for schizophrenic patients is the text messaging interventions introduced by Watson, Simpson and Hughes (2016).

2.5.1 Buddy support systems that have been used in mental conditions

A treatment buddy refers to an individual, usually a trusted family member or friend who is committed to supporting a patient on taking their medications regularly. He or she accompanies the patient to the clinic and helps with taking the medication correctly, provides encouragement and supports healthy practices directed towards an endeavor to recover. Treatment buddies have not been used in mental illness, but a similar system or program referred to as peer support services has been extensively used and have become increasingly popular during the past twenty years for patients with severe mental illness in countries including the United States, United Kingdom, Australia, Germany, Brazil, New Zealand, Canada and China (Henderson and Kemp 2013; Dahl *et al.* 2015; Collins, Firth and Shakespeare 2016; Vayshenker *et al.* 2016; Mahlke *et al.* 2017; Fan *et al.* 2018; Lyons, Cooper and Lloyd-Evans 2021). Notwithstanding the above, Moran *et al.* (2020) is of the opinion that peer support services are not fully utilized. These services are meant to bring together people with similar life experiences, culture, living environments, social status, concerns, and daily challenges. This commonality promotes mutual respect, enables sharing of information, practical strategies and ongoing support that are critical to sustained behavior change (Fan *et al.* 2018). The aim of peer support is to mentor those who are struggling with serious mental illness by those who are coping well with the same illness. It can also reduce social discrimination against persons with serious mental illness by demonstrating that people with mental illness can recover and function effectively. Peer support services contribute to mental health care by promoting social understanding and acceptance, lessens social stigma and fear associated with being mentally ill, and reduces feelings of shame and isolation (Fan *et al.* 2018).

Interventions such as treatment or peer supporters, have been used in mental health care services and have had improved adherence (Henderson and Kemp 2013; Dahl *et al.* 2015; Collins, Firth and Shakespeare 2016; Vayshenker *et al.* 2016; Mahlke *et al.* 2017; Fan *et al.* 2018; Moran *et al.* 2020). The treatment supporters were people who have survived mental illness and were used to provide support to those who were newly diagnosed (Fan *et al.* 2018). Peer support was mainly used for health care workers who experienced mental health challenges to support them at work (Fan *et al.* 2018). Chaundari et al. (2017), reported that when drugs are supervised by someone else,

adherence levels are better than when the drugs were self-administered by the patients on their own. The degree of psychopathology in schizophrenia determines the level of adherence. The availability of supportive family or friends to supervise medication during critical psychopathological phases of schizophrenia have been associated with better adherence levels for those treated outside hospital facility (Effiong and Umoh 2015; Chaundari *et al.* 2017). Likewise, patients admitted in an institution have a good recovery rate because their medication intake is managed by health care workers. The involvement of relatives or friends in treatment will ensure compliance and positive outcomes of long term follow up management (Effiong and Umoh 2015).

2.6 SUPPORT SYSTEMS THAT HAVE BEEN SUCCESSFUL IN OTHER DISEASES

A treatment buddy system has been used in other diseases and has been found to be useful (Joseph *et al.* 2015; Kibaara *et al.* 2016; Wyant 2021). Conditions that have used peer support effectively includes HIV/AIDS, directly observed treatment (DOT) programme for Tuberculosis (TB) patients, and cancer (Nakigozi *et al.* 2015; Kibaara *et al.* 2016; Nakamanya *et al.* 2018; Wyant 2021).

2.6.1 Treatment supporters in HIV / AIDS

Much has been reported about non-adherence to antiretroviral (ARV) therapy by people living with HIV/AIDS (Azia, Mukumbang and van Wyk 2016; Baer and Baker 2017; Iacob, Iacob and Jugulete 2017; Kheswa 2017; Bukenya *et al.* 2019; Moosa *et al.* 2019). The adherence to antiretroviral therapy varies between 27% and 80% across different populations, compared with the required level of 95% (Iacob, Iacob and Jugulete 2017; Nakamanya *et al.* 2018). Non-adherence to ARV treatment has been found to be attributable to factors such as lack of employment opportunities and or unfair dismissal, financial constraints with resultant food insecurity, poor service from health care workers, fear of the consequences of disclosure, and rejection by church members (Kheswa 2017). Factors such as feeling better, migration, cultural and religious beliefs, intimate partner violence, alcohol consumption and use of alternative ‘HIV cure’ medicines, ART side effects, and treatment fatigue also contributed to poor adherence to antiretroviral therapy

(Azia, Mukumbang and van Wyk 2016; Bukenya *et al.* 2019). Inaccessibility of health care centres in low middle-income countries like Uganda, South Africa, Kenya and Zimbabwe remains a challenge (Azia, Mukumbang and van Wyk 2016; Bukenya *et al.* 2019).

Interventions towards improving adherence to ART have been directed towards the development of a committed multidisciplinary team involving the doctor, pharmacist, psychologist and other close relatives/friends to closely monitor the patient for drug adherence (Iacob, Iacob and Jugulete 2017). Good communication with the patient, appropriate motivational interviewing techniques and ongoing psychological therapy have improved adherence. Improved access to ARVs and the use of anti-depressants to eradicate depression following the new diagnosis have also been useful (Iacob, Iacob and Jugulete 2017). Furthermore, the treatment of alcohol addiction and provision of social support is advised (Iacob, Iacob and Jugulete 2017).In addition, Nakamanya *et al.* (2018) included intensified adherence counselling, reminder alarms/calendars, daily or weekly mobile phone text messages, electronic pill devices, adherence clubs and the use of treatment buddies to improve adherence.

In Botswana, the role of an HIV/AIDS treatment buddy included offering support and guidance about adherence to antiretroviral drugs and all other treatment regimens including TB regimens since it is a common opportunistic infection among people infected with HIV (Zuyderduin, Ehlers and van der Wal 2008). They reminded patients to take their treatment regularly. They also provided emotional support in a culturally appropriate manner (Zuyderduin, Ehlers and van der Wal 2008; Nakamanya *et al.* 2018). A treatment supporter's role goes beyond encouraging adherence to drugs, and also includes supporting the patient with several different daily needs (Bezabhe *et al.* 2014). Treatment supporters in Botswana, were not paid for their service, but received a stipend of 50 BWP per month to cover travel costs to the health center and were expected to devote 4-6 hours weekly to their patients (Zuyderduin, Ehlers and van der Wal 2008).

The choice of selecting a treatment supporter is usually left to the patient. They usually consider somebody they trust, those who encouraged them to take an HIV test, someone they live with, or a relative or friend who lived nearby (Nakamanya *et al.* 2018). Men preferred their wives whereas women preferred female supporter like a child/mother/sister or friend rather than their partner regardless of whether they lived together (Nakamanya *et al.* 2018).

Several studies reported that many individuals without treatment buddies had failed on first line ART regimens and were switched to second line ARTs; and that treatment supporters remain important in adherence to long-term ART and HIV-care (Zuyderduin, Ehlers and van der Wal 2008; Chaiyachati *et al.* 2014; Nakamanya *et al.* 2018; Moosa *et al.* 2019).

Patients often tend to default during the first year of treatment initiation and become more adherent as treatment progresses beyond the first year. This would mean that treatment supporters are needed to play an active role in the first year of treatment initiation (Zuyderduin, Ehlers and van der Wal 2008; Chaiyachati *et al.* 2014; Nakamanya *et al.* 2018; Moosa *et al.* 2019). This knowledge might be of benefit for schizophrenia patients as they are also known to default within the first five years of commencement of treatment (Haddad, Brain and Scott 2014)

From the above literature, it is noted that HIV positive patients on long-term ART have similar experiences to schizophrenic patients regarding defaulting of treatment and the resultant outcomes of non-adherence. However, treatment supporters have had a positive impact in improving compliance to ARTs in HIV positive patients. Hence similar strategies will be useful to schizophrenic patients.

2.6.2 Treatment supporters in cancer

The increased use of oral medications in treating cancer patients has attracted attention on medication adherence in the management of cancer patients (Ganesan *et al.* 2011). A study conducted by Addeo *et al.* (2011) reported that 65% of patients treated for breast cancer failed to comply with medication dosages that were prescribed for them.

Some of the reasons that result to non-adherence to cancer drugs is the emergence of side effects occurring for both oral and intravenous anticancer medication, the high cost of cancer medication, and the recommended timing of taking drugs (Geynisman and Wickersham 2013). Schedules that require taking of tablets hours before or after a meal become difficult for patients to sustain over a long period of time leading to unintentional non-adherence. Reported common side effects of chemotherapy include diarrhoea, nausea, vomiting, palmar plantar erythrodesthesia, rash, stomatitis, hypertension, oedema / fluid retention, fatigue, anaemia, leukopenia, muscle cramps, transaminitis and cytopenia (Vinayak and Carlson 2013). These side effects are discouraging to patients, and they end up defaulting treatment.

Amongst the interventions to improve adherence to medication by oncology patients was the introduction of cancer supporters (Halter 2018; Stephan 2020). Stephan (2020) reported that an ideal treatment supporter for a cancer patient should be someone who has had cancer before because talking with a person who has previously suffered from cancer can be helpful for the newly diagnosed patient.

Effective cancer treatment supporters act as an advocates for the patients whom they are supporting, respect the patient's need to socialize, and assist with managing medical insurance and financial matters of the patient (Stephan 2020). The treatment supporter can also advise the patient of the best treatment they can get based on their affordability (Stephan 2020). Activities undertaken by treatment supporters during treatment include occupying the patient by having a conversation, relieving health staff by helping with minor requests from the patient, doing shopping for the patient, escorting them to doctors' appointments, giving medication, helping with eating, bathing or dressing up (Stephan

2020). Cancer supporters can be a stranger to the patient who volunteers out of passion to support someone. They register themselves with organizations that coordinate cancer buddy programs (Health 2020).

2.6.3 Directly Observed Treatment programme (DOT)

Directly Observed Treatment, (DOTS) is a strategy to ensure adherence to tuberculosis (TB) treatment which involves a health care worker observing taking of TB medicines by the patient on a daily basis or several times a week (Joseph *et al.* 2015).

Globally, DOTS has become the most effective strategy available for controlling the TB epidemic. Non-adherence to TB treatment is the major challenge in the management of TB disease which leads to increased length and severity of illness, disease transmission, multidrug resistant-TB as well as extended drug-resistant TB, and death (Mekonnen and Azagew 2018). The prevalence of non-adherence to anti-tuberculosis treatment is 50% in India, 15.5% in Thailand, and 24.7% in South Ethiopia (Mekonnen and Azagew 2018); and it varies between 11.3% to 29.6% in Sub-Saharan Africa, where there are high rate of losses to follow up amongst TB patients (Castelnuovo 2010).

Similar to non-adherence to schizophrenia treatment, the main reasons for non-adherence in anti-tuberculosis treatment included drug side effects, forgetting to take medication, being away from home, missing appointment dates, lack of travelling fare to the health centre, lack of family support, inadequate communication between patient and healthcare workers attending to the patient (Mekonnen and Azagew 2018). In addition, shortages of TB drugs, particularly in public sector hospitals and clinics have also led to non-adherence since the patient did not receive the medication timeously (Mekonnen and Azagew 2018). Tola *et al.* (2015) added the increasing burden of HIV/AIDS pandemic associated with non-adherence to TB treatment.

Patients who are in remission, are often misled that the disease is cured, and therefore stop treatment. When they stop taking treatment, the drug blood serum levels become depleted within the body with resultant complications such as treatment failure and

subsequent requirement for stronger medication regimens that requires use of multiple drugs (WHO 2003). The health care worker needs to counsel and provide intensive education to the patient and family regarding adherence to treatment even when not experiencing symptoms of TB following proper administration of drugs.

The DOTS programme is designed to support all newly diagnosed TB patients for at least the first two months of drug initiation (WHO 2003). It involves government commitment to sustained TB control activities; a consistent uninterrupted supply of all essential anti-TB drugs; and a standardized recording and reporting system that allows assessment of treatment results for each patient and of the TB control programme overall (WHO 2003).

Supervised TB treatment, through DOTS, helps patients to take their drugs regularly and complete treatment without default, thus achieving cure and preventing the development of complications such as TB drug resistance (WHO 2003). Supervision may be undertaken at a health institution, in the workplace, in the community centres or at home. It is provided by a treatment supporter who is acceptable to the patient and is trained and supervised by the health service. There are also peer support groups that are helpful in promoting adherence to treatment because they provide knowledge about the condition and advice on important patient related issues such as access to medication and eliminating barriers to getting treatments (Tracy and Wallace 2016; Baer and Baker 2017).

TB patients are allowed to choose their supporter which could either be a facility-based health worker, a community-based health worker or a family member (Hussain *et al.* 2018). In Poland, patients preferred a family member treatment supporter (86.8%) (Hussain *et al.* 2018). In contrast, Rajagopaul *et al.* (2014) in eThekwini district in South Africa stated that family and friends often sympathise with the patient and fail to force them to take treatment resulting in missed dosages. They concluded that community

DOTS supporters were more effective at improving adherence and cure rates (Rajagopaul, Reddy and Kistnasamy 2014)

The WHO 2007 guidelines have advocated that family members can only be selected as treatment supporters when other options are not feasible because they are usually not trained in medical care and therefore may not be able to pick up the side effects of prescribed TB medications experienced by the patients (Hussain *et al.* 2018). Further, because of cultural and social reasons, the family member may not be empowered to enforce the strict adherence to TB treatment that is required for cure (Hussain *et al.* 2018). Interestingly, studies revealed that the treatment success rates in patients observed by community-based health workers (66%) and a family-based DOTS supporter (68%) were very similar (Hussain *et al.* 2018).

The role of treatment supporters is vast and includes guiding and motivating TB patients thus ensuring completion of treatment. Patients are reminded of clinic appointments, referred to relevant services that may be needed. Treatment supporters may also refer possible new TB cases to the clinic, create awareness about TB in the community, report inconsistencies to the DOTS Coordinator and attend ongoing training sessions, (2003 2003; USAID 2012; Hussain *et al.* 2018). Training of treatment supporters and nurses involved in the DOTS programme is needed to keep the programme running effectively and efficiently (WHO 2003, and USAID TB CARE Guide II 2011). Rajagopaul, Reddy and Kistnasamy (2014) at eThekwini district suggests that family members with no medical background must be trained and supervised by a trained health care professional. The above-mentioned characteristics can be utilized as guidelines when establishing the treatment buddy system for people suffering from mental illness.

2.7 TREATMENT BUDDIES FOR SCHIZOPHRENIA PATIENTS

Treatment buddies for schizophrenia has not been established yet. Around the world, treatment supporters for mental illness have been investigated and are commonly called

by their role characteristics such as peer companions, peer advocates, consumer case managers, peer specialists or peer counsellors (Moran *et al.* 2020). A treatment buddy is an individual, usually a trusted family member or friend, who commits to supporting the patient who is diagnosed with a condition and is prescribed continuous treatment to manage the condition (Kibaara *et al.* 2016). The treatment buddy may accompany the patient to the clinic and support the patient to adhere to treatment, provide lay counselling and encouragement, and support the patient in establishing healthy behaviours, such as preventing drug and alcohol use (Kibaara *et al.* 2016).

2.7.1 Selecting a treatment buddy for schizophrenic patients

The criteria for selection of treatment buddies are similar for most conditions. For HIV/AIDS patients, a treatment supporter is any person willing to support and without necessarily having recovered from the same disease. It can be a person who has never had HIV/AIDS as long as the person is agreeable and has interest in helping the person who has been diagnosed. For cancer supporters, an ideal treatment buddy for a patient can be someone who has had cancer before (Halter 2018).

In mental health, peer supporters have been used and these are people who have an experience of mental illness, and who are willing to provide role modelling and support to other individuals with mental illness (Fan *et al.* 2018).

The treatment buddy concept for mentally ill patients can be someone who is not suffering from mental illness or a person who has recovered from mental illness and is in full control of his or her life. For this person to be effective in this role, he/she will need information regarding the condition that the patient is experiencing and the expected role to play. The guiding principles are that the treatment buddy must be a person who is chosen by the patient and who personally has an interest in helping the patient.

Mentally ill people often have a problem of not trusting anyone, therefore ideally the person should be someone known to the patient such as a family member (spouse, relative, child, parent), a friend, or a neighbour (Hooker *et al.* 2011) . Of interest, is the role of gender and selection of treatment supporter. Gender differences in social norms and economic standing may have an influence on how men and women choose treatment supporters. A study by Kibaara *et al.* (2016) in Kenya, reported that males often selected a partner/spouse, brother, or another family member as their treatment supporter; whereas females usually preferred their treatment supporter to be a sister, followed by the partner/spouse or another family member. Peers need to possess good communication skills, have some understanding of mental illness, must be responsible and caring in nature, as well as mentally stable (Fan *et al.* 2018).

2.8 CONCLUSION OF THIS CHAPTER

This chapter reported on literature on Schizophrenia as well as problems related to non-adherence to treatment for the disorder. Support systems that are in use for other diseases have also been highlighted. The next chapter presents the research methodology undertaken by this study.

CHAPTER 3: THEORETICAL FRAMEWORK

3.1 INTRODUCTION

This chapter identifies and provides an explanation of the theory that forms the foundation of this research study. It further explains how how the problem of non-adherence to medication by patients diagnosed with schizophrenia relates to the theory.

3.2 THE ROLE OF THEORECTICAL FRAMEWORK IN A RESEARCH STUDY

Understanding the definition of the two concepts, theory and framework is the initial step to understanding the role of a theoretical framework in a dissertation. Theory is a set of abstract generalizations, propositions, principles or concepts that explains how phenomena are interrelated (Polit and Beck 2014). A framework refers to a set of ideas and that guide decision making (Grove, Burns and Gray 2013). Therefore, theoretical framework is a logical structure that guides the development of the study based on knowledge and principles relevant to the research problem (Grove, Burns and Gray 2013). It serves as the guide on which to build and support the research study, and also provides the frame to define how one will approach the whole study dissertation (Grant and Osanloo 2014). Researchers uses theoretical frameworks to make their research findings more meaningful and acceptable, and to ensure that it is generalizable within the research field (Grant and Osanloo 2014). In overall, theoretical frameworks connect the researcher to existing literature, guide the researcher in choosing appropriate questions for the study, guide the selection of a research design, guide the data collection methods, assist the researcher to make predictions of the outcomes and the interpretion and analysis of the research findings (Grove, Burns and Gray 2013; Grant and Osanloo 2014; Polit and Beck 2014).

3.3 THEORETICAL FRAMEWORK FOR THIS STUDY – THEORY OF PLANNED BEHAVIOR

The study intends to address a relationship between schizophrenia patients and the behavior of non-adherence to prscribed medication.The study is based on the understanding that adherence levels to medication can be improved if patients are willing to engage in the behavior of taking their medication according to prescribed orders. The theoretical framework was selected at the beginning of the study to guide the direction of the literature review.The theory of planned behavior has been selected to guide the process of this study. This model was developed by Azjen, a social psychologist in 1985 (Ajzen 1991). The theory was an extension of a theory of reasoned action that was developed by Fishbein and Azjen in 1975 (Ajzen 1991). Both models were developed in quest to understand social behavior (Ajzen 1991). Lin *et al.* (2016) concluded that the theory of planned behavior is a framework that can be used by researchers to describe the process of help-seeking behavior by individuals. According to Ajzen (1991), an intention to engage in a specific behavior is dependent on the person's attitude towards the behavior and control of circumstances around achieving that particular behavior. The author used constructs such as attitude towards the desired behavior, subjective norm and perceived behavior control. When these constructs are positive, then there is a likelihood for the person developing strong intentions towards performing the behavior (Flowers *et al.* 2017).

3.4 APPLICATION OF THE THEORETICAL FRAMEWORK TO THE STUDY

The theory of planned behaviour has a potential to influence intentions of schizophrenic patients towards taking of medications. The problem statement of this study has identified a gap between the need to take medication and actual taking of medications among schizophrenic patients that are on long-term prescription of antipsychotic medication. This study aimed to close the gap by implementing an intervention of treatment buddies as a remedy of strengthening the motivation levels of the schizophrenic patient towards taking

medication. Explanations of the concepts used in this theory guided the literature review. Below is the schematic presentation of the theory of planned behaviour followed by a narrative of the basic concepts of the theoretical framework.

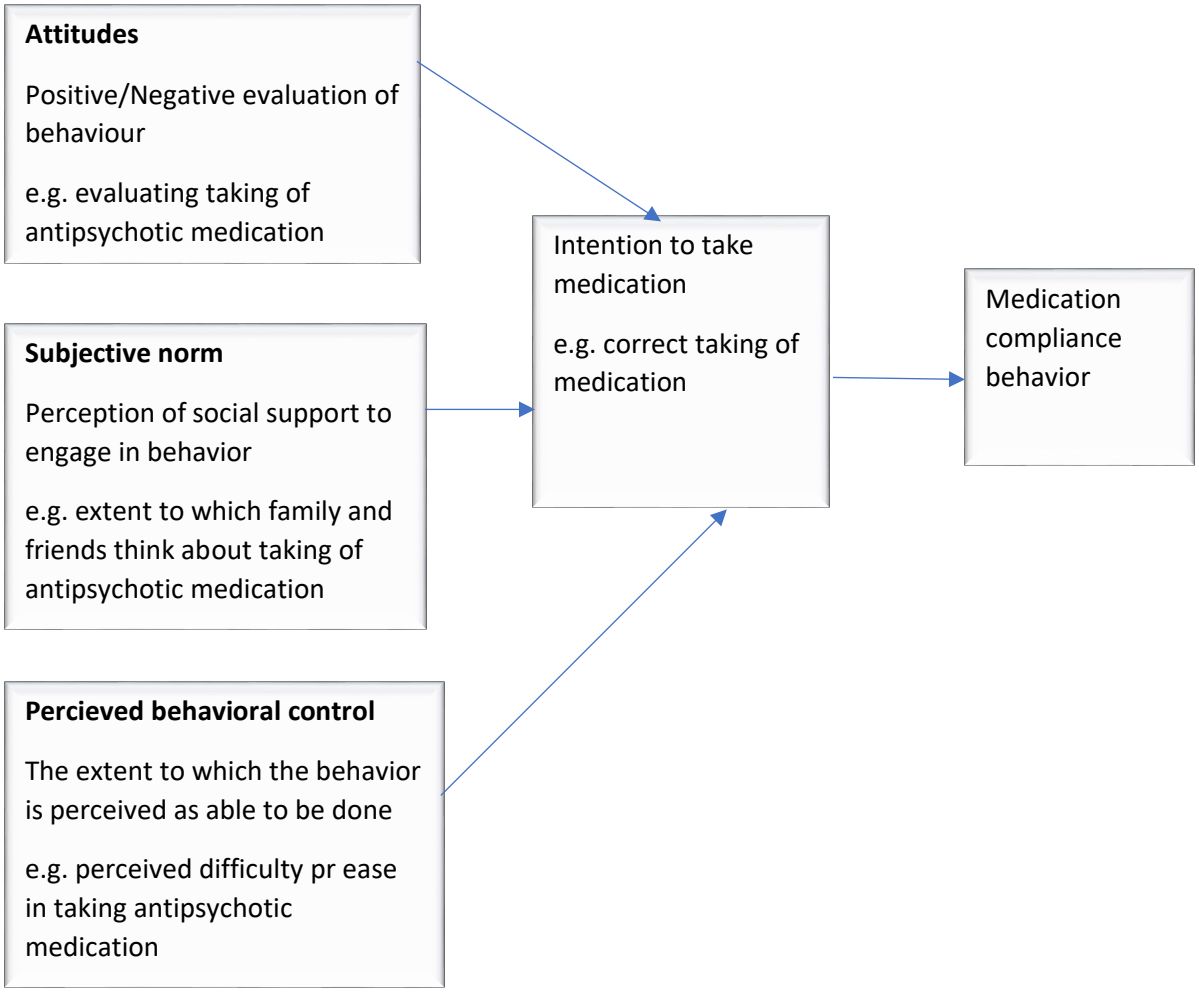


Figure 3.1 Schematic presentation of the Theory of Planned Behaviour (Ajzen 1988)

Personal attitudes refer to the beliefs the patient holds about a certain phenomenon (Brookes 2021). Attitudes are influenced by the knowledge, prejudices, or perceptions about the behavior and be interpreted as either positive or negative(Brookes 2021). For example one person may believe that medication is good, necessary, bad, expensive, not

helping etc. A second construct of subjective norms refer to the thoughts a person holds about other people's views or ideas of the behaviour. This could be the attitude of family and friends and colleagues about taking medication. If others are viewed as in favour of taking medication, the more likely is the intent to take treatment correctly, and th opposite is possible. A third construct that influences intentions towards a behavior is perceived behaviour control (Brookes 2021). This is the extent control a person believe to have over own behavior. Controlling own behavior depends on one's perception of his or her internal ability and determination and other external resources and support available (Brookes 2021). Schizophrenic patients because of their asocial behaviour and many challenges around taking of medication, lack the internal determination and support from relatives and friends. According to Flowers, Freeman and Gladwell (2017) the theory of planned behavior is an educational theory where one needs to be taught in order to get motivated toward developing favorable intentions. The treatment buddy was used in the study as a tool to influence the intentions of the schizophrenic patients. Intentions are described as indications of the depth of effort exerted by individuals towards performing a certain behavior (Brookes 2021). Generally, the stronger the intention to engage in a behavior, the more the likely that is the performance of the behaviour.Treatment buddies incorporated within the framework of the theory of planned behavior brought about knowledge, and act as a resource or support system for the patient. Once positive motivation occurs, automatically the behavior of taking medication ensues and adherence levels improves.

3.4 CONCLUSION OF THE CHAPTER

The chapter discussed the theoretical framework identified to guide this study. The origin of the framework, and application to this study was conducted. Additionally, it explained the structure of the literature review, research objectives and questions. The next chapter focuses on the methodological underpinning of the study.

CHAPTER 4: RESEARCH DESIGN AND METHODS

4.1 INTRODUCTION

The previous chapter outlined the literature review relevant to schizophrenia and its treatment. The literature review also provided some insight into the use of interventions in the form of support from family and friends to improve treatment uptake in other diseases. The dearth in the literature for such support from patients with schizophrenia was noted.

This chapter will discuss the research design, methodology including target population, sampling processes specific for this study, data collection, data analysis, and validity aspects of the study.

4.2 RESEARCH DESIGN

This study utilized a mixed methods research approach. This method combines both qualitative and quantitative aspects. An experimental pre-test-post-test control group design was used. The pre-test-post-test design allowed for the participants to be randomly assigned into two groups, the experimental group and the control group (Brink 2013). Both groups were assessed using a quantitative questionnaire at the beginning of the study, to ascertain the level of adherence to medication. A research assistant was employed for this study. The role of the research assistant was to act as a 'treatment buddy' to send daily text reminders to the participants from the intervention group, reminding them to take their medication. Reminders to collect the medication at the appointed time were also sent by research assistant. The intervention involved providing virtual treatment buddy support for six months. Following this, the participants were asked to fill out a second quantitative questionnaire to compare whether the intervention had any effect on the rate of adherence to psychiatric treatment.

In addition, qualitative interviews with patients, the research assistant and mental healthcare professional nurse were conducted to gain an in depth understanding of their

experiences with the treatment “buddy system”. The advantages, disadvantages of the system, pitfalls and ways to improve the system were also discussed.

4.2.1 Mixed Methods Study

Mixed methods studies refer to studies that combine both the qualitative and quantitative approaches to the research process Teddlie and Tashakkori (2008). Reasons of using mixed methods in this study is that it involves implementing the strengths of both qualitative and quantitative research methods, and thus enlarging understanding of the problem under investigation; can address the complex problems of social and health science research which cannot be fully attended to by either the quantitative or qualitative approach alone; and combining both approaches yields more insight to the problem (Creswell 2009).

The core characteristics of a well-designed mixed methods research include collection and analysis of both quantitative and qualitative data; implementing strict procedures relevant to each approach during collection and analysis of data; and integration of data during collection, analysis, and discussion.

The mixed methods approach advantages are that both quantitative and qualitative data can be compared, participant’s views are reflected, and allows for collection of valuable, relevant, and wide range data. (Wisdom and Creswell 2013).

The challenges for mixed methods researchers are a need for wider data collection, analyzing both text and numeric data, and requires researchers to possess a good understanding of both quantitative and qualitative forms of research (Creswell and Creswell 2018).

In this study data was collected concurrently before data analysis was conducted. Both quantitative and qualitative information was emphasized equally, and both databases were integrated.

The structure of the final report presentation of this study will describe the data collection of both qualitative and quantitative methods in separate sections but the analysis and interpretation will be combined to seek convergence or similarities among results (Creswell 2009).

4.2.2. Data collection instrument

Quantitative and qualitative questionnaires were used to collect data for this study (Annexure I and J). The quantitative questionnaires (Annexures I and J) were divided into subsections of patient's demographic data, information about previous admission to a psychiatric institution, factors related to taking of treatment, and questions about seeking intervention regarding adherence to psychiatric treatment. The qualitative questionnaires (Annexure K, and M) had fewer questions that were designed to guide the qualitative interviews. All the questionnaires except for health practitioners and for the research assistant were translated to IsiZulu version. (Annexures I(a) and J(a)). The questionnaires were planned as follows:

1a. Annexure I.

This was the pre-intervention quantitative questionnaire which was used to gather information from all schizophrenic psychiatric participants who were selected as participants for this study.

1b. Annexure J.

This annexure composed of the post-intervention quantitative questionnaire which was used to gather information from all psychiatric participants who participated in this study.

1c. Annexure K.

This was the post-intervention qualitative questionnaire that was designed to guide qualitative interviews for the psychiatric patients who had received the intervention. This questionnaire comprised of six questions. These were the main questions but further probing questions were used depending on the response received from the participant.

1d. Annexure L

This document contained questions that gave the research assistant an opportunity to report on her experience during the study, how she managed the groups, the problems she encountered, the pros and cons of the buddy system. She had to give her opinion about effectiveness of the buddy system in improving adherence to psychiatric medications.

1d. Annexure M.

This was the qualitative questionnaire for the healthcare practitioners (nurses) that were involved in this research to ascertain their views about the virtual treatment buddy support.

Both qualitative interviews mentioned above (Annexures K and M) were audio recorded and subsequently transcribed prior to data analysis.

4.3 STUDY POPULATION

The targeted population was psychiatric patients who are suffering from Schizophrenia and were prescribed psychiatric treatment for a period of at least six months by a psychiatric healthcare practitioner in the province of KwaZulu-Natal.

4.3.1 Inclusion Criteria

- The person had a diagnosis of Schizophrenia.
- Prescribed antipsychotic medications by a qualified psychiatric healthcare practitioner.
- Was on treatment for at least six months.
- Was on a long-term treatment plan of at least one year.
- Was on a monthly schedule of script renewal.
- Was able to communicate in isiZulu or/and English.
- Was collecting medication at Chatsworth psychiatry clinic of R.K. Khan Hospital in the eThekwini district.
- Both males and females were included.
- Belonged to any ethnic group.

4.3.2 Exclusion criteria

- Were not minor ie. below 18 years of age
- Was not over the age of 65 years.
- Those having a diagnosis of mental retardation were excluded.

4.4 SAMPLING

A non-probability, convenience sampling method was utilized to select the participants. Convenience samples are inexpensive, accessible, and usually require less time than any other sampling types (Grove, Burns and Gray 2013). The researcher selected all the patients who visited the Chatsworth psychiatric clinic of R.K. Khan Hospital during the weeks of participant selection. Only patients who suffered from schizophrenia and who met the criteria of inclusion were accepted. The researcher entered the available patients into the study until the desired number of participants was reached.

4.4.1 Sample Size

The sample size for quantitative research is usually larger to describe variables, identify relationships among variables, or determine differences between groups (Grove, Burns and Gray 2013). According to the statistics from Chatsworth psychiatric clinic of R.K. Khan hospital there are between 180 to 220 psychiatric patients suffering from schizophrenia that are seen on a monthly basis. This formed the study population, from which participants were drawn.

Participants were divided into two groups: Control group and intervention group. A statistician was consulted to assist with the sample size calculation. Using the Clincalc sample size calculator, a probability of 0.05 and an 80% power, a minimum sample size for the 2 groups was calculated. From the calculations the intervention group had 58 participants and 29 for the control group. As we anticipated, some loss to follow up, the number of participants to recruit per group was 80 for intervention group and 35 for the control group.

Another set of participants comprised of three nurses that were recruited as study participants. Lastly, the research assistant was recruited too and was expected to give her experience of the treatment buddy system.

4.5 EXPERT GROUP DISCUSSIONS

An expert group discussion comprising of the researcher, the supervisor, co-supervisor and two other experts from the university who thoroughly interrogated the questionnaires prior to commencing with the study was undertaken. This was followed by a pilot study. The expert group focus was on how much time it would take to administer the entire instrument, whether questions yielded sufficient data and whether questions were understood in the same manner as intended by the researcher (Polit and Beck 2008).

4.6 PILOT STUDY

The researcher gave the pre-intervention quantitative questionnaire (Appendix I) to four participants. Two of these participants were English speaking and the other two were speaking IsiZulu, therefore both versions of the questionnaires were reviewed. The researcher randomly selected these participants and ensured that the participants were meeting the criteria of inclusion. The researcher explained the aim of the research and allowed the participant to complete the survey in the researcher's presence. Permission to use the participants was sought from the nurse in charge of the clinic. The pilot participants were recruited from the same clinic where the study was conducted, they were asked to provide written informed consent. They were excluded from the main study and their data was not used in the data analysis. The necessary corrections to the questionnaires were made and the final questionnaires were used by the researcher.

4.7 DATA COLLECTION PROCEDURE

Data collection is described as the precise, systematic gathering of information relevant to the research purpose or the specific objectives, questions, or hypothesis of a study (Grove, Burns and Gray 2013). There were two sets of data to be collected, the quantitative and the qualitative data, hence the study is a mixed method study. The study sought to investigate the effectiveness of the virtual buddy support to improve adherence to psychiatric treatment of patients suffering from schizophrenia, therefore the people

ideal for giving appropriate data were psychiatric patients suffering from schizophrenia, and the nurses that were involved in providing and monitoring the participants with treatment. The design of the study is a pre-test post-test and therefore required data for pre-intervention phase and the post-intervention phase for comparison of treatment behaviors among schizophrenia patients. The whole process of data collection took place over a period of six months. Having recruited the study participants, the researcher began collecting the first set of data regarded as pre-intervention data and after six months of participant's exposure, the post-intervention data was collected.

Before the entire recruitment process commenced, the researcher made an appointment with the professional nurses allocated at the Chatsworth psychiatric clinic of R.K. Khan Hospital. The researcher introduced herself and the study to them. Their support was sought to assist the researcher by providing the patient's files and space for the researcher to conduct her one-on-one interviews with the participants. The nurses were also recruited to participate in the study so that they can provide in depth information on healthcare worker perspectives on use of virtual treatment "buddy system" for psychiatric patients that took place in the clinic. In order to engage on these interviews, the nurses were issued with participant information letter (Annexure C) and were asked to sign a consent form (Annexure F).

The researcher selected 117 participants from the Chatsworth psychiatric clinic of R.K. Khan Hospital. Of these participants, 82 were allocated treatment buddy services, a research assistant supported them virtually by sending daily text messages either by short messaging system (SMS) or WhatsApp for a period of six months, and the remaining 35 formed the control group and were not provided any treatment buddy service. The researcher personally conducted the recruitment of participants. The participants were placed randomly to either intervention group or control group.

The recruitment process began on the 25 May 2021 and was completed on 02 June 2021. On the first day of contact with the patient, the researcher briefly introduced herself and gave a brief outline of the study to the patients in their waiting room. The researcher then proceeded to the nurses to request files from which she selected all patients suffering from schizophrenia. Patients with comorbid illnesses and comorbid alcohol and substance use were also selected. Following their consultation with the nurses and psychiatrists, these patients were asked to go to a private room, where the researcher introduced the study in detail in both English and isiZulu, as per preference of each patient and afforded them an opportunity to ask questions. The researcher issued the participant information letter to the patients and read the information letter to them. Those who were interested in participating were asked to sign a consent form prior to entering into the study. Both information letters and consent forms were provided in the language of choice, either English or isiZulu (Annexure A (a) and D (a)). With each individual consultation the researcher used her background knowledge of psychiatry nursing to continuously assess each participant for their capacity to consent for the study. The participants were then asked to complete the pre-intervention questionnaire. This questionnaire was designed to assess the level of compliance in taking treatment. Finally, the participants were requested to provide their active cellphone numbers that could be used to communicate with them via text messaging. Participants spent about 30 minutes in the clinic on their first contact with the researcher; hence the researcher provided them with prepacked lunch, to compensate them for their time.

The selection took place approximately over a period of three weeks as follows:

Table 4.1: Population of study participants that were recruited.

DATE	NO OF PARTICIPANTS	INTERVENTION	CONTROL
25/05/2021	10	8	2
26/05/2021	12	8	4
27/05/2021	18	13	5
28/05/2021	22	14	8
31/05/2021	14	10	4
01/06/2021	14	11	3
02/06/2021	12	8	4

Since the data collection process occurred over a period of time, the researcher managed to randomly arrange at least one monitoring session with participants in a form of an unstructured interview during the implementation of the intervention to check whether the participant and the research assistant (treatment buddy) were still working together. This monitoring was conducted by the researcher, who made telephonic contact with the participants. Having this additional contact session with the participants was advantageous because it created familiarity between the participant and the researcher; it also promoted a trusting relationship between the researcher and the participant and his/her treatment buddy (Grove et al. 2013). Members of the control group (who did not receive text messages), were only contacted at the end of the study to establish compliance so that the two groups could be compared. The data was collected by the researcher.

All the participants, from both the control and intervention groups, were asked to return for a follow up interview six months after the initial data collection. They were required to complete the post intervention quantitative questionnaire at this stage. Some participants did not arrive at the clinic on the appointed date and were therefore sent telephonic

reminders. Completion of post-intervention questionnaires got delayed by two weeks of the original appointed date.

Eight participants were lost to follow up. One of these had died during the study period whilst another seven could not be located. Three of those who were lost to follow up were from the intervention group and five from the control group. Thus, a total of 109 participants were followed in the six months period, 79 participants from the intervention group and 30 from the control group. The actual completion of post intervention questionnaires on follow-up was as follows:

Table 4.2: Dates and number of participants seen during post intervention quantitative data collection

FOLLOW - UP DATE	PARTICIPANTS SEEN FROM INTERVENTION GROUP	PARTICIPANTS SEEN FROM THE CONTROL GROUP	TOTAL NO OF PARTICIPANTS
09/11/2021	3	2	5
10/11/2021	7	3	10
11/11/2021	8	1	9
12/11/2021	5	2	7
15/11/2021	6	2	8
16/11/2021	8	8	16
17/11/2021	3	-	3
18/11/2021	6	3	9
19/11/2021	2	1	3
22/11/2021	7	1	7
24/11/2021	2	2	4
30/11/2021	6	1	7
06/12/2021	5	1	6
07/12/2021	1	2	3
08/12/2021	5	1	6
09/12/2021	4	-	4
13/12/2021	1	-	1
TOTAL	**79**	**30**	**109**

The qualitative aspect of this study involved interviewing the study participants, the research assistant and healthcare professionals regarding their experiences and views of the virtual buddy support. Nurses were specifically asked to discuss their

understanding of the buddy system, experiences with the patients who had been offered treatment buddy services by the researcher and those who did not have treatment buddy services. They were also allowed to provide suggestions for future use of the treatment "buddy system". A semi-structured interview guide was used to collect in depth information from the participants (Annexures K), health care professionals (Annexure M) and the research assistant (Annexure L). This was created by the researcher. The researcher personally conducted the interviews on a one-on-one basis with study participants to collect the qualitative data. These interviews were audio recorded; participants were asked permission for the recording. Individual participants from the intervention group were randomly selected for in-depth interviews. Some participants were not willing to participate because they were hurrying to work, and others were escorted by visitors who were not prepared to wait. Further participants were then randomly selected for the qualitative interviews, 24 of which were conducted until data saturation was reached. Saturation of data occurred when additional sampling provided no new information, but only redundancy of previously collected data (Grove, Burns and Gray 2013).

The researcher organized beforehand the dates and venue of the one-on-one qualitative interviews; and the research participants were informed in advance about their meetings. The site to conduct the interviews was a private room located in the same clinic where patients were attending treatment sessions. This allowed for privacy, safety and convenience for participants, as this is the same place in which they get their treatment. The researcher had a responsibility to create an atmosphere that would allow for sharing of experiences and feelings and had to display an attitude of respect and caring for participants. Also, the researcher had to ensure that discussions take at least 45 minutes to one hour because schizophrenia patients are likely to lose concentration, as they usually have poor attention span. The discussions were actually taking ten to twenty minutes. To manage qualitative data, discussions were audio recorded and subsequently transcribed. Used audiotapes were labelled using date of collection and participant numbers. The tapes were stored safely in a cabinet that is kept safe by the researcher,

and the transcribed material was saved on computer that is password protected. The data were kept safe for data analysis later.

The qualitative interviews were conducted on the following dates:

Table 4.3: List of qualitative interviews conducted.

DATE	**QUALITATIVE INTERVIEWS CONDUCTED**
09/11/2021	3
10/11/2021	3
11/11/2021	6
12/11/2021	2
15/11/2021	1
16/11/2021	4
17/11/2021	1
18/11/2021	3
13/12/2021	1
TOTAL	**24**

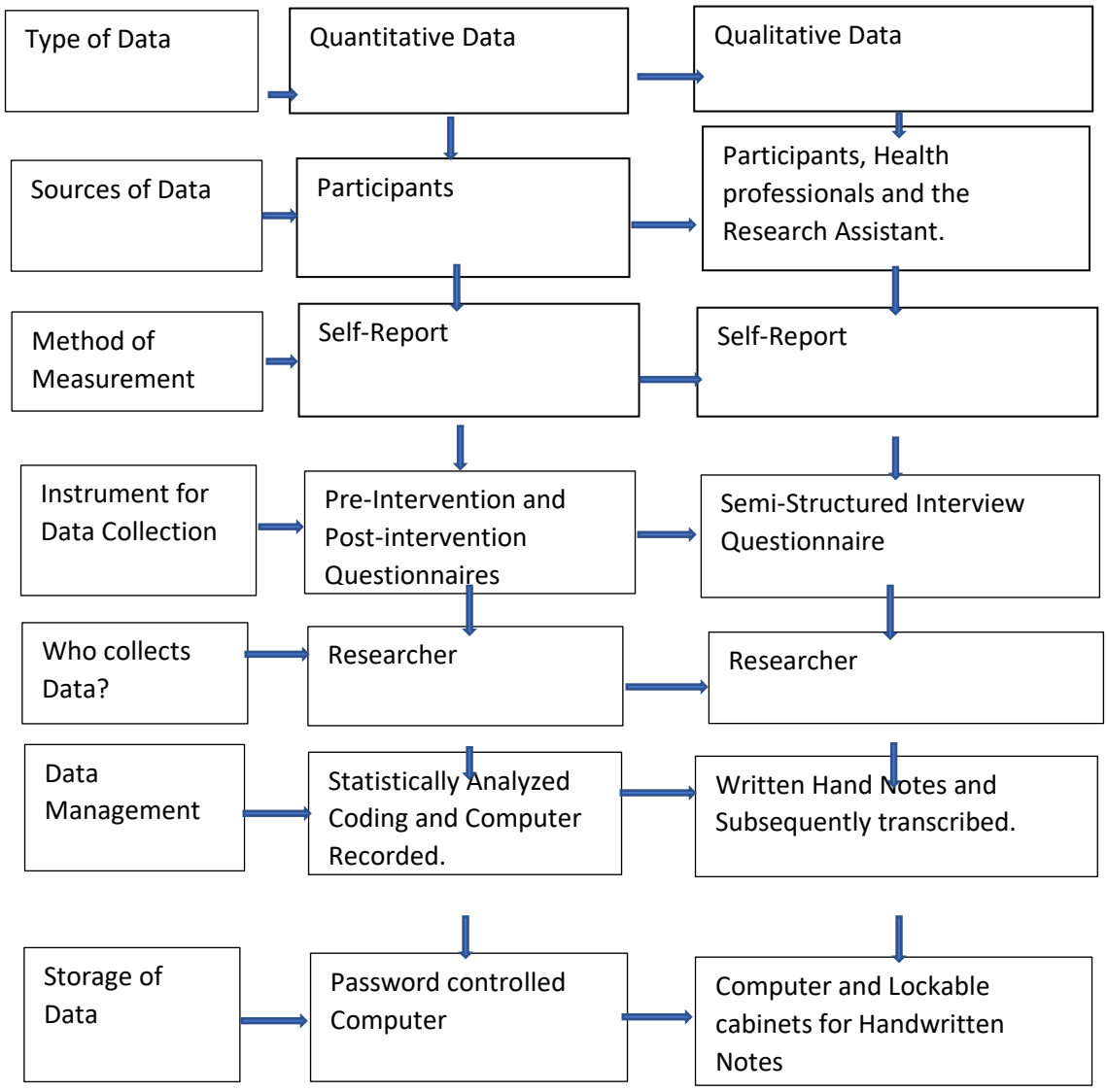
The four professional nurses allocated in Chatsworth psychiatric clinic of R. K. Khan Hospital were interviewed after all patient participants were followed up. There were initially three professional nurses and the fourth one joined whilst the research was ongoing. He was also interviewed because he had spent three months with the patient and was aware of the research.

Lastly, the research assistant who served as a treatment buddy for all study participants was interviewed also. Social distancing and other COVID-19 protocols were adhered to throughout all interview sessions.

4.8 QUANTITATIVE DATA COLLECTION PLAN

The procedure of collecting data for this study was conducted according to the following order:

Figure 4.1: Schematic Presentation of Data Collection Plan



A first set of quantitative data was collected from all recruited schizophrenia patients (n=117) prior to implementation of the intervention (pre-test data). A self-administered questionnaire (Annexure I) which was designed by the researcher was used to seek information from the participants. The questionnaire was composed of both open ended

and closed ended questions. The inclusion criteria allowed for English and/or IsiZulu speaking persons, therefore the instruments have been translated from English to isiZulu to accommodate the persons communicating only in IsiZulu (Annexure I(a) and L(a)). The researcher was available to guide the participants in completing the package. It became critical that the researcher created an atmosphere of respect and caring for the participants as they were suffering from schizophrenia and likely to have a poor attention span. The researcher pre planned the dates for data collection and estimated number of patients to see per day. Data collection occurred over a period of three weeks because the researcher was guided by availability of participants and willingness to participate in the study.

Data management was conducted immediately following collection for each day, the researcher coded the data and recorded it in a computer for storage until data analysis commenced. It is critical that information gets stored immediately following collection to prevent any loss of information.

At expiration of intervention time, all participants including the control group were required to fill out a post intervention questionnaire (Annexure J), but there were sections that the control group could not complete e.g. the intervention section which was addressing issues related to treatment buddy support. The researcher distributed the questionnaire, remained available for participants' questions and personally collected the questionnaires on completion. The intention was to gather information regarding their current experiences of adherence to treatment, thus enabling the researcher to make comparisons of the rate of adherence to psychiatric treatment between the intervention group and the control group. The computer was protected by use of a password. The above-mentioned questionnaires had English (Annexure I and J) and IsiZulu (Annexure Ia and Ja) versions. Collected data was again coded and got stored in the computer for data analysis purposes.

4.9 VALIDITY AND RELIABILITY

The researcher developed new questionnaires for this study since there were no previous studies found that had made use of virtual treatment buddy support for psychiatric patients suffering from schizophrenia. According to Grove, Burns and Gray (2013), a pilot study can be used to develop various steps in the research process such as a measurement method. The quantitative aspect of this study required critical evaluation of the reliability and validity of the measuring instruments. Firstly, a focus group discussion to thoroughly interrogate the questionnaire was conducted to refine and examine the reliability and validity of the research instrument i.e. the questionnaires. This was followed by a pilot study. Reliability refers to consistency and accuracy with which the research instrument measures the targeted attribute (Polit and Beck 2014). Reliability is enhanced by using questionnaires with unambiguous questions allowing respondents to understand and respond in the same manner. Validity is the degree to which an instrument measures what it is supposed to measure (Polit and Beck 2014).

4.10 ETHICAL CONSIDERATIONS

Prior to collecting data for this research study, institutional ethical clearance (Ethical Clearance number IREC 030/20) was obtained from the Institutional Research Ethics Committee (IREC) of the Durban University of Technology (DUT) (Annexure O). Permission to conduct the study was sought from the KwaZulu-Natal Department of Health (KZN DoH) (Annexure H and Annexure P), and from Chatsworth psychiatric clinic of R.K.Khan hospital in the eThekwini district (Annexure G and Annexure N). Consent to participate in this study was obtained from the participants i.e. psychiatric patients, the healthcare professionals (nurses) and the research assistant, who served as the treatment buddy.

4.10.1 External ethical reviews and the protection of human rights.

Formal research ethics committees and protocols have been established by institutions of higher education for reviewing of proposed research plans before they are implemented for a certain research project (Polit and Beck 2008). The reasons for involving established formal committees to review proposed research plans comes from the understanding that researchers may fail to be completely objective when assessing the risk/benefit ratios, in developing procedures to protect participant's rights, to eradicate biases arising as a result of the researcher's commitment to an area of knowledge and the researcher's desire to conduct the study with as much rigor as possible (Polit and Beck 2008). For the formal research ethics committees to permit the research study to proceed, certain requirements have to be met. The requirements are that risks to participants are minimized and reasonable in relation to anticipated benefits, selection of participants is equitable, informed consent sought and appropriately documented, participant's safety is ensured, privacy and confidentiality of data is maintained, and inclusion of appropriate additional safeguards for vulnerable groups to protect their rights and welfare (Polit and Beck 2008; Grove, Burns and Gray 2013).

This study involved human participants that are regarded as vulnerable group (psychiatric patients) hence had to be approved by the Faculty Research Committee (FRC) and the Institutional Research Ethics Committee (IREC) of the Durban University of Technology (DUT). However, because the study used patients as participants, permission was also sought from the Department of Health of KwaZulu-Natal (KZN DoH) and from the Chief Executive officer (CEO) of R. K. Khan Hospital where the study was conducted as indicated above.

4.10.2 Ethical principles for protecting study participants

4.10.2.1 Respect for human dignity

Participants were never forced to participate in this study because of their mental status, they retained their right to self-determination and the right to full disclosure (Polit and Beck 2008).

Self-determination is the honor given to potential participants to decide voluntarily as their right whether to partake or not in a proposed study (Polit and Beck 2008; Grove, Burns and Gray 2013). The participants were not coerced or deceived in any way, not threatened or lured for excessive reward (Polit and Beck 2008; Grove, Burns and Gray 2013). To address the issue of self-determination, the participant letter of information that was read to prospective participants and the consent form informed them of their right to withdraw from the study at any time without a penalty.

The right to full disclosure required the researcher to fully describe the nature of the study, the individual's right to refuse participation, the researchers' responsibility and the benefits together with risks likely to occur (Polit and Beck 2008). For this study, the researcher provided a participant information letter that fully described the entire research process, including the purpose of the research, how recruitment was to take place, how the researcher would maintain privacy and confidentiality of information, and the right to withdraw participation. The prospective participants signed a consent form in agreement to participate in the study.

4.10.2.2 Right to Privacy

Privacy is an individual's right to determine the time, extent, and general circumstances under which personal information will be shared with or withheld from others (Grove, Burns and Gray 2013). The participant's personal information that needed protection and could not be shared without their consent consisted of their attitudes, beliefs, behaviors, opinions, and records (Grove, Burns and Gray 2013). Anonymity was maintained as the

names and physical addresses were not required in the questionnaire. Only participant numbers were allocated.

Confidentiality of information was maintained throughout the study by ensuring that private information about the patient was not shared. The study raw data such as the completed consent, questionnaires and audio recorded interviews with different participants, was kept safe from reach by unauthorized persons. Anonymity of participants was maintained by not writing their names on the research material, only participant numbers were used making it impossible to link them with their responses during data collection and publication of the study. The researcher made sure that participant's names are not accidentally revealed. The explanation about privacy rights was included in the participant's information letter.

4.10.2.3 The Principle of beneficence

This principle required the researcher to do good and 'above all do no harm' (Grove, Burns and Gray 2013). There was no harm anticipated with the topic at hand. The participants cooperated with the support offered by the research assistant who acted as a treatment buddy, and she followed the guidelines provided by the researcher. The researcher gave clear instructions to the research assistant on how to conduct her role of reminding participants to take treatment and how to address problems reported by participants, without contravening the right to protection from discomfort and harm of the participants. It is fortunate that the research assistant was a trained psychiatric nurse who understood issues that needed to be reported to the researcher.

The principle of beneficence also safeguarded participant's right to protection from exploitation. The possibility of exploitation arises when the information they have provided get used against them. Participants were expected to mention reasons for non-adherence to treatment which might include factors such as comorbid substance use, economic

factors etc. The researcher assured participants that any information shared was not divulged to a third party.

4.10.2.4 The Principle of justice

This principle holds that all human participants involved in a particular study should be treated fairly and should receive what they deserve or owed (Grove, Burns and Gray 2013). The participants were selected for reasons directly related to the problem being studied and not based on their easy availability, their compromised position, or their manipulability (Grove, Burns and Gray 2013). Fair treatment entailed respecting the agreement about the role of the researcher and that of the participant within the study (Grove, Burns and Gray 2013). The researcher kept the promise of having the participants reminded of their treatment for an agreed duration. The sample was composed of various age groups and genders (excluding minor children 18 years and the elderly of above 65 years of age), ethnic backgrounds and socioeconomic status. Study participants who decided to withdraw from the study were not prejudiced in any manner.

4.10.2.5 The protection of vulnerable groups

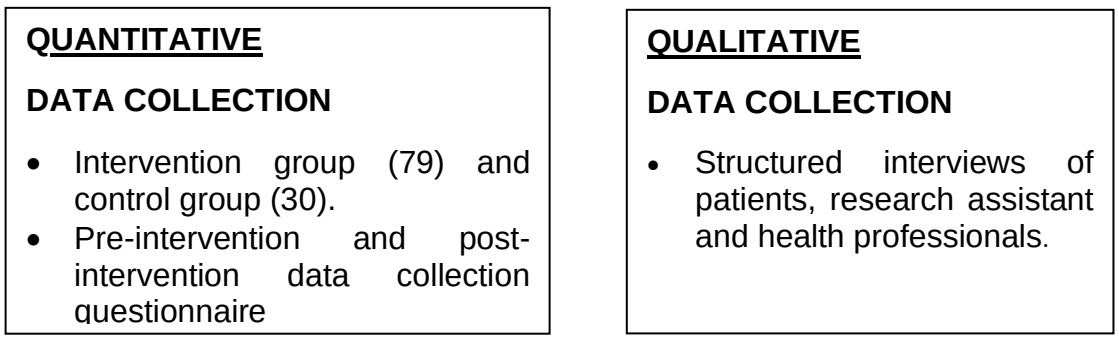
Vulnerable groups refer to those individuals that may be incapable of giving fully informed consent such as children, mentally or emotionally disabled people, severely ill or physically disabled, terminally ill, institutionalized people or pregnant women. For this study, the researcher had no intention of using children with mental challenges as indicated in criteria of inclusion. The study involved only adults of ages between 18 and 65 years. The mentally ill persons had to be used because the study attempted to resolve a problem that directly involved them. This research study is therapeutic; hence the participants have a potential to benefit directly from using the virtual support provided by the treatment buddy. There was no potential risk anticipated to these participants.

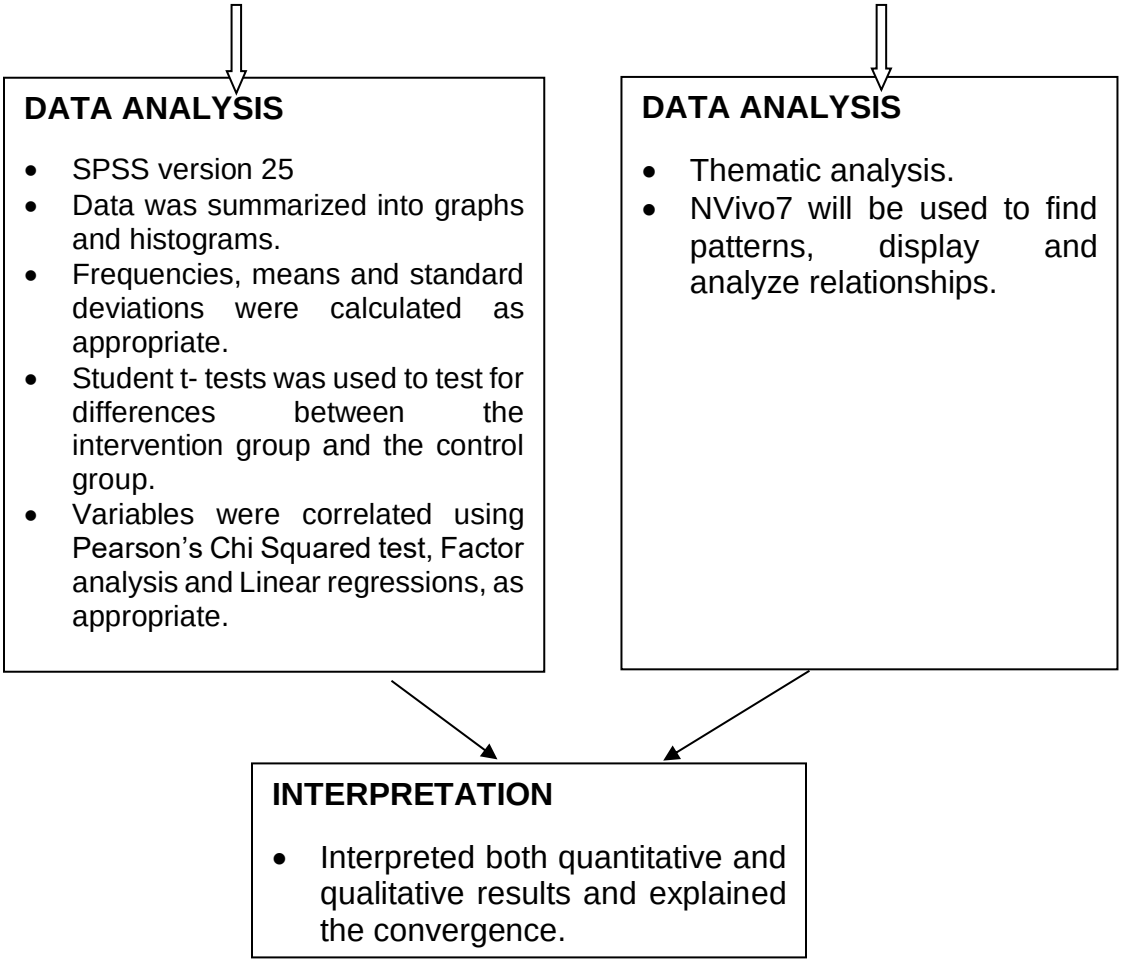
4.11 DATA ANALYSIS

Data collected needed to be systematically analyzed. Data analysis entailed categorizing, ordering, and summarizing the data and describing them in meaningful terms (Brink, Van der Walt and Van Rensburg (2014). Quantitative data was analyzed using SPSS (Version 25). Descriptive statistics such as frequencies, means and standard deviations were calculated as appropriate. Student t- tests was used to test for differences between the intervention group and the control group. Variables were correlated using tests such as Pearson's Chi Squared test, factor analysis and linear regressions, as appropriate. A *p* value < 0.05 was considered statistically significant.

The qualitative data to be analyzed was taken from audio recorded interviews of the questionnaire collected from the patients, treatment buddies and nurses regarding their view on use of treatment buddies in psychiatry. All the interviews were transcribed, and subsequently qualitative data analysis was conducted using the thematic analysis approach. Thematic analysis is described by Maguire and Delahunt (2017), as the process of identifying patterns or themes within qualitative data. Nowell *et al.* (2017), describes thematic analysis as a qualitative research method that can be widely used across a range of epistemologies and research questions for identifying, analyzing, organizing, describing, and reporting themes found within a data set. Maguire and Delahunt (2017), identified the six steps of thematic analysis to include becoming familiar with the data, generate initial codes, search for themes, review themes, define themes, and write-up. For further analysis of qualitative data, content analysis was conducted to analyze narrative data and to identify prominent themes and patterns.

Figure 4.2: Data analysis plan





CHAPTER 5: RESULTS

5.1 INTRODUCTION

The focus of this chapter is on presentation and description of results. The aim of the study was to develop an intervention, with the use of a text message managed "buddy system" to improve adherence to medication among patients suffering from

schizophrenia. A mixed method approach was used. The study utilized the pre-test-post-test design, and the participants were randomly assigned into two groups, the experimental group and the control group.

The quantitative findings will be presented first. The qualitative findings will be presented beginning with study participants, followed by the health professionals and lastly the results from the research assistant case study.

5.2 PRE-INTERVENTION QUANTITATIVE FINDINGS

5.2.1 Demographic information

The pre-intervention sample comprised of 117 participants. The demographic characteristics of the participants are detailed in Table 5.1. The male participants constituted the majority (64%; n = 75) in this study. Most participants (28.2%; n = 33) were between 45 to 54 years. Just over half the participants (53.8%; n = 63) were Indian and were of the Christian religion (65%; n =76). The majority of participants (79.5%; n = 93) were unmarried and 72.6% (n = 85) completed secondary education. More than half the participants (59, 8%; n = 70) were English speaking.

Table 5.1: Demographic information of participants (pre-intervention)

Sociodemographic Characteristics	**Categories**	**Frequencies n (percent)**
Gender	Males	75 (64%)
	Female	42 (40%)

Age	18 -24	6 (5.1%)
	25-34	23 (19.7%)
	35-44	28 (23.9%)
	45-54	33 (28.2%)
	55-64	27 (23.1%)
Race	Black Africans	48 (41%)
	White	4 (3.4%)
	Indians	63 (53.8%)
Language	IsiZulu	42 (35.9%)
	English	70 (59.8%)
	Other	5 (4.3%)
Religion	Christian	76 (65%)
	Islam	15 (12.8%)
	Hinduism	21 (17.9%)
	Cultural	3 (2.6%)
	Other	2 (1.7%)
Level of Education	None	2 (1.7%)
	Primary	18 (15.4%)
	Secondary	85 (72.6%)
	Tertiary	12 (10.3%)
Marital Status	Single	93 (79.5%)
	Married	19 (16.2%)

	Divorced	2 (1.7%)
	Widowed	2 (1.7%)

5.2.2 Adherence to treatment

The pre-intervention findings revealed that more than half (60.7%; n = 71) of the participants were consistent with their treatment, while just above one-third (39.3% n = 46) had stopped treatment at some stage. Among the participants who were inconsistent in taking their medication, 38.1%; (n = 16) had stopped treatment for more than 1 week but less than 1 month, 23.8%; (n = 10) had stopped treatment for a period ranging between 1 to 6 months, 11.9%; (n = 5) had stopped treatment for less than 1 week, 9.5%; (n = 4) had stopped treatment for 6 months and 4.8%; (n = 2) had stopped treatment for more than a year. The majority 81%; (n = 34) of those who stopped medication, discontinued more than one medication, while 19%; (n = 8) discontinued only one medication.

5.2.3 Factors contributing to discontinuation of treatment

Table 5.2 indicates factors that caused the participants to stop treatment. The most common causes reported were inadequate knowledge about the disease (63.6%; n = 28), discouragement due to there being no cure for the disease (52.3%; n = 23), and long treatment duration (50%; n = 22). Many also reported having side effects with the medication (47.7%; n = 21), experiencing odd feelings (45.5%; n = 20), not understanding instructions (43.2%; n = 19) and forgetfulness (40.9%; n = 18).

Table 5.2: Factors contributing to participant's discontinuation of psychiatric treatment

Statements	**Number n (%)**
Inadequate knowledge about the disease.	28 (63.6%)
Discouraged that the disease will not be cured (chronic nature).	23 (52.3%)

Long duration of treatment	22 (50%)
Experiencing side effects.	21 (47.7%)
Experiencing odd or unusual feelings, thoughts and behaviours that did not exist before illness like hearing voices, holding certain beliefs or an urge to move around.	20 (45.5%)
Not understanding the instructions.	19 (43.2%)
Forgetting to take the treatment.	18 (40.9%)
Suffering from substance use disorder leading to forgetting treatment for schizophrenia.	6 (14.3%)
Financial problems prevented the client from obtaining his / her medication.	4 (9.1%)
Fear of becoming labelled as worthless.	3 (6.8%)
Transport issues prevented the patient from obtaining his / her medication.	3 (6.8%)
Being unemployed led to defaulting medication	2 (4.5%)
Lack of support from family.	4 (3.4%)
Lack of time to visit the clinic / hospital because of work, or personal commitments.	1 (2.3%)
The long queue when attending the clinic/hospital caused the patient to default	1 (2.3%)
The unwelcoming attitude of health care workers caused patient to default	1 (2.3%)

5.2.4 Association between demographic variables and factors contributing to discontinuation of treatment

The association between the participant's demographics (gender, age, race, language, religion, education, and marital status) and the factors contributing to the discontinuation of psychiatric treatment was analysed. A significant association was found between race and financial problems that prevented the participant from obtaining medication *(p = 0.029),* with more people from the Black race having financial problems that prevented

them from taking medications. There was a statistical difference between the level of education and not having time to visit the clinic / hospital because of work and other personal commitments (*p<0.001*), with the uneducated participants reporting insufficient time to visit the clinic / hospital. Those who were uneducated also perceived an unwelcoming attitude of health care workers which led to them missing appointments to collect medication (*p<0.001*). The demographic factors of gender, age, language, religion and marital status showed no association with any of the factors associated with discontinuation of treatment *(p>0.05*).

5.2.5 Effect of discontinuation of medication

Most of the participants who did not adhere to their prescribed treatment reported either a worsening or return of the disease symptoms (86%; n = 37), and rehospitalization (47.7%; n = 21). Many had to be referred for specialist treatment (38.6%; n = 17) and stronger medication was prescribed (38.6%; n = 17). All the effects are reflected in Table 4.3.

Table 5.3: Effect of discontinuing treatment (pre-intervention)

Effects	**Number n (%)**
Return or worsening of symptoms of schizophrenia after partial recovery	37 (86%)
Rehospitalization	21 (47.7%)
Referral to specialists	17 (38.6%)
Stronger medications prescribed	17 (38.6%)

Loss of employment	13 (29.5%)
Financial Loss	12 (27.3%)
Decreased productivity in daily activities/chores.	12 (27.3%)
Symptoms became chronic	10 (22.7%)
Had to stop schooling/university/studies.	3 (7%)
Loss of family support.	4 (9.1%)
Removal from the rehabilitation program.	2 (4.8%)

5.2.6 Association between demographic variables and effects of discontinuing treatment

No significant difference was found for gender, age, religion, marital status and any of the effects as a result of discontinuing treatment (*p>0.05*). However, there was a significant difference between language (*p=0.009*), level of education (*p=0.004*) and returning or worsening of symptoms of schizophrenia after partial recovery (p<0.001).
The majority of participants 84% (n = 21) who reported return or worsening of symptoms were English speaking and with secondary school level of education (94.3%; n = 33).

5.2.7 Intervention factors

This section was conducted during the pre-intervention phase of this study. The aim was to establish whether the participants felt that “treatment buddy services” was necessary prior its implementation. When asked about their knowledge of a treatment buddy, the majority of participants (97.4%; n = 113) indicated having no knowledge of the treatment buddy while only (2.6%; n = 3) heard about it. They were asked of their need for assistance in adhering to treatment and data showed that half of the participants (50.9%; n = 59) preferred assistance while the others felt it was not necessary. Of those participants (50.9%; n = 59) who preferred someone to assist them in adherence to their prescribed treatment, a third (35.6%; n = 21) proposed a parent and another third a

relative (35.6%; n = 21) to assist them. All the preferences for assistants are indicated in Table 5.4.

Table 5.4 Participant's preferred treatment buddy

Preferred assistant in treatment in taking prescribed medication	**n (%)**
Parent	21 (35.6)
Relative	21 (35.6)
Spouse	12 (20.3)
Child	4 (6.8)
Other	1 (1.7)

5.2.8 History of admission to a hospital ward / psychiatric institution and factors related to treatment of participants

The data in Table 4.5 suggests that the majority of participants (80.3%; n = 94) were previously admitted to a ward in a hospital / psychiatric institution for psychiatric illness while (19.7%; n = 23) were not. Among those who were previously admitted to the psychiatry institution, nearly half (43%; n = 40) frequented the institution more than two times, 28% (n = 26) two times, and 29% (n = 27) only once. The longest duration spent during admission was more than a month (23.4%; n = 22) followed by one month (26.6%; n = 25) and lastly two weeks (24.5%; n = 23). The majority of participants (70.9%; n = 83) were on treatment for more than five years and were mainly receiving medication only as a form of treatment. Only 13.7% (n = 16) received both medication and psychological interventions for their schizophrenia disorder. The data (Table 4.5) showed that two thirds of participants (66.7%; n = 78) were prescribed two to three types of medications, while 16.2% (n = 19) had only one medication prescribed. There was not much difference in the number of participants who were able to recall the names of the medication (50.5%;

n = 59) to those who could not recall the names of the medication prescribed (49.6%; n = 58; p = 0.198).

Table 5.5: Tabulation of pre-intervention and post-intervention findings (control and intervention group)

Category		**Pre-intervention (n= 117)**	**Post-intervention (n= 109)**		**p Value showing difference between pre and post-intervention groups**	**p Value showing difference between intervention and control groups**
			Intervention (n= 79)	**Control (n= 30)**		
History of admission		80.3% (n=94)	4 (5.1)	2 (6.7)	*p < 0.001*	*0.743*
Frequency of admission	Only once>	27 (29)	3 (60)	3 (100)	*0.407*	*0.449*
	2 times	26 (28)	1 (20)	-		
	> 2 times	40 (43)	1 (20)	-		
Duration of admission	< 1 week	7 (7.4)	1 (20)	1 (12.5)	*0.393*	*0.410*
	1 week	6 (6.4)	2 (40)	5 (62.5)		
	2 weeks	23 (24.5)	-			
	3 weeks	11 (11.7)	-			
	1 month	25 (26.6)	1 (20)	1 (12.5)		
	> 1 month	22 (23.4)	1 (20)	1 (12.5)		

Knowledge of the disorder			40 (50.6)	14 (40.7)		*0.711*
Duration of psychiatric treatment	< 6 months	8 (6.8)	4 (5.1)	6 (5.5)	*0.516*	*0.528*
	6 months	1 (0.9)	-	1 (0.9)		
	6 months – 1 year	8 (6.8)	1 (1.3)	1 (0.9)		
	1-5 years	17 (14.5)	15 (19.0)	20 (18.3)		
	> 5 years	83 (70.9)	59 (74.7)	81 (74.3)		
Type of treatment prescribed	Medication	101 (86.3)	70 (88.6)	27 (90)	*0.135*	*0.284*
	Both medication and psychological treatment	16 (13.7)	9 (11.4)	3 (10)		
Number of medications prescribed	1 medication	19 (16.2)	3 (3.8)	1 (3.3)	*0.253*	*0.569*
	2 to 3	78 (66.7)	18 (22.8)	5 (16.7)		
	4 to 5	18 (15.4)	47 (59.5)	22 (73.3)		
	≥ 6	2 (1.7)	11 (13.9)	2 (6.7)		
Ability to recall names of prescribed medication		58 (49.6)	47 (59.5)	12 (40)	*0.198*	*0.068*
History of stopping treatment		(46) 39.3	11 (13.9)	2 (7.1)	*p < 0.001*	*0.345*

Duration of stopping treatment	<1 week	5 (11.9)	7 (58.3)	1 (25)	*0.594*	*0.386*
	>1 week but < 1 month	16 (38.1)	2 (16.7)	2 (50)		
	1-6 months	10 (23.8)	2 (16.7)	-		
	6 months	4 (9.5)	1 (8.3)	1 (25)		
	>1 year	2 (4.8)	-			
	Occasionally	5 (11.9)	-			
Number of medications discontinued	only 1	8 (19.0)	4 (33.3)	1 (16.7)	*0.169*	*0.027*
	>1	34 (81.0)	8 (66.7)	2 (33.3)		

5.3 Post-intervention quantitative findings

The post-intervention phase of the study was completed by 109 participants. 79 of whom were in the intervention and 30 in the control group. Originally there were 117 participants, however eight participants were lost to follow up, and five from the control group and three from the intervention group. The members from the intervention group were exposed to virtual treatment buddy support that involved sending them text message reminders to take their treatment on a daily basis. The control group did not receive any form of support. The support was provided for six months after which all participants were asked to complete a post-intervention questionnaire.

5.3.1 History of admission between control and intervention groups

The majority of participants in both the intervention (94.9%; n = 75) and control groups (93.3%; n = 28) were not admitted to a hospital for psychiatric illness during the intervention period; only 4.9% (n = 4) and 7.4% (n = 2) of participants in the intervention and control groups respectively were admitted during the six months intervention period. Of those that were admitted, 75% (n = 3) of intervention group and 100% (n = 2) from the control group were admitted once to the hospital ward / psychiatric institution during the treatment period. Half of the participants 50% (n = 2) from the intervention group and both 100% from control group spent less than a week in the ward. The student t-test revealed that there was a significant difference in the history of admission ($p<0.001$) during pre-intervention and post-intervention. The mean value measured for admission history pre-intervention was higher when compared to post-intervention. This suggests that there were fewer participants that were admitted to a hospital ward / psychiatric institution during the intervention period compared to before commencement of the intervention.

5.3.2 Psychiatry treatment

Prior to implementation of the intervention, it was necessary to first establish the participant's knowledge of their disorder, and there was no difference found on knowledge of the disorder between the intervention and control groups (p = 0.541). Regarding psychiatric treatment, participants from both the intervention (72%; n = 59) and control groups (81.5%; n = 22) were treated for more than 5 years. There was no significant difference in the duration of treatment between the intervention and control groups ($p = 0.705$). The t-test revealed that there was no significant difference in the duration of treatment pre and post intervention ($p = 0.516$). This suggests that the duration of treatment pre-intervention and post-intervention were more or less

the same; and the participants from both intervention (86.6%; n = 70) and control groups (90.0%; n = 27) received one type of treatment for their schizophrenia i.e. medication only. The t-test revealed that there was no significant difference in type of psychiatry treatment pre and post intervention (*p = 0.134*). This suggests that the type of psychiatry treatment received by participants pre-intervention and post-intervention was the same, there were no changes in prescriptions for the participants in the entire six months study period.

On analysing the number of medications that were prescribed for each participant, the majority in both the intervention (59.5%; n = 47) and the control (73.3%; n = 22) received 2 to 3 types of medication followed by 22.8% (n = 18) and 16, 7% (n = 5) in the intervention and control groups respectively that reported receiving one type of medication. The Chi-square test indicates that there was no significant difference in the number of medications prescribed for participants in the intervention and control groups (*p = 0.285*).

5.3.3 Recalling names of medication

Only 40.5% (n = 32) in the intervention group knew the names of the medication prescribed to them compared to 60% (n = 18) from the control group. However, the Chi-square test indicated that there was no significant difference in the ability to recall names of medication between the two groups (*p = 0.068*). The t-test results further show that there was no difference in the ability to recall medication pre- and post-intervention (*p = 0.198*).

5.3.4 Stopping medication

Many participants in both the intervention (86.1%; n = 68) and control (92.9%; n = 26) groups claimed to have never stopped their medication during the six-month study period. However, there were some participants in the intervention group (13.9%; n = 11) and some in the control group (7.1%; n = 2) who had stopped their medication in the previous six months. Two participants did not respond to this question. Among the participants who stopped their medication, more than half of them in the intervention (58.3%; n = 7) and half in the control (50%; n = 2) stopped it for less than one week. About 66.7% (n = 8) in the intervention group and (33.3%; n = 2) of the control group discontinued their medication for more than one week. The Chi-square tests suggest that there was no significant difference between the intervention and control groups with regards to them stopping medication (*p = 0.345*), however a significant difference was noted in the number of medications discontinued between these two groups.

The t-test showed that the mean values of stopping medication measured for pre-intervention (M = 0.491) were significantly higher than those measured for post-intervention (M = 0.330; *p<0.001*). This suggests that more of the participants stopped their medication prior to the intervention, when compared to post-intervention.

5.3.5 Factors contributing to discontinuation of treatment

There were no significant differences between the intervention and control groups and the factors implicated in discontinuation of treatment (*p>0.05*). It emerged that the reported factors (as listed in Table 4.6) had a minimal contribution to the participant's discontinuation of treatment. Only 7.6% (n = 6) in the intervention group and 3.3% (n = 1) from the control group related transport issues to noncompliance with treatment.

In contrast, significant differences were found in the mean results of factors contributing to discontinuation of treatment between the pre and post intervention groups. The implicated factors were long duration of treatment, discouragement in realizing that there is no cure for the disease, inadequate knowledge about the disease, an experience of odd or unusual feelings, thoughts and behaviors that did not exist before the disease e.g. hearing voices, holding certain beliefs or an urge to move around; forgetting to take the medication, not understanding the instructions about taking the medication, and the experience of side effects. The mean results of factors contributing to discontinuation of treatment that were measured for the pre-intervention period were significantly higher than those measured for the post-intervention period in these factors (*p<0.001*). This suggests that the effect of the above factors in the discontinuation of the participants' medication were significantly reduced post-intervention. No differences were measured pre- and post-intervention in the rest of statements asked in the questionnaire (*p>0.05*).

Table 5.6 Factors contributing to participant's discontinuation of psychiatric treatment for the pre and post-intervention groups

Factors contributing to discontinuation of treatment:	**Pre-intervention (n = 117)**	**Post-intervention (n = 109)**	**P-value**
Long duration of treatment	0.46 (.505)	0.00 (.00)	$p < 0.001$
Discouraged by knowing that the disease will not be cured (chronic nature).	0.49 (.506)	0.02 (.156)	$p < 0.001$
Inadequate knowledge about the disease.	0.61 (.494)	0.07 (.264)	$p < 0.001$
Experiencing odd or unusual feelings, thoughts and behaviours that did not exist before illness like hearing voices, holding certain beliefs or an urge to move around.	0.44 (.502)	0.05 (.218)	$p < 0.001$
Forgot to take the treatment.	0.37 (.488)	0.05 (.218)	$p < 0.001$
Not understanding the instructions.	0.39 (.494)	0.05 (.218)	$p < 0.001$
Experiencing side effects.	0.49 (.506)	0.07 (.264)	$p < 0.001$

5.3.6 Assessing the effect of discontinuation of medication

There were minimal effects that resulted from discontinuing treatment in both the control and intervention groups. There were significant differences that were marked in some of the pre and post-intervention effects. A significant difference was found in the effect of return or worsening of symptoms of schizophrenia after partial recovery ($p<0.001$). The pre-intervention had higher mean ± SD 0.85 compared to the post intervention mean ± SD 0.13. The effect of rehospitalization ($p<0.001$) also had pre intervention mean ± SD 0.49 higher as compared to post intervention mean ± SD 0.05 indicating less rehospitalization among the post intervention

group. Likewise, loss of employment (*p<0.001*) had higher pre-intervention mean ± SD 0.29 compared to post intervention mean ± SD 0.02 signifying lesser report of unemployment among post-intervention participants. A similar pattern was identified in the effects of loss of family support (*p = 0.044*), financial loss (*p = 0.001*), referral to many specialist doctors (*p<0.001*), prescription of stronger medication (*p<0.001*), and symptoms that became chronic, without remission (*p = 0.032*). These factors had higher scores of their mean measurements for the pre-intervention group compared to the post intervention groups; suggesting that the effect of not taking treatment was significantly reduced in the post-intervention phase. No differences were measured pre-intervention and post-intervention for the other statements asked in the questionnaire (Table 5.7).

Table 5.7: Comparing the effects of not taking treatment

Effects:	**Comparison of intervention and control groups**			**Comparison of pre and post intervention groups**		
	Intervention (n=79)	**Control (n=30)**	**p value**	**Pre-intervention**	**Post-intervention**	**p value**
Return or worsening of symptoms of schizophrenia after partial recovery.	6(7.6%)	2(6.7%)	0.868	.85(.362)	.13(.335)	*p < 0.001*
Rehospitalization	3(3.8%)	0(0%)	0.279	.49(.506)	.05(.218)	*p < 0.001*
Loss of employment	1(1.3%)	0(0%)	0.536	.29(.461)	.02(.156)	*p < 0.001*
Stopped schooling / university / studies	1 (1.3%)	0(0%)	0.536	.08(.267)	.03(.158)	*P = 0.323*
Loss of family support	0(0%)	0(0%)	-	.10(.300)	.00(.000)	*P = 0.044*
Financial Loss	2(2.5%)	0(0%)	0.376	.29(.461)	.02(.02)	*p < 0.001*
Referral to many specialist doctors	1(1.3%)	0(0%)	0.536	.38(.490)	.03(.158)	*p < 0.001*
Prescription of stronger medications	0 (0%)	0(0%)	-	.37(.488)	.00(.000)	*p < 0.001*

Symptoms became chronic – no remission	3(3.8%)	0(0%)	0.279	.20(.401)	.05(.218)	*P = 0.032*
Decreased productivity in daily activities / chores	6(7.6%)	1(3.3%)	0.418	.27(.449)	.12(.331)	*p < 0.001*
Removal from the rehabilitation program	0(0%)	1(3.3%)	0.103	.05(.223)	.03(.160)	.570

5.3.7 Intervention factors

This section deals with the intervention on the treatment plan.

5.3.7.1 Relationship with treatment buddy

The data in Figure 5.1 show that the majority of the respondents (85.9%; n = 68) had a good relationship with treatment buddy while few (14.1%; n = 11) did not have a good relationship.

5.3.7.2 Treatment buddy and medication compliance

The majority of the participants (91.4%; n = 71) confirmed that the treatment buddies reminded them to take their medication every day and added that treatment buddies also phoned to check on them. The majority (85.5%; n = 17) believed that all schizophrenic patients must have treatment buddies, while only 8.4% (n = 8) were not in favour of the idea.

5.3.7.3 Future use of treatment buddies

More than two-thirds of the participants (68.4%; n = 54) stated that they would like to use treatment buddies in the future; interestingly, 59% (n = 47) of participants preferred the research assistant to continue supporting them while 41% (n = 32) preferred someone else. Given the fact that some participants preferred another treatment buddy besides the research assistant, it was prudent to know the participant's preferences regarding selection of a treatment buddy. The data in Figure 5.1 show that 40% (n = 32) of the participants would prefer their parent as a

treatment buddy, 33.3% (n = 26) prefer a relative, 16.7% (n = 13) their spouse, and 10% (n = 8) prefer their child as a treatment buddy.

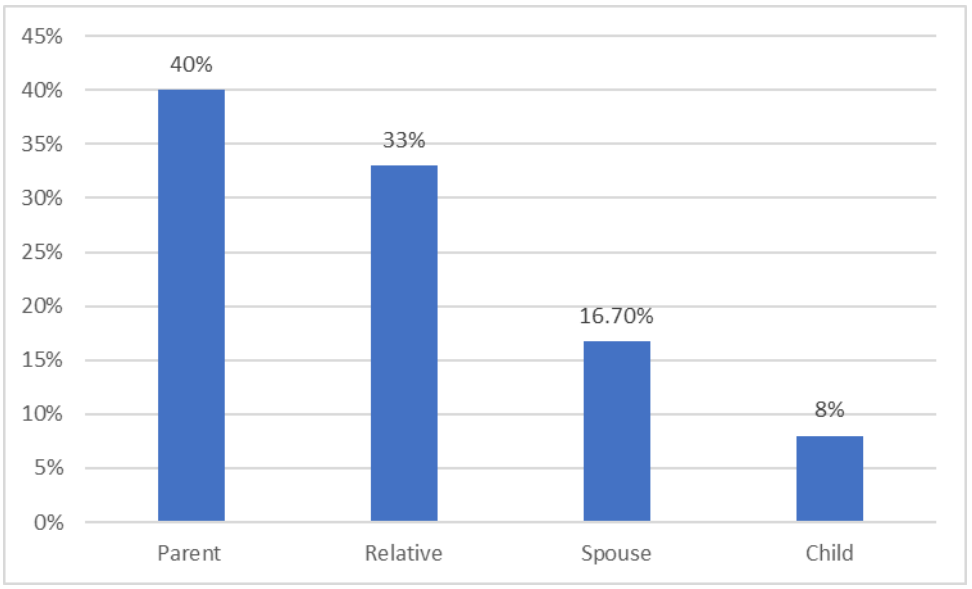


Figure 5.1: Participant's preference of treatment buddy

5.3.7.4 Selection of treatment buddy

Just over half of the participants (51%; n = 40) wanted to select their own treatment buddy, 48.1% (n = 37) preferred a decision taken by themselves together with their family, while 15.8% (n = 12) stated that they trusted the judgement of their health professional to select a treatment buddy, and 6.5% (n = 5) preferred a joint decision between themselves, family and health professional to select a treatment buddy. Some participants responded to more than one option in this section.

5.4 Qualitative findings

The findings from interviews with patients, health professionals and the research assistant are presented below.

Table 5.8: Sociodemographic characteristics of participants involved in qualitative interviews (post intervention)

Sociodemographic Characteristics	**Categories**	**Frequencies n (%)**
Gender	Males	15 (63)
	Female	9 (37)
Age	25-34	6(25)
	35-44	6 (25)
	45-54	7 (29)
	55-64	5 (21)
Race	Black African	10 (42)
	White	1 (4)
	Indian	13 (54)
Language	IsiZulu	10 (42)
	English	14 (58)
Religion	Christian	15 (62)
	Islam	4 (17)
	Hinduism	5 (21)
Level of Education	Primary	6 (25)
	Secondary	13 (54)
	Tertiary	4 (17)
	Postgraduate	1 (4)

Marital Status	Single	17 (71)
	Married	5 (21)
	Widowed	2 (8)

5.4.1. Sociodemographic characteristics of participants (patients)

Sociodemographic characteristics of the participants are detailed in Table 4.8. There were more male participants in this aspect of the study (63%, n = 15). The majority of participants (29%, n = 7) were between 45 to 54 years, and an equal age distribution of (25%, n = 6) was noted for the two age groups 24-34 and 35-44 years. Over half the participants (54%; n = 13) were Indian and 62% (n = 15) were Christian. Almost three quarter 71% (n = 17) were unmarried and 54% (n = 13) obtained secondary education.

5.4.2 Themes emanating from the patient's qualitative interviews

Table 5.9: Themes and subthemes emanating from qualitative interviews

Category of respondents	Themes	Subthemes
Patients	• Improved adherence to medication	• Establishing routine • Realization of importance of medication
	• Improved support from clinic	• Continuation of treatment buddy support via text messaging.
	• Alleviation of other problems	
	• Encouragement of treatment buddy support for other schizophrenia patients	• Increased focus on condition. • Promotion of independence.

The main themes generated from patient interviews are shown in Table 4.9 and included: improved adherence to medication, improved support from clinic, alleviation of associated problems, and encouragement of support for other schizophrenia patients.

5.4.2.1. Theme 1: Improved adherence to medication

All 24 participants who were exposed to virtual treatment buddy support confirmed that receiving messages was a good reminder:

> *"I would like to say messages are excellent for everybody. To wake up and have a reminder is excellent. It's something everybody should have; you know when you forget sometimes, and you wake up with a reminder" [P45].*

Participants reported that they no longer forgot to take their medication because of the reminders. The experience of receiving text messages was positively described by participants as helpful and motivating to continue with their medications.

> *"It was very helpful to me because you remember even the day to go and collect your medication. It motivates even if you were intending to stop taking medication." [P10].*

> *"I feel very happy, I like them. Sometimes as a patient we forget to take our medication. It reminds us to take medication" [P13].*

> *"You have been kind to me for supporting me. Every time before going to work I received the message that is why I responded by saying thank you, I was able to take medication on time" [P18].*

> *"Firstly, it wakes me up every morning, I'm reminded, I know now that you are there and therefore, I cannot default" [P34].*

The reminders became a solution for the participant who was troubled by his home environment. The participant mentioned that, although he is not a drinker, the busy schedule and level of noise caused by selling of alcohol in his home caused him to forget taking his medication at times. However, when he received the text message reminders, he confirmed that he no longer forgot:

> *"It helps to remind me to take medication especially that where I live, we sell alcohol. Even when we have load-shedding, I still remember" [P19].*

Some participants admitted that they would skip the medication previously, but the treatment buddy support facilitated in taking the medication regularly:

> *"It helped a lot, in the previous years; I used not to take medications every day. The buddy came along to help me" [P18].*

> *"She taught me how to take my medication on time, and also what it does to the body, If I don't take my tablet, I will be sick again and enter the hospital I must take my tablet regularly, I am grateful that she was phoning me and making me to take my tablets on time" [P79].*

5.4.2.1.1 Subtheme 1: Establishing routine

Receiving messages from the research assistant daily led to patients developing a routine of taking medication at almost the same time every day since the messages were sent to participant's cell phones between 6am and 7am every day. Taking medication consistently and at the same time every day is encouraged by therapists because it keeps the concentration of the drug within the therapeutic range and the therapeutic effect will not be compromised by missed doses (Xiao *et al.* 2021).

> *"Yes. Because it motivates us to always remember our treatment" [P10].*

> *"At least I'm getting up early on time, I take my medication on time. And I'm Ok, and I'm taking as I was supposed to take in the morning and in the evening" [P79].*

One participant explained her newly established routine following the cell phone bleep of the incoming message:

> *"When it rings, I wake up, it is an alarm to go have my tea and take my medication" [P102].*

5.4.2.1.2 Subtheme 2: Realization of the importance of medication

The implementation of virtual support and the change it introduced made participants realize the importance of medication. They realized that their life is dependent on their medication:

"I think they are good for me they remind me to take my medication when I forget, it motivates me to take my medication and help me to live" [P3].

"It was very helpful to me because you don't forget, the medication is actually carrying your life" [P10].

"She sent messages every day. She helped me to be focused to taking my medication" [P13].

"Yes, because it will help them realise the importance of medication and the treatment they are in, without medicines you cannot get better" [P58].

5.4.2.2. Theme 2: Improved support from clinic

The sending of messages together with the involvement of the research assistant was recognized by participants as an additional service from the clinic that has made them feel special, knowing that somebody is there to support them. They were grateful for the treatment buddy service that was provided and viewed it as helpful. They could resume their normal functioning, feeling good about themselves and were looking forward to a better life:

"She helped me to remember every day that when I'm taking tablets, I am not alone, there is someone helping me to remember" [P10].

"I would say thank you very much" [P103].

"Yes, it made me happy you know" [P20].

"I am happy in an amazing way when you've been sending message because they were reminding me to take my medication" [P75].

Participants viewed sending of messages as an additional service from the clinic and felt that it was sufficient:

"The clinic is giving us more help; I think this is enough" [P10].

In addition, some participants enjoyed texting the treatment buddy about their personal problems. This was beneficial for participants as they could converse privately with their

treatment buddy. One participant expressed her gratitude for the “treatment buddy services” as follows:

> *“We had WhatsApp communication on the phone. Even today is not my appointment date but I came to talk to her” [P34].*

5.4.2.2.1 Subtheme 1: Continuation of treatment buddy support via text messaging.

Participants were asked whether they would like to continue receiving treatment buddy support. All participants agreed to continue with treatment buddy support and that it made them focus on taking their medication at that time.

> *“Yes, because it is helping to get everything out of the mind” [P1]. “ It motivates us to always remember our treatment” [P10].*
>
> *“Yes I prefer the messages and same treatment buddy” [P17].*
>
> *“I prefer to carry on, it truly helps’ [P18].*
>
> *“It is an additional support to getting medication. It is good” [P58].*

Even those participants, who had successfully established the routine of taking the medication and had become compliant prior to implementation of the treatment buddy support, still enjoyed the treatment buddy services.

> *“Yes, it was nice to have a reminder although; I do not forget taking my medication anymore” [P51].*

Some participants were happy to get text messages but also acknowledged the significance of the support they received from their relatives and friends. Those participants who received treatment buddy support, together with good support from family, friends and neighbours preferred a combined form of support.

> *“Yes definitely, the same form of messages. I would prefer both messages and (support from) my people, family and friends” [P3].*
>
> *“It’s helping me, my sister is also reminding me to take (medication) every day” [P64].*

5.4.2.3. Theme 3: Alleviation of other problems

Schizophrenia patients have many problems that are brought about by the disorder and side effects of the medication. Having treatment buddy services alleviated some of these problems because the treatment buddy used her knowledge to encourage, motivate, and reduce schizophrenia related problems. Participants verbalized some of the problems that they were experiencing, which included loneliness, lack of motivation, being suicidal, and being unemployed. One participant had a problem of suicidal ideations and had attempted to overdose herself with depression tablets:

> *"Say for instance we have a problem; we can phone our treatment buddy to help us. The person is there for you if you have a problem having someone you can talk to" [P17].*

> *"It was good, I expect assistance from the person I know to talk to me because sometimes I am lonely, remind me to take medicines" [P1].*

> *"Since I had a problem recently of attempting suicide, I would appreciate once a week a phone call" [P34].*

Some participants had distressing symptoms such as aggressiveness and poor sleeping habits:

> *"My problem is not getting a good sleep, maybe if the buddy can help me with that" [P103].*

> *"It helped me to take tablets so that everything come right, no fighting" [P64].*

The use of the treatment buddy led to improvements in physical functioning such as sleeping patterns, however, one participant was still struggling and was requesting further help with improving sleeping patterns. Getting a good night's sleep is critical for daily functioning. Insomnia can have a negative effect on one's daily functioning because patients will be tired and have no energy to resume activities of daily living. One participant reported that continuous taking of medication improved her sleeping patterns:

> *"It was good, beautiful, was good to get help. I was sleeping well" [P1].*

"Yes, it is very helpful. Makes the patient become more positive, taking medication will calm their mind" [P13].

One participant wished the treatment buddy could assist in finding a job. Unemployment rate is high among schizophrenic patients, bringing frustration and desperation among patients.

***"**If I can be assisted in finding a job, I am looking for a job, staying at home with no income is not good" [P54].*

5.4.2.4. Theme 4: Encouragement of treatment buddy support for other schizophrenia patients

All participants agreed that they would encourage other schizophrenic patients to have treatment buddies for themselves. They believed that problems that were brought about by the schizophrenia disorder, such as psychotic episodes, failure to collect medication from the clinic, side effects and relapse of schizophrenia symptoms, got resolved due to the treatment buddy service.

"Yes, I would encourage them. I heard that other people stop taking medication, maybe they forgot to collect and then afraid to go and collect the following day. Yes, I would encourage them. I see having a buddy as additional help for them." [P10].

"Yes, I would because it will remind them to take medication every day, and to avoid relapse" [P17].

"I would but I do not know anybody. If they get help they will not be critical, worrying the family or disturbing them or making unnecessary noise" [P79].

One participant believed that even other dysfunctional habits that are common among schizophrenia patients such as smoking substances can be eradicated when getting treatment buddy support.

"I would encourage others to get buddy support. If you've been smoking Zulu tobacco, you need to stop as it does not 'gel' with this illness" [P103].

5.4.2.4. 1 Subtheme 1: Increased focus on condition

The “treatment buddy service” aids in allowing patients to focus and take the condition seriously.

“I would encourage them because my illness is serious, and it needs special attention. There is someone near home who has an illness of getting confused, I will encourage him” [P19].

5.4.2.4.2 Subtheme 2: Promotes independence

Treatment buddies support the sick individuals with knowledge and skills of handling life issues thus improving daily functioning and promoting independence. The “treatment buddy service” provides better learning opportunities for the patients.

> *“Yes definitely, because the sickness I have is in the mind, If I don’t have support how will I battle alone, If I battle alone the devil will win over me’ [P3].*
>
> *“Yes, it is very helpful. Makes the patients become more positive, taking medication will calm their mind” [P13].*
>
> *“Treatment buddy is always there for you, and in few years’ time we will all be secured” [P18].*
>
> *“When you get up in the morning and look at your WhatsApp messages and remember to take the medicines” [P17].*
>
> *“The message was fine. Every morning I know I must take my treatment” [P50].*

5.4.3 Qualitative responses of professional nurses

Table 5.10: Themes and subthemes emanating from professional nurse's one-on-one qualitative interviews

Category of respondents	Themes	Subthemes
Professional Nurses	• Improved compliance with medication	• Improved compliance with follow up visits to the clinic • Other positive benefits of the treatment buddy system
	• Improving the buddy system	
	• Selection of treatment buddies	
	• The future of the treatment buddy system in mental healthcare services	

The one-on-one qualitative interviews were conducted with all four professional nurses that were working in the clinic during data collection period. The main themes that emanated from these interviews were: improved compliance with medication, improving the buddy system, selection of treatment buddies and the future of the "treatment buddy system" in mental healthcare services.

5.4.3.1 Theme 1: Improved compliance with medication

Nurses perceived provision of treatment buddy support as a significant service in improving compliance to medication, where a treatment buddy physically monitors and assists a schizophrenia patient to take their prescribed medication, monitors for side effects and allows for family involvement.

"*A supportive somebody who is there to assist you, make sure you are taking your medication on time, to see that you are swallowing it, that you are not having side effects, just to be there to support that you are not alone." [Nurse 1].*

"The buddy system helps patient to remember especially when family members come with the client. Allows families to interact with each other" [Nurse 2].

"It is a thing that help the patient to remember to take the medication" [Nurse 3].

"A treatment buddy person is someone who is assisting clients reminding with the taking of medication" [Nurse 4].

5.4.3.1.1 Subtheme 1: Improved compliance with follow up visits to the clinic

The use of treatment buddy support promoted regular clinic visits; patients eagerly kept to their appointment dates resulting in less defaulters. The additional support motivated the participants not to miss their visit to the clinic and staff anticipated reduced rates in relapse.

"Treatment buddy helps them remember their treatment and keep to their appointments" [Nurse 1].

"The treatment buddy was helping a lot, because even if the treatment buddy was not there on that day they were asking. They were interested to come to the clinic" [Nurse 3].

"Yes, from the group I saw they were coming and most of them were more compliant, and since they sort of remember that they have someone who is a treatment buddy. They were able to comply" [Nurse 4].

"They were beneficial to the patients because there were less defaulters in the clinic which was also a benefit to the clinic and the government because the medication is not returned to the pharmacy, medication is not expiring because patients are now coming to collect, and there is no relapse of patients" [Nurse 3].

"Treatment buddy can assist by having regular checks of whether the client is taking medication, more often to motivate the client so that they can see the need to take medication" [Nurse 4].

5.4.3.1.2 Subtheme 2: Other benefits of the treatment "buddy system"

Nurses share a view that the treatment buddy support will benefit patients and health services because treatment buddies can bring positive behaviours back on track, through encouragement and motivation. It will further promote positive self-perception among schizophrenic patients because they will regard themselves as important. Nurses agreed that a well-informed treatment buddy understands and attends to all of a patient's problems, refers patients to special services required such as counselling services, and social welfare departments etc, thereby improving the standard of health care usage. Treatment buddies can be good confidants for their patients.

> *"Yes. because of disorientation and perceptual disturbances, the treatment buddy will be very effective in controlling the patient when they decided to go off the rail a bit to bring them back on correct tract" [Nurse 1].*

> *"It will encourage all psychiatric patients. Because sometimes these patients in their homes, in their communities they are not taken as important person. If they see that someone takes them as important, they will be keen to take their treatment" [Nurse 3].*

> *"I would encourage it, because the treatment buddy can also assist more clients with treatment more than health professionals can because the treatment buddy can be closer to the client and can easily identify if there is a problem with taking of treatment" [Nurse 4].*

> *"Treatment buddies are very good, can be a confidant to them," [Nurse 2].*

> *"Maybe to assist with timeous taking of medication like they say take every day same time to ensure levels are the same and there is no decrease or increase in their treatment. The treatment buddy will be there to motivate them, if at certain times they feel demotivated like in the mornings, the treatment buddy will be there to encourage and uplift them and give them reasons why they are taking the medication. It will help the patient understand further and they will probably want to continue taking medication and adhere to their times" [Nurse 1].*

> *"The treatment buddy will always remind the patient about medication. And also attend to psychological problems of the patient" [Nurse 3].*

Other positive benefits suggested by nurses are that treatment buddies can eradicate loneliness. Nurses also suggested that with treatment buddy support there will be less aggressive patients in the communities, less relapse rates and reduced admission costs for health care services.

> *"It will increase adherence and decrease defaulters, a decrease on a number of people who are relapsing. That will be a good thing for the community and society as they will not deal with aggressive patients. Behavioural problems will be minimal because the treatment buddy will be there to assist" [Nurse 1].*
>
> *"They share experiences with each other and become friends. Sometimes after clinic they have lunch together" [Nurse 2].*
>
> *"It will benefit a lot. There will be no more defaulters and relapses for patients." [Nurse 3].*

Treatment buddies will create a good follow up system and there will be no cases lost in the system.

> *"The mental healthcare services will be assisted because clients will be more compliant, there will be reduced cases of relapse, and no clients lost in the system, it will be cost effective because there will be less admissions, since clients will be taking medications and seeing the doctor in time" [Nurse 4].*
>
> *"Maybe like a diary system where you give a patient a page so their appointments are allotted in it, so in that the treatment buddy or somebody can sign or give some medication, and on the next appointment you able to see the relationship between the treatment buddy and the patients of how it went" [Nurse 1].*

5.4.3.2 Theme 2: Improving the "buddy system"

Nurses thought sending of messages would be more beneficial if sent to a family member rather than sending to patients who, depending on their mental state at that time, may not be capable of interpreting the message. Other nurses believed that using a family member or neighbour would be beneficial, because of trust, their understanding of each other and living in close proximity.

Different approaches were suggested by nurses to supplement the sending of messages. These included a diary system, use of reminders such as a calendar system and home visits for a group of patients in a day. Organizing family members into small groups (support groups) and providing them with information about schizophrenia and its management would be encouraging and will promote interest among treatment buddies. Information to be taught to treatment buddies should include a discussion on reasons for promoting adherence to antipsychotic medication. They should also be taught how to motivate patients and establish a trusting relationship with the patient, how to become a confidante for the patient as well as have the ability to identify and attend to the psychological problems of the patient.

> *"I would say that depending to the mental state of the patient if you are sending the reminder to the patient they would not take heed of that reminder all the time, whereas I feel if you send the reminder to a relative or a person living with them who is in a good mental state of their mind compared to the patient him- or herself, I think that reminder would have been more effective" [Nurse 1].*

> *"I think the family member can do better in supporting the patient, because they know the patient best. And the care worker at the clinic. Because he or she is the one who sees the patient when they come for the first time when he is very ill, the nurse knows the signs and symptoms" [Nurse 4].*

Nurses also reported that they were unable to hold small group discussions to assist the patients because of Covid 19 epidemic. The treatment "buddy system" would be useful because the buddy would be able to provide this information to the patient. Thus, the large numbers of people in a social gathering would be avoided.

> *"If it was not for Covid, professional nurses could hold groups where they provide a lot of information and can give them more knowledge and insight about the patient's illness. Imagine if it is your mother, you would go and get knowledge from the small groups held with relatives and nurses will show them how to maintain a schizophrenia patient at home" [Nurse 1].*

5.4.3.3 Theme 3: Selection of treatment buddies

The nurse's perceptions regarding an ideal selection of a treatment buddy differed. One nurse believed the patient should provide nurses with a list of names of people that they trust to be their treatment buddies, then the nurse can assist in selecting one.

> *"The patient needs first to trust this treatment buddy, somebody they trust, they are familiar to see if there are any side effects, change in behavior, someone who is willing because of the stigma attached to mental illness, rather get a list of people and see who the best person is. Ask the patient to provide a list of people they are OK with them and who knows the condition of the patient and you see who is best appropriate for them. You need to know how much these people know, what they are going through, how much stresses they have, to see how willing this person is. The patient provides a list and the health professional chooses someone who is willing.*
>
> *Even before this we used to ask for collateral that is the person they live with at home. Patients can try to beat the system by telling you what you want to hear whereas the collateral will tell you what you have to know, whether they are compliant, or if there is any change in behaviour" [Nurse 1].*

Views from other nurses were that a family member would be the best treatment buddy, mutually agreed upon by the patient and the relative.

> *"Like TB have DOTS. The family member would be the best to select because they live with these people and know them better" [Nurse 2].*
>
> *"I think the relative of the patient because he or she is the one that knows the patient best. And the health care worker at the clinic. Because he is the one who sees the patient when they come for the first time when he's very ill, he knows the signs and symptoms" [Nurse 3].*

However, one nurse felt that the patient should choose his or her own treatment buddy, who would most likely be someone that the patient trusts. This would facilitate them speaking freely to each other.

> *"I suggest that the client can be involved in the selection so that client will get someone who is easy to see or speak with, so the health professional and client can talk together,*

so that client does not have someone who is not favourable to the client. You can't give anyone. They will run away from the process. It will be someone they know and trust and can speak to the client" [Nurse 4].

5.4.3.4 Theme 4: The future of "treatment buddy system" in the mental healthcare services

All nurses supported the idea of encouraging the healthcare services to implement treatment buddies in mental health care because of the benefits that they observed with this group.

", I would encourage it because I can see the benefit of it" [Nurse 1]

"I would like that because at the end of the day some people do not have support nor somebody to talk to" [Nurse 2].

"I will encourage all the mental health care services to practice the treatment buddy system" [Nurse 3].

"I will encourage from what I have seen in this small group" [Nurse 4].

5.4.4 Research Assistant Case Study

An in-depth interview was conducted with the research assistant. The interview focused the research assistant had to adapt the new responsibility to her daily routine. It was challenging because messages had to be sent early in the morning every day. This was reported to be more difficult during weekends when she was not going to work. However, by the second week of observation she had adjusted well.

"In the beginning it was really hectic, but as time goes on, I got used to the idea and I was very happy for helping them. I had to wake up in the morning even if I'm not going to work just to be on the same time every day".

The research assistant positively evaluated her role as beneficial to participants referring to the forgetful nature of schizophrenic patients. A sense of achievement was experienced. However,

she felt she would have been more helpful if she was communicating directly with the patients, their families and friends instead of just sending messages.

> *", I think I was effective and capable, because I was able to assist them as you know these are psychiatric patient and they become forgetful sometimes, so I think I was able to assist them, by reminding them to take treatment on time".*

The research assistant mentioned that there were no barriers in performing her role and was happy that the study participants were also communicating with her by sending messages. The participants were mainly asking whether the clinic was open on certain days, some were asking whether they can take their sick relatives to the clinic for treatment. Others needed advice on how to get more treatment as they were planning to spend some time with relatives elsewhere and would miss appointment dates. The research assistant was satisfied of the advice she provided to participants. She realized that a trusting relationship was gradually developing between her and the participants. She acknowledged that the treatment buddy can effectively resolve some of the problems of schizophrenia patients including a need to communicate.

> *"No there were no barriers. In the fact the patients were able to communicate with me they were sending me messages, I was able to give correct advice to them and they were thanking me."*

She believed that treatment buddies can improve adherence rates among patients diagnosed with schizophrenia. The idea of encouraging family members, friends and neighbours to take an active role in supporting a mental health care patient on treatment would encourage schizophrenic patients to seek treatment buddy support.

> *"Yes, it can help a lot because the patient will be reminded, they won't forget to take their treatment. I can encourage family members, friends, and neighbours to take an active role in supporting the sick person in order to help them not to default their treatment. I think they would be the best people to buddy with the patients".*

The research assistant agreed that she would encourage other persons suffering from schizophrenia to have treatment buddies for themselves. She felt schizophrenia patients are lonely and have a need to communicate with other people.

“Patients suffering from schizophrenia are lonely most of the time and are not communicating with anyone, if they have a buddy for themselves, they will be able to remind each other and talk other things that are beneficial to the health of the patient”.

5.6 CONCLUSION OF THE CHAPTER

The study results and findings had been presented in this chapter. Statistical tests were used to determine the frequencies of the occurrence of the variables. Analysis of the relationship between the demographic data and study variables had been conducted. The next chapter deals with discussion of results.

CHAPTER 6: DISCUSSION

6.1 INTRODUCTION

Antipsychotic medication remains the cornerstone in management of individuals that are diagnosed with schizophrenia disorder. Adherence to treatment is a critical step towards reducing relapse and improving better patient outcomes. The aim of the study was to develop an intervention that uses text message managed “buddy system” to improve adherence to medication among patients diagnosed with schizophrenia disorder. The results were presented in the previous chapter, and these are now discussed in relation to other related literature.

6.1.1Sociodemographic factors

This study had more male participants (64%) which reflects the higher proportion of male schizophrenic patients seen in the region. In Africa, it has been found that serious mental illness disorders affect more males, with schizophrenia affecting more males than females at a ratio of 5:1 (Ghebrehiwet et al. 2019). This is a longstanding worldwide finding which is confirmed by Iacono and Beiser (1992) who reported a two to three times higher proportion of males compared to females with this disorder in Canada. Orrico-Sánchez *et al.* (2020) also reported a higher prevalence in adults between 35–54 years old in Spain. This may be due to the fact that schizophrenia is often diagnosed between 16 and 30 years of age with the late onset of around 44 and 49 years of age (Pugle 2021). Mwesiga *et al.* (2020) reported schizophrenia prevalence rate of 62.8% among males in Uganda and Paruk *et al.* (2015) reported a figure of 69% in the province of KwaZulu-Natal. About 29.1% of the participants were older adults within the age group 45-54 years of age. In addition, older adults engage more in help-seeking behaviors as compared to younger persons, resulting in more older adults in health care centers than any other age group (Mackenzie et al. 2008; Mitchell, McMillan and Hagan 2017).

6.1.2 Adherence to schizophrenia treatment

Before intervention the level of adherence for the participants was 60.7%. Post intervention, the adherence rate improved to 86.1% for intervention group. These findings are slightly higher compared to some of the studies conducted in low-middle income countries (LMIC) of the Sub-Saharan region. Tareke *et al.* (2018) reported 59% non-adherence in people with schizophrenia in Ethiopia; 55% was reported in Malawi (Myaba 2017), and a slightly lower rate of 45% in

Nigeria (Ibrahim *et al.* 2015). In this study, the improvement in adherence rate was brought about by augmenting psychopharmacology with an intervention. Phan (2016a) is of the opinion that combining pharmacology with behavioral interventions that involves a patient support system like implementing reminders is successful in improving adherence; therefore, strategies aimed at improving medication use must target the patient and their support system.

The rate of adherence to treatment for schizophrenia disorder may be influenced by many factors including those related to the patient. The results show an association between levels of adherence with race and financial difficulties. It is possible that there were lower levels of adherence among Blacks because of financial difficulties that many of them face. Black Africans in South Africa are the most disadvantaged racial group in finding employment and are earning substantially less in relation to other races (Maluleke 2019). Additionally, those patients that have to travel to the dispensing point are likely to default if they do not have money for transport. The clinic from which the participants were recruited was located in a predominantly Indian area, hence Black Africans were most likely living further away and had to travel to the clinic, for which finances were required. According to (Galaal 2022), Black Africans are challenged by high unemployment rates of 39.1% compared to Whites of whom only 8.8% are unemployed. Measures such as offering financial incentives could be more effective in improving adherence among patients receiving antipsychotics (Highton-Williamson *et al.* 2015; Noordraven *et al.* 2018). In other studies, research about ethnicity and adherence to antipsychotic medication produced mixed results (Higashi *et al.* 2013b). However, El-Mallakh and Findlay (2015) suggested that being a member of a minority ethnic group contributed to poor medication adherence. Poor adherence among minority groups is caused by financial difficulties, the inconvenience of accessing specialist treatment services, and negative beliefs about medication beliefs (Zeber *et al.* 2011). Although Black Africans constitute the majority ethnic group (81%) of the total population of South Africa (Alexander 2018), they are still highly disadvantaged in education, income and employment with a marked poor quality of life compared to whites, Indians and Coloured South Africans (Kon and Lackan 2008). In 28 years of democracy, the inequalities that were created by the apartheid government still exist with only a slight improvement in access to education and health care has occurred (Kon and Lackan 2008). It is these disparities in provision of services that cause Black African to struggle to adhere with long-term prescriptions such as antipsychotic medication.

The findings also demonstrated that lower education contributed towards antipsychotic medication default. This is corroborated in previous studies (El-Mallakh and Findlay 2015). This may stem from the lack of ability to read, understand and take medication according to instructions provided by the health care professional (Ngoatle and Mothiba 2021). The less educated are likely to be unemployed or doing menial jobs with minimal earnings. As a result of the South African law of “no work no pay” which states that the employees who rendered no service, for whatever reason, even if not a fault of their own, are not entitled to remuneration, patients tend to prioritize work over collecting treatment for the sake of getting an income (Potgieter 2020). In South Africa, the legacy of apartheid and poor education and training caused unemployment with resultant financial difficulties among communities (GCIS 2021). The apartheid legislation was designed to exclude Blacks from acquiring formal skilled employment by depriving them access to adequate education (Gardin 2018). The apartheid laws created economic inequalities where Blacks were placed in townships and were barred by migration laws from accessing the cities for jobs, and if employment occurred, the Blacks only occupied low-paying jobs when compared to Whites (Gardin 2018). This in turn created poverty among Black South Africans which still exists, even post-apartheid (Gardin 2018).

Some participants, particularly those with lower education levels experienced an unwelcoming attitude from the health care professionals. The health care professionals serving in the clinic were of different races including Whites, mainly Indians and some Black Africans. Barriers to effective communication between patient and the health care professional often results from differences in age, cultural orientation and language or being unwell at the time of the conversation (Milton *et al.* 2018). In order to promote adherence to treatment, every effort must be made on the part of the health care professional to communicate with the patients in a kind and understanding manner. The major shortcomings in South Africa revolve around the existing demographics of the trained psychiatric clinicians who are predominantly White, thus not providing a culture relevant psychotherapy service; secondly the high cost of psychotherapy services are unaffordable to the majority of South Africans who are underprivileged (Wolff 2015). The clinic had only two professional nurses who could speak IsiZulu which is predominant language of Black Africans in the study site, the rest of the health care professionals working in the clinic were English speaking including the consulting psychiatrists. IsiZulu being the language spoken by the majority of the population infers that effort must be made by health care workers to speak in the indigenous language to the patients, as that might promote a better relationship between both parties. Other strategies that may improve

communication might involve incorporating effective communication skills during training of health care professionals for their qualifications, and further provide area-specific communication techniques during induction and orientation of a new employee in a mental health care institution (Van Rensburg, Lian and Zane 2014).

Almost two-thirds of the participants (63.3%) reported that they had inadequate knowledge of schizophrenia disorder and that it was one of the factors that caused them to stop taking treatment. Huang *et al.* (2018) reported similar findings in China and explained that it was the responsibility for all health care professionals who provide services to a mentally ill person to provide the patient with knowledge of their mental illness diagnosis and its treatment. Improving a patient's knowledge would make it possible for patients to adhere to their treatment plans and thus improve compliance to treatment (Huang *et al.* 2018). Nonadherence to treatment might cause a poor response to treatment, increased risk for relapse, repeated non-compliance related admissions to a hospital, increase in inpatient costs, and lowered quality of life (Semahegn *et al.* 2020). Insight refers to the patients ability to partly or fully recognize that they have a mental disorder and the need to treat it (Lysaker *et al.* 2018). Poor insight about illness is common among schizophrenic patients and has been reported in Northern Ethiopia and Ghana to have adverse effects on clinical outcomes (Eticha *et al.* 2015b; Semahegn *et al.* 2018). When individuals with schizophrenia do not perceive themselves as having a mental illness disorder, they are not consistent with treatment, subsequently experiencing severe symptoms and a decline in functioning (Mohamed 2009; Lysaker *et al.* 2018). Recovery from mental illness can take place when patients accept that they are ill and willingly engage in pharmacological management to reverse the symptoms and achieve better functioning within their communities (Lysaker *et al.* 2018). Schizophrenic patients would benefit from a health education session that shows the importance of medication for symptom relief (Mohamed *et al.* 2009).

Over half (39.3%) of the study participants were not adherent to their medication because they were discouraged due to there being no complete cure. This has previously been reported in other studies, however, patients need to be informed that they can improve over the long-term period with consistent treatment, and that that functional remission is possible (Vita and Barlati 2018). This refers to clinical remission of symptoms accompanied by improvement in social functioning. Casarella (2021) reports that in a period of ten years after initial diagnosis, half the patients with schizophrenia recovered from symptoms to such an extent that they can work and

live on their own, and another quarter showed improvement but required some help from a strong support system. In order for improvement or recovery to be possible in those who strictly adhere to treatment; a continuous maintenance dose of antipsychotics is necessary to keep the disorder under control (Seah and Brennand 2020). When the disease is under control, the patient may exhibit a certain degree of independence such as getting employed, becoming involved in family matters and maintaining healthy relationships and functioning well on a daily basis with little or no signs of impairment (Schwartz 2021).

This study finding revealed that 50% of the participants with schizophrenia perceived the duration of treatment as too long and therefore often engaged in irregular use, where they skipped treatment on certain days and changed their medication dosage. Others reported stopping medicines for varying durations over different periods of time. Symptom relief often gives patients the impression that the disorder is cured, resulting in them stopping their medication altogether. Participants of this study reported occasional stopping of treatment for mainly less than a week, and this behaviour usually started during the first year of treatment, when they experienced remission of symptoms. This corroborates with Krzystanek, Krysta and Skałacka (2017) who reported that many schizophrenic patients in Poland stopped the treatment after two to three months of initiation without consulting the psychiatrist, and about 80% discontinued medications after two years of treatment .

Almost half of the participants (45.5%; n=20) experienced unusual feelings like hearing voices, or an urge to move around. These symptoms often occur at the residual phase of schizophrenia which is a transition between full blown schizophrenia and remission (Schennachat *et al.* 2019). The impact of these symptoms would affect the overall management of schizophrenia (Khan *et al.* 2015). During remission, some patients will be symptom free whereas others present with continuous lifelong mild symptoms commonly social and emotional withdrawal as well as a lack of energy (Khan *et al.* 2017a). Patients sometimes report persistent hearing of voices and holding strange beliefs even when psychosis has subsided (Khan *et al.* 2017a). Residual symptoms could be managed effectively by long-term low-dose antipsychotic medications to prevent relapse, and supplemented by behavioral therapies such as cognitive behavior therapy to improve mental state functioning (Khan *et al.* 2017b).

Cognitive deficits such as forgetfulness or the inability to remember information have been reported in this study in 40, 9% of participants. Rehse *et al.* (2016) and Tripathi, Kumar Kar and Shukla (2018) highlighted the undesirable impact of cognitive deficits on adherence to antipsychotics, commonly resulting in partial compliance (Rehse *et al.* 2016). Studies confirm that taking antipsychotic medications regularly at a lower dosage improves cognitive functioning, however, high doses over a long period worsens cognitive impairment (Rehse *et al.* 2016; MacKenzie *et al.* 2018).

It has been reported that patients experiencing side effects from antipsychotics are unlikely to continue with medication (Stroup and Gray 2018). Findings from this study revealed that 47.7% participants experienced some side effect that resulted in nonadherence. Reported side effects included feeling tired, excessive drowsiness, slowed movements, feeling dizzy at times, and loss of interest, weight gain and sexual dysfunction. These side effects are common in schizophrenia, Stroup and Gray (2018) revealed the same symptoms in patients in Hawaii and also found that constipation, tardive dyskinesia, acute dystonia, agranulocytosis, and myocarditis may occasionally occur. Kumar *et al.* (2020) reported similar side effects in Sub-Saharan Africa and also reported metabolic syndrome. The associated side effects range from tolerable to very unpleasant. The side effects may also be painful, disfiguring or life threatening (Stroup and Gray 2018). These experiences affect patient attitudes toward treatment.

Among participants who defaulted treatment, 86% experienced worsening and return of the disease symptoms that had previously been controlled. Relapse is a major contributor for nonadherence to antipsychotics and a vicious cycle has been established between antipsychotic non-adherence and relapse (Emsley *et al.* 2013). In the qualitative interviews, participants also expressed fear of relapse associated with non-compliance to treatment. However, Alphs *et al.* (2016) suggested that because of the chronic nature of schizophrenia, patients may still relapse despite remaining adherent to medication.

Almost half of the participants (47.7%) who defaulted treatment had to be rehospitalized. It is common to develop acute symptoms that necessitates stabilizing in psychiatric emergency departments when defaulting medication (Hardy, Jackson and Byrne 2018). Participants reported that they were admitted because of aggressive behaviour, sleeplessness, and excessive restlessness. Tareke *et al.* (2018) is in agreement that failing to adhere to

antipsychotics increases readmission episodes. The South African legislation (Mental Health Care Act No. 17 of 2002) supports admission of all mental health care patients who are experiencing acute symptoms of mental illness that require further management in the community once stabilized on treatment.

6.1.3 Implementation of the intervention

In this study adherence levels to antipsychotic medication improved following implementation of virtual treatment buddy support to the study participants. The findings revealed that two-thirds 60.7% (n=71) of the participants complied with treatment during the pre-intervention phase and a positive change in adherence occurred for the intervention group (86.1%) and for the control group (92.9%) post intervention. This finding suggests that adherence levels improved following implementation of the treatment buddy support. In agreement is Boardman, McCann and Kerr (2014) who confirmed that a problem-specific peer support programme targeting nonadherence to medication provided to patients in their communities improves adherence. Dixon, Holoshitz and Nossel (2016) further confirm that specialised psychosis programs have greater success in keeping patients longer on treatment compared to routine monthly services provided in community clinics. The daily observed therapy (DOT) programme that is used in the management of tuberculosis, an intervention that also uses treatment buddies to support adherence to treatment, has been used successfully in South Africa and worldwide to improve adherence; and was adopted as a standard method for managing tuberculosis (Ershova *et al.* 2014). Even the treatment buddies used in management of long-term HIV infection in Uganda and South Africa had improved adherence to antiretroviral therapy (Nakamanya *et al.* 2018).

The findings revealed that 80.3% (n = 94) had been admitted for psychiatric illness before intervention and this decreased post-intervention with only 4.9% of intervention group and 7.4% of the control group having been admitted for psychiatric illness during the six months intervention period. This suggests that fewer number of study participants in the post-intervention group were admitted for psychiatric reasons compared to the pre-intervention phase. These findings concur with those of Schöttle *et al.* (2019) who postulated that the rate of involuntary admissions for schizophrenia spectrum disorders decreases significantly when patients get involved in a program like the “treatment buddy system”. The South African legislation (Mental Health Care Act No. 17 of 2002) supports involuntary admission of mental

health care users experiencing acute symptoms of mental illness and requires further management in the community once stabilized on treatment. In South Africa, schizophrenia constitutes the highest rate of in-patient admission (Madala-Witbooi and Adeniyi 2019). This is caused by aggressive behavior associated with psychotic symptoms of schizophrenia. Hlophe (2010) supports the idea by stating that the buddy programme provided for HIV infected persons indirectly provides relief to overburdened hospitals.

Findings of this study also revealed that participants indicated the need for assistance in taking medication, prior to the intervention. Mokwena and Ndlovu (2021) confirm that in South Africa, a huge number of people who suffer from mental illness require some assistance either from family members and or any other caregiver for their basic but critical responsibilities such as daily self-care and taking of medication. Treatment support is important in conditions that require strict adherence to medication, where non-compliance may result to poor health outcomes. The DOTS programme involves providing assistance to TB patients to prevent multi drug resistance (MDR) and treatment failure. Likewise, HIV treatment supporters are an intervention provided to prevent treatment resistance and use of aggressive second- and third-line treatment regimens for medication defaulters. Similarly, in schizophrenia treatment buddies are intended to prevent resistance to antipsychotic drugs and relapse. For mental illness, Velligan *et al.* (2017) implicated forgetfulness as a leading cognitive deficit symptom for non-adherence among schizophrenic patients hence participants needed someone to remind them to take their treatment as prescribed. Tripathi, Kumar Kar and Shukla (2018) suggest cognitive adaptation training where an individual is utilized to provide cognitive training that will improve self-care to a specific individual.

6.1.4 Participants views towards treatment buddies

Almost all participants (97.4%) had no knowledge of a treatment buddy prior to implementation of the intervention. Post intervention, the majority (85.9%) reported a good relationship with their treatment buddy and were willing to continue having assistance in taking medications. Findings support the understanding that schizophrenia is a mental disorder that is chronic and disabling to individuals, warranting caregiving services for affected individuals (Caqueo-Urízar *et al.* 2015). This finding is very important because it suggests the treatment buddy support to be a necessary intervention to address the problem of non-adherence to treatment for patients diagnosed with schizophrenia. The finding is also supported by qualitative interviews, where participants suggested that patients who are diagnosed with schizophrenia are to be

encouraged to have treatment buddies. Treatment supporters are effective in promoting adherence to long term treatment as demonstrated in chronic conditions such as HIV/AIDS, cancer and tuberculosis (Rajagopaul, Reddy and Kistnasamy 2014; Nakigozi *et al.* 2015; Stephan 2020).

Many participants (68.4%) vouched on using treatment buddies in the future. The finding is supported by certain themes from patient qualitative interviews which made it clear that treatment buddy support improved adherence to medication, patients established a routine that incorporated daily taking of medications and they could remember their clinic visit dates too. The nurses and the research assistant strongly shared the same sentiments and reiterated that treatment buddies must continue being implemented for mental illness in future. Participants further explained that the treatment buddy program also helped to resolve other schizophrenia related problems that they were experiencing like an inability to fall asleep, loneliness, lack of motivation, and being suicidal. Mall *et al.* (2013) has reservation that the treatment supporters may apply a great deal of control that may end up compromising the right to autonomy of the patients. This study did not find any compromise instead participants wished for more interaction with their treatment buddy and were even seeking assistance through text messages.

Participants and nurses unanimously preferred an active “treatment buddy system” with a single treatment buddy assigned for each patient, where face to face contact is possible rather than virtual support. As much as they acknowledged the impact of Covid-19 epidemic on their usual routine of having information sharing sessions with their patients, nurses highlighted many causes of non-adherence that may necessitate one-on-one treatment buddy support. The causes of non-adherence that were highlighted by nurses included changes in mental state functioning, lack of insight to medication, and demotivation. A one-on-one peer support, once a trusting relationship is established between the patient and the treatment supporter, allows the patient to discuss his or her thoughts and feelings in an environment of equal power and respect, the behavior patterns improve and information sharing about the diagnosis and treatment becomes possible (Shalaby and Agyapong 2020). The treatment supporter utilizes skills such as problem solving, conflict resolution and the patient’s strengths to influence positive change whilst working on their weaknesses (Shalaby and Agyapong 2020). The patient will become motivated to engage in treatment and participate in activities of daily living (Shalaby and Agyapong 2020). Fan *et al.* (2018) advocate that peer support improves the patient’s mood,

communication, and understanding of the diagnosis by the patient. Nurses further motivated by stating that treatment buddies will ensure compliance and motivate the patient. However, Mall *et al.* (2013) strongly believe that cellphones have infiltrated the communication system such that everybody owns one and therefore they can be used to reach many people. Notwithstanding the above, Torous *et al.* (2014) stated that the majority of psychiatric patients, who are receiving treatment for serious and chronic psychiatric illness in the public sector, do not have cellphones compared to patients who are treated at private insurance clinics.

Different views came up regarding selection of a suitable treatment buddy for the patient. Some participants felt that it would be better for patients to choose their own treatment buddy, whilst others considered the input of both their families and health professionals as important when choosing a treatment buddy. Treatment supporters of psychiatry in Germany, UK, Israel, India, Uganda and Tanzania are voluntary, they register themselves, get trained and allocated by the health care professional driving the program (Moran *et al.* 2020). The DOTS programme allows patients to choose any supporter with whom they feel comfortable, it could either be a facility-based health worker, a community-based health worker or a family member (Hussain *et al.* 2018). However, Rajagopaul, Reddy and Kistnasamy (2014) in eThekwini district believed that the best treatment supporter is a community worker, the patients' family and friends are not encouraged because they often sympathize with the patient allowing them to miss treatment. The HIV infected individuals are advised to choose their own treatment supporter who would subsequently be trained at the health facility (Zuyderduin, Ehlers and van der Wal 2008; Hlophe 2010). The nurses who participated in qualitative interviews shared the same sentiments with the patient participants that the patients, family and nurse's contribution in selection of treatment buddy were regarded as significant. One nurse's opinion was that patients need first to trust the person, it must be someone familiar to the patient, someone who is willing to support the patient because of the stigma attached to mental illness. They also suggested that the patient could provide them with a list of people and they will decide who could be the best person. Zuyderduin, Ehlers and van der Wal (2008) agree with this proposition in their study on treatment supporters for HIV positive patients in South Africa. The nurse will assess whether the individual knows the condition of the patient, what they are going through, how much stresses they have. In psychiatry, peer supporters are selected based upon their ability to communicate effectively, understanding of the patient's diagnosis, sense of personal responsibility and compassion towards others, and must be mentally stable for three months and more (Fan *et al.* 2018).

Another nurse stressed the importance of collateral information from the family and the fact that family, has special interest in their relative's wellbeing. In agreement is Caqueo-Urízar *et al.* (2015) who mentioned that family members often find themselves as the main caregiver since they live with the patient and find it necessary to support their sick loved one. Family members who are caregivers have reported both positive and negative experiences of caregiving but is still regarded as the best by Caqueo-Urízar *et al.* (2015). The satisfaction of caregiving begins when a good trusting relationship is established with the patient and the caregiver is appraised of the work he or she is doing and the improvement in coping skills for both of them is evident (Caqueo-Urízar *et al.* 2015). Negative experiences include changes in the daily routine, isolation from the rest of the family, some have to leave work with resultant financial constraints, challenges with physical health such as feeling tired, and guilt especially if they missed development of new symptoms in their relative (Caqueo-Urízar *et al.* 2015).

6.1.5 The research assistant's views towards treatment buddies

The research assistant shared same sentiments with the nurses and the patients about virtual treatment buddy support. Her views supported the themes that emanated from participants and nurses that using the virtual treatment buddy support improved adherence to medication, resolved some of the problems related to schizophrenia disorder such as social isolation and the need to communicate. She also advocates that the best treatment buddy for a person diagnosed of schizophrenia would be a family member, friend, or a neighbor. She agreed that schizophrenic patients must be encouraged to seek treatment buddies for themselves. That would resolve the symptom of forgetfulness which contributes to schizophrenic forgetting to take their prescribed treatment. The research assistant consistently sent reminders every day at the same time, and this led to the study participants establishing a routine of taking medication. Adherence to routine indicates that someone is stable and contributes towards recovery whereas failure to perform daily activities is regarded as worsening symptoms (He-Yueya *et al.* 2020) . She enjoyed the attempts to communicate with her that were made by participants. Study participants were sending messages to her asking very important questions mainly about whether the clinic was open on certain days, how to get enough supply of medication by those planning to travel away from home for some time, and whether they can send their sick relatives to the psychiatric clinic. This interaction demonstrated trust that has developed in patients towards her and trusting a treatment supporter is a critical element in effective provision of treatment buddy support. The research assistant indicated that helping schizophrenia patients created a sense of satisfaction within her because she understands the

value of keeping adherent and consequences of non-adherence in someone's life. She indicated that she would like to participate in such projects in the future.

6.2 CONCLUSION

An indepth discussion of study results was undertaken. The conclusion from this discussion was that treatment buddies has a potential to improve adherence to treatment for patients suffering from schizophrenia, and the implementation of treatment buddies was supported by all participants. The next chapter concludes the study and provides recommendations for further studies.

CHAPTER 7: DEVELOPING A PRACTICE FRAMEWORK

7.1 INTRODUCTION

Theoretical framworks are developed by researchers to describe the phenomena, explain connections, and make predictions (Vinz 2015). This chapter intends to develop a theoretical

framework that addresses the problem poor adherence levels of schizophrenic patients to prescribed medication. The objective of the framework is increase adherence to antipsychotics for better patient outcomes. The framework addresses the question of how can adherence of schizophrenic patients to medication be improved.

7.2 THEORIES SUPPORTING THIS STUDY

Many theories have been used by researchers to predict adherence to medications the social cognitive theory, the health belief model, the self-regulatory model and the transactional model of stress and coping (Holmes, Hughes and Morrison 2014). These theories are behavioural, their focus is on identifying people's behaviors that are commonly related to nonadherence and predict outcomes. Behaviors such as social isolation, forgetting, poor interpersonal relationships are predicted to cause a negative impact on adherence to treatment, and vice versa (Holmes, Hughes and Morrison 2014).

The theory of planned behavior was found befitting in the development of this study's framework. The theory of planned behavior is favoured because besides identifying the behaviors related to non-adherence, it also influences the behavior as it encourages motivation of intentions. It is then regarded as an intervention seeking theory (Holmes, Hughes and Morrison 2014). Generally, schizophrenic patients lack motivation and may benefit from a program related intervention like use of treatment buddies that have been implemented in this study. (Schöttle *et al.* 2019). Secondly, the theory of planned behavior has been identified by Flowers, Freeman and Gladwell (2017), as an educational theory and therefore can influence people's desires through education.

7.3 DEVELOPING THE PRACTICE FRAMEWORK FOR THIS STUDY

The main concepts extracted form the problem statement necessitating development of a framework are lack of adherence and better patient outcomes. Adherence to medication has been defined in the literature review chapter as the extent to which patients take their prescribed medication (Verloo *et al.* 2017). People diagnosed with schizophrenia disorder are considered adherent if they take more than 80% of prescribed medications (El-Mallakh and Findlay 2015).

Adherent patients exhibit improvement of treatment outcomes when they show symptoms of recovery such as symptom remission, able to assume work, independent living, and reestablishes good social relationships with others (Kane, Kishimoto and Correll 2013).

The components of the theory of planned behavior that will guide our practice framework are attitudes, intentions and behavior change.

7.3.1 Assessing the patient's attitudes.

According to the theory of planned behavior, identifying the attitude that drive the behaviour is critical. The health care workers must utilize their initial contact session with the patient to assess the attitudes of the patients towards taking of medication for their diagnosed disorder. The health care workers must establish the patient's perceptions of what other think about taking of medication i.e. subjective norms. The last attitude to assess is the patient's perception of their control over taking medication. Specific questions to be asked would focus on availability of resources, support system and self-efficacy. From this assessment the health care worker can determine whether the patient's attitudes towards medication are positive or negative and identify those attitudes that need to be be addressed by the intervention. The aim of this framework is to utilize treatment buddies to influence the attitudes of the schizophrenic patients to develop strong intentions of medication compliance (Lin, Updegraff and Pakpour 2016). The healthcare worker, based in the above assessment will inform the treatment buddy of areas that need to be taken care of for the patient.

7.3.2 Influencing the patient's intentions

Intentions have been described in chapter three of this study as effort exerted by individuals towards performing a certain behavior (Brookes 2021). Lack of motivation was reported by the participants of this study during the qualitative interveiews, in a theme "elimination of other problems". Implementing treatment buddies for all schizophrenia patients is paramount, especially in South Africa with non-adherence rate ranging between 40-45% (Van Rensburg, Lian and Zane 2014). Because the theory of planned behavior is an educationa theory, a well trained treatment buddy utilizes knowledge, and a positive attitude to educate the patient on the diagnosis, action of treatment, importance of adherence, potential side effects and their management (Flowers, Freeman and Gladwell 2017). A well taught patient is likely to become motivated toward developing favorable intentions. This practice framework requires the health

care worker to also support the treatment buddy with knowledge and skill necessary to support the patient. The health care worker has got a responsibility to facilitate the process of establishing the treatment “buddy services” for each schizophrenic patient visiting the institution.

7.3.3 Behavior Change following treatment buddy intervention

Change in behavior is the ultimate goal of the theory of planned behavior. The desired change for this study is for schizophrenia patients to takemedication on their free will. The relationship between the treatment buddy and the patient will determine the outcome. The health care worker still has got a role to continuously monitor and influence the relationship between the patient and the treatment buddy. The participants of this study had indicated the need of a treatment for themselves and other patients suffering from schizophrenia. This finding was reveaked by both quantitative and qualitative results. The practice framework for adherence to antipsychotic medication that utilizes the treatment buddies is presented below.

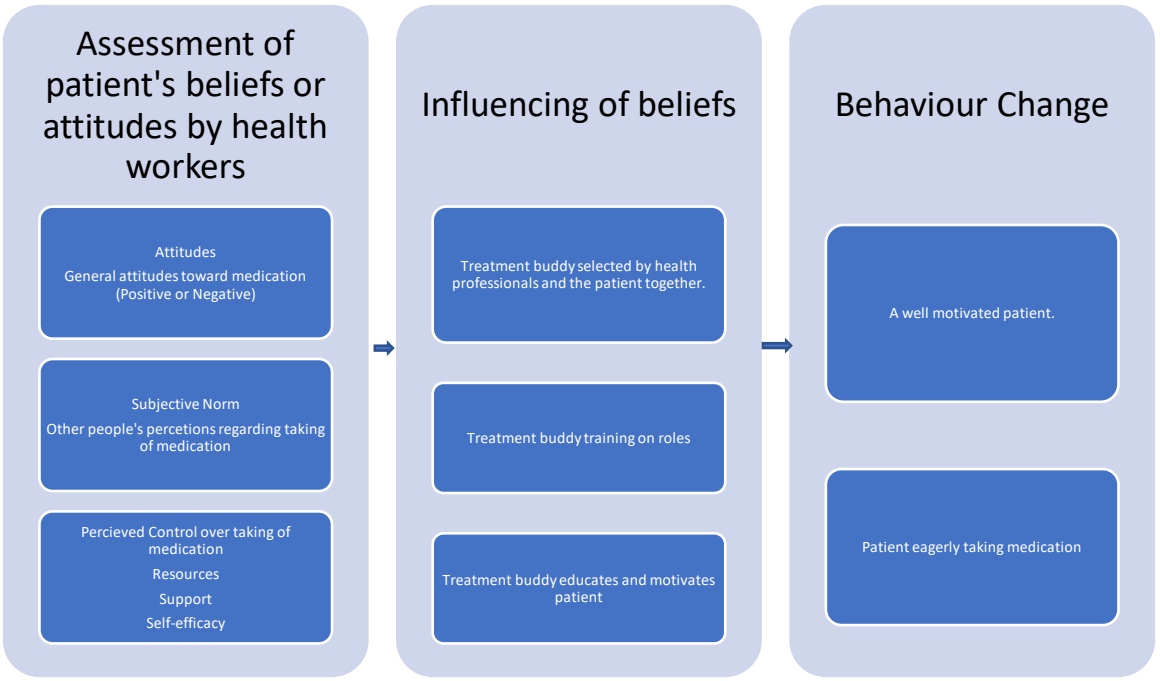


Figure 7.1 A practice framework of assessment, influence, and behavior change.

7.4 CONCLUSION OF THE CHAPTER

A practice framework of assessment, influence and behavior change developed in this chapter is intended to assist health care services to improve patient outcomes for schizophrenic patients that are prscribed antipsychotic medications. For effective implementation of this framework, support is required from the department of health policy makers and skills development sector for training regarding training of treatment buddies and treatment buddy champions of each mental health institution. The next chapter summarizes the study and make recommendations.

CHAPTER 8: SUMMARY, CONCLUSION AND RECOMMENDATIONS

8.1 INTRODUCTION

The summary of the study, significant conclusions, limitations that were encountered by the researcher and the recommendations made for health services managers and for further research are presented in this chapter.

The aim of the study was to develop an intervention, with the use of text message managed “buddy system” to improve adherence to medication among patients diagnosed with schizophrenia disorder. The research questions that guided this study were:

- What are the medication compliance levels of schizophrenia patients who have been exposed to the intervention of virtual treatment buddy support?
- What are the in-depth experiences of the virtually operated “buddy system” from the perspectives of patients and health care professionals?

- How would one develop a practice framework that uses a treatment “buddy system” as an intervention to enhance adherence to treatment by patients suffering from schizophrenia in the province of KwaZulu-Natal?
- What is the role and the scope of treatment buddies in mental healthcare?

Chapter 1 of this study described the research problem and its background, purpose and significance of the study in mental health nursing. The specific research objectives were outlined based on reviewed literature. Chapter 2 presented a detailed literature review that addressed the research problem. During literature review the researcher established that use of treatment buddies for psychiatric patients was never investigated besides what was called peer support by researchers. Chapter 3 discussed the theoretical framework and chapter 4 detailed the research methodology followed by data collection and analysis in chapter 5. Chapter 6 was an indepth discussion of study results.

In this final chapter, the summary, conclusions, limitations and recommendations specific for this study are presented. The summary is discussed in relation to the research objectives and the theoretical framework of this study, as well as literature and related studies.

8.2 SUMMARY OF RESEARCH FINDINGS

A summary is drawn from the findings of this study that were presented in Chapter 5 and will be discussed in relation to each study objective. The study was influenced by low levels of adherence to medication among schizophrenia patients and its negative impact on health outcomes. The purpose of the study was to introduce virtual treatment buddies as an intervention and then evaluate their effectiveness to improve adherence to medication among patients diagnosed with schizophrenia in KwaZulu-Natal; and this was achieved. A mixed methods research approach was utilized to direct the study. Conclusions and recommendations are discussed last in this chapter.

8.2.1 Objective 1: To investigate adherence levels of schizophrenia patients who have been exposed to the intervention of virtual treatment buddy support.

In this study adherence levels to antipsychotic medication improved following introduction of virtual treatment buddy support to patients diagnosed with schizophrenia disorder.

Firstly, findings revealed that a fewer number of study participants in the post-intervention group (4.9%; n = 4) have been admitted in a psychiatric ward during the six months intervention period compared to the pre-intervention phase (80.3%; n = 94). These findings concur with those of Schöttle *et al.* (2019) who postulated that the rate of psychiatric admissions for schizophrenia spectrum disorders decreases significantly when they get involved in a program like the "treatment buddy system". In South Africa, schizophrenia is among the main diagnoses that constitutes the highest rate of in-patient admission (Madala-Witbooi and Adeniyi 2019). And this is due to violence associated with psychotic and manic symptoms of the two disorders.

Secondly, the findings for adherence levels to antipsychotic medication revealed an improvement from 60.7% before treatment to 83.1% post-intervention. In agreement is Boardman, McCann and Kerr (2014) who confirmed that a problem-specific peer support programme targeting nonadherence to medication that is provided to patients in their communities often improves the adherence levels. Dixon, Holoshitz and Nossel (2016) concurs that specialised psychosis programs have greater success in keeping patients longer on treatment compared to routine monthly services provided in community clinics.

Thirdly, findings of this study revealed that 50.9% of the study participants needed assistance in taking medication. Mokwena and Ndlovu (2021) confirms that in South Africa, a huge number of people who suffer from mental illness requires some assistance from family members and or any other caregiver for their basic care activities such as daily self-care and taking of medications.

8.2.2 Objective 2: To explore experiences of the virtually operated "buddy system" from the perspectives of patients and health care professionals.

The use of treatment buddy support yielded positive results by improving adherence to antipsychotic medication among schizophrenic patients. This was evident from the themes that emerged from participant qualitative interviews which were improved compliance to medication, improved support from the clinic, alleviation of problems and encouragement of treatment buddy support for other schizophrenia patients. The effort taken by treatment buddy of

consistently sending the reminders made patients realize the importance of taking medication and how their life is dependent on these medications. They welcomed the service and viewed it as helpful and a valuable service to have. The participants, suffering from this chronic condition, still benefited from continuous engagement with the treatment buddy (Mahone, Maphis and Snow 2016). Because messages were sent same time every morning patients established a routine and that was a benefit to them. According to García-Laredo (2018), schizophrenia patients usually benefit from routine schedules especially verbally communicated information.

These patients were normally receiving services from the clinic such as collecting their medication, having assessment of mental state functioning and physiological assessment when necessary, and referral to other services such as social worker or psychologist. These services were provided prior implementation of treatment buddy support. The emergence of treatment buddy support was then viewed as an additional service provided by the clinic and was greatly appreciated. Having realized the effort taken by the clinic to promote their recovery, they became motivated, and they endeavored to resume normal functioning. This engagement of the treatment buddy with this cohort of participants improved the demotivation brought about by negative symptoms of schizophrenia (Favrod *et al.* 2019). Lack of motivation in psychosis impairs goal-directed behaviors such as taking medication which are deemed necessary for effective daily life functioning and recovery (Favrod *et al.* 2019).

Patients expressed continued need for treatment buddy support service for themselves and other patients suffering from schizophrenia. They vouched to encourage other patients who are suffering from schizophrenia to get treatment buddies for themselves. They believed that schizophrenia brings a lot of problems such as aggressiveness, relapse, and inability to cope. Treatment buddies, on the other hand, brings along information that can increase insight to the condition and medication, help patients focus on their condition, and make them lead an independent life.

8.2.3 Objective 3: To develop a practice framework that uses a treatment "buddy system" as an intervention to enhance adherence to treatment by patients suffering from schizophrenia in the province of KwaZulu-Natal.

The theory of planned behavior guided the development of the practice framework that utilized treatment buddies to influence change in attitude towards medication. According to Flowers, Freeman and Gladwell (2017), a well taught patient through the educational theory of planned behaviour will ultimately become motivated toward developing favorable intentions. This practice framework, developed for this study focused on assessment of patient's beliefs about taking of medication by health care workers, use of treatment buddies to motivate patient's beliefs and behavior change.

8.2.4 Objective 4: To outline the role and the scope of treatment buddies in mental healthcare.

The role and scope of treatment buddies presented here is gathered from the qualitative interviews with professional nurses, the patient participants and research assistant in this study. Patient's expected treatment buddies to help them improve compliance, establish a routine of taking medication every day and increase the understanding of the role of medication in their lives. Treatment buddies are expected to closely monitor taking of medications, emergence of side effects and conduct motivational talks to eradicate troubling schizophrenia related symptoms such as loneliness, lack of motivation, poor sleeping habits, and suicidal behaviour.

Nurse's opinions are that treatment buddies improves compliance with medication when they physically monitor and assist a schizophrenia patient take their prescribed medications, monitor and advise during emergence of side effects, support regular clinic visits, provide encouragement and motivation which promotes self-esteem of patients. A well-informed treatment buddy with good insight of the patient's condition effectively attends to all patient's problems and refer patients to necessary special services such as psychological support services, social welfare departments etc. Problems inherent in schizophrenia such as loneliness, aggressiveness, frequent admission to emergency healthcare services are reduced; and they create a good follow up system and there will be no cases lost in the system. With establishment of good personal relationships, they become good confidants for their patients.

The research assistant shared same sentiments with patients and nurses that the role of a treatment in mental illness is to support the patient with taking of treatment and improve

independent functioning. The indepth role and scope of treatment buddies is for further research.

8.3 CONCLUSION

In conclusion, implementation of virtual treatment buddy support had improved adherence to antipsychotic medications. Adherence to antipsychotic medication is a cornerstone for the management of schizophrenia disorder. Improved adherence levels result to better patient outcomes, reduces the risk of relapse and promote a good quality of life. It also reduces financial costs related to frequent use of psychiatric emergency services by relapsing patients requiring 72-hour assessment of involuntary patients and subsequent admission to a psychiatric institution. With good adherence, community members and families become free from risk of violence inherent in relapsing patient. Causes of non-adherence are many and differ with each patient. Cognitive deficits with inherent forgetfulness, lack of family support and side effects among others have been identified as the most critical in this study. As much as mental health services have been included as a priority in Sustainable Developmental Goals, South Africa is still experiencing challenge of resource constraints which negatively affect provision of mental health services. Treatment buddy support that was provided virtually in this study has proved to be effective in improving compliance levels among patients suffering from schizophrenia. The intervention is found by health professionals and patients as predominantly relevant given the increasing pressure on mental health resources in our country. For effective implementation of treatment buddies support, active involvement of mental health professionals, the patient and their families and friends are vital. Treatment buddies can now be considered an option hence research suggests multidimensional approaches for effective management of non-adherence to psychiatric treatment. The role of treatment buddies is to improve compliance through physically monitoring of taking of medication, addressing side effects, increase patients' insight to the condition, support regular clinic visits, provide encouragement and motivation thereby promoting self-esteem of patients and refer patients to necessary special services such as psychological support services, social welfare departments etc. The designed practice framework of assessment, influence, and behaviour change will guide healthcare professionals in the implementation process.

8.4 RECOMMENDATIONS

Based on the findings and discussions of findings presented in the chapters above, the following recommendations are suggested. This study revealed the effectiveness of virtual treatment buddy support as an intervention to improve adherence to medication by patients diagnosed with schizophrenia.

- Since use of treatment buddy support has been proven efficient in promoting adherence to antipsychotic medication, mental health practitioners should incorporate treatment "buddy services" into their routine management of patients diagnosed with schizophrenia to maintain the highest rate of compliance to medication and help improve patient's health outcomes.
- Implementation of treatment buddies should be encouraged by administrators and embraced by health care workers and policy makers at district and even provincial level in an effort to continually improve adherence to psychiatric treatment. The stakeholders should add this intervention on mental health provision guidelines.
- Treatment buddy champions should be identified in each health institution who will train and provide continuous support to treatment buddies.

8.5 LIMITATIONS OF THE STUDY

There are two major limitations in this study that could be addressed in future research. The first challenge was limited access to study participants. The phase of data collection came about during the period of the emergence of Covid-19 epidemic in the province of KwaZulu-Natal. The researcher was denied permission to collect data from the institution that was initially earmarked for data collection because Covid-19 regulations that were discouraging overcrowding and promoting social distancing. The study intended to have a treatment buddy for each study participant, and this was source of the problem. This led to a redesign of the research strategy where treatment buddies were replaced by virtual treatment buddy support and one treatment buddy (research assistant) was attending to all study participants. The researcher had to find another site for data collection. The original plan of selecting treatment buddies and monitor their role performance could not happen. The replacement of individual treatment buddies by the research assistant worked perfectly well because virtual support was provided via text messages to all participants and the level of adherence was improved.

The second concern was lack of previous research studies on the topic. It was the first time that treatment buddies for the patients were considered in research and therefore there was no available literature on treatment buddies for psychiatric patients. Citing and references was then

based on relevant literature such as treatment buddy research of Tuberculosis buddy program (DOTS program), HIV/AIDS buddy system, Cancer buddies and peer supporters in mental health. Peer supporters in mental health focused on health professionals assisting each other to cope with mental illness. The information gathered from the above-mentioned conditions guided this study.

8.6 SUGGESTIONS FOR FURTHER RESEARCH

Future research on use of treatment buddies for psychiatry patients might extend the explanations of their roles and scope. Future studies should consider using a single treatment buddy for each patient, and not a group of patients for one treatment buddy.

8.7 CONCLUSION OF THE CHAPTER

This study's aim of evaluating the effectiveness of a virtual operated treatment buddy support was conducted and the study findings supported the aim of the study. The study paved way for rffrctive use of treatment buddies in mental health like it has been used successfully in other disease like HIV/AIDS. Further studies are required that focuese on role and scope of a treatment buddy.

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Annexure: A

LETTER OF INFORMATION

(Patient)

Title of the Research Study: Evaluating the effectiveness of virtual buddy support to improve treatment adherence for patients suffering from schizophrenia in KwaZulu-Natal: a model of care.

Principal Investigator/s/researcher: Nomhle Mvunelo RN, RM, Master's Degree.

Co-Investigator/s/supervisor/s: Prof F. Haffejee and
Dr Y. Thandar

Welcome Remarks: Good Day. It is a pleasure to have you today. Thank you for showing interest in this study.
You are welcome to participate in this study. There will be 115 participants for this research, 80 will be exposed to an intervention that provides virtual treatment buddy support and 35 will form the control group. Participation is voluntary and you can withdraw at any time, without any penalty. This will not affect your treatment in any way.

Brief Introduction and Purpose of the Study: Non-adherence to treatment remains a major challenge in the management of psychiatric patients. Adherence to prescribed treatment is regarded by healthcare professionals as a key to recovery, both in acute episodes and in long term management of mental illness, with psychotropic medications being the cornerstone to management of mental illness. The purpose of this study is to introduce the virtual treatment buddy support that involves sending of text message reminders as a strategy that may be utilized to overcome the ongoing problem of non-adherence to treatment in the field of mental healthcare.

Outline of the Procedures: You are requested to participate in a research study that is being conducted at your clinic. You are required to read this information letter, and to complete the consent form thereafter. On the day of recruitment, the researcher will introduce the study to you and allow you an opportunity to ask questions. You will then be requested to sign the consent to indicate that you agree

to participate in the study. You will also be required to complete a questionnaire. On your first day of contact with the researcher you will be requested to spend approximately one hour with the researcher. This is because the researcher will introduce the study to you, read the participant information letter with you, ask you to sign the consent and assist you to complete the questionnaire. You could either be in intervention or control group. If are in intervention group, then you will receive text message reminders to take your medications and you will receive reminders to collect your medications at appointed time. You will be randomly selected to be part of either the intervention or the control group and that these reminders will only be sent to you only if you are in the intervention group.

During the course of the research, researcher assistant will act as your treatment buddy, she will communicate with you using text messages. She will remind you to take medication on a daily basis, to collect your medications at the appointed time, and will attend to all your problems related to taking of your schizophrenia treatment for a period of six months. There are two sets of data that will be collected from you ,the first set of data will be collected before you are exposed to the intervention and the second set is gathered after six months exposure to the intervention. Since the data collection process will occur over a period of time, the researcher will randomly arrange at least two monitoring session for participants in a form of an unstructured interviews to check whether the participants and the researcher assistant are still working well together. Each monitoring interview will last approximately ten (10) minutes. This will be arranged in advance to accommodate other commitments of the participants. There will also be qualitative interviews, conducted on individual basis to gather in-depth experience of exposure to virtual treatment buddy support. The researcher will randomly select about fifteen participants or more to part-take in qualitative interviews. These one-on-one qualitative semi-structured interviews will be arranged by the researcher to take place here in the clinic on your appointment day so there will be no additional day of visiting the clinic.

During your involvement in this research process, you are requested to continue observing the Covid-19 protocols of wearing a face, sanitizing your hands and maintaining social distance. The researcher will guide in maintaining the Covid-19 protocols.

To be included in this study you need to meet with the following criteria of inclusion:

- You must be suffering from Schizophrenia.
- You must have been prescribed psychotropic medications by a qualified psychiatric health care practitioner.
- You must have been on treatment for at least six months minimum.
- You must be on a long-term treatment plan i.e. at least one year to the minimum.
- You must be on a monthly schedule of script renewal.
- You must be between 18 and 65 years old.
- You must be able to communicate in either isiZulu or/and English.
- You must be living and collecting treatment in the province of KwaZulu-Natal.
- You must not suffer from physical disabilities such as blindness, intellectually challenged, or deaf.

The researcher will sometimes take notes as you are talking or will need to voice record your conversation. You have got a right to agree or disagree with voice recording. If you disagree it would mean you are not continuing with the research and your participation will be withdrawn. You will be contacted telephonically at times if the need arises. You are expected to cooperate with the researcher instructions. You have been chosen because you have met our criteria of inclusion as stated above.

Risks or Discomforts to the Participant: You may feel slightly uncomfortable when disclosing certain information during the study. If you do feel any discomfort, please let me know, so that I can get a counsellor to assist you.

Benefits:
The study will lead to establishment of an intervention that will be utilized to improve adherence to psychiatric treatment. The establishment of treatment buddies will reduce loneliness amongst the persons suffering from schizophrenia. The study will be published thereby enlarging evidence-based knowledge in the field of nursing and psychiatry.

Reason/s why the Participant May Be Withdrawn from the Study: You will be withdrawn from the study if you fail to cooperate with the researcher as your treatment buddy. You may also withdraw yourself from the study at any time and there will be no adverse consequences for you should you choose to withdraw.

Remuneration: There will be no remuneration for participating to the study. You will be provided with a sandwich on the days that we will have interviews.

Costs of the Study: There is no payment required for participating in this research.

Confidentiality: Confidentiality of information will be maintained throughout the study by ensuring that private information about you is not shared. Your files will be read only by the researcher in private rooms and handed over to staff for filing without exposing them to other unauthorized persons. All interviews will be conducted in a private room that will be closed to maintain privacy.
Your name will not be used on any research material, where you will only be referred to by your participant number.
Collected data will be stored safely in a locked cabinet and electronic data will be saved in password protected computer by the researcher for a period of five years; and be safely discarded thereafter. Hand notes will be shredded, recorded and electronic material will be deleted accordingly.

Research-related Injury: There is no risk of physical injury with this study. You may experience discomfort with the treatment buddy or during the interview. Psychological counselling will be undertaken, if you require it.

Persons to Contact in the Event of Any Problems or Queries:
Researcher: Nomhle Mvunelo Cell No. 082 707 6869
My Supervisor: Professor F. Haffejee Cell No. 0832918796
Institutional Research Ethics Administrator: 031 3732375.
DVC: Research, Innovation and Engagement Prof S. Moyo on 031 3732577 or moyos@dut.ac.za.

Isijobelelo: A (a)

INCWADI YOLWAZI

(Eyesiguli)

Isihloko Socwaningo: Ukuhlola ukusebenza ngempumelelo kohlelo lomlekeleli oluhlose ukuthuthukisa ukusetshenziswa ngendlela efanele kwemishanguzo ezigulini ezihlushwa isifo sofufunyana KwaZulu-Natali: imodeli yokunakekela.

Umcwaningi omkhulu: Nomhle Mvunelo RN, RM, Master's degree.

Sekela Mphathi/Abaphathi/Umphathi/abaphathi:
Prof F.Haffejee and
Dr Y. Thandar

Amazwi Okwamukela: Sawubona. Kuyintokozo ukuba nawe namuhla. Siyabonga ukuthi ukhombise uthando kulesifundo.

Uyamukeleka ukuzibandakanyeni kulolu cwaningo**.** Ucwaningo luzodinga abahlanganyeli abayikhulu neshumi nanhlanu (115), abangamashumi ayisishiyagalombili (80) bazothola abalekeleli abangamashumi amathathu nanhlanu (35) abangeze bathola abalekeleli. Ukubamba iqhaza kungokuzithandela futhi ungakwazi ukuhoxa noma ngasiphi isikhathi ngaphandle kwenhlawulo. Lokhu akungeze kwaphazamisa uhlelo lwakho lokuthola imithi.

Isingeniso Esifishane Nenhloso Yocwaningo: Ukungathathi kahle imishanguzo kusahlezi kuyinselelo enkulu ohlelweni lokulashwa kweziguli zesifo sengqondo**.** Ukuthatha imishanguzo ngendlela kufaniswa oochwepheshe kwezempilo njengokhiye wokululama kulabo abasabambekile ngamawala nalabo asebenesikhathi eside besebenzisa imishanguzo yabagula ngomqondo, lapho imishanguzo iyisihluthulelo nethemba lokulapha isifo sengqondo. Inhloso yocwaningo ukwazisa ngohlelo lomlekeleli njengohlaka olungasetshenziswa ukunqoba inkinga elokhu iqhubekile njalo yokungathathi ngendlela imishanguzo kwisigaba sabagula ngengqondo.

Okubhekelele ukuthi Ukwenze: Uyacelwa ukuthi ubambe iqhaza kulo lolucwaningo oluqhubekayo kumtholampilo wakho. Uyacelwa ukuthi uyifunde lencwadi yolwazi mawuqeda usayine isijobelelo**.** Ngelanga lokukhethwa kwamalunga azobamba iqhaza kulolucwaningo, umcwaningi uzikwazisa kafushane ngocwaningo futhi akunike isikhathi sokuthi ubuze imibuzo. Uzocelwa ukuthi usayine imvume yokubamba iqhaza okukhombisa ukuthi uyavumelana nalokho. Ngemuva kwalokho uzocelwa ukuthi uphendule uhla lwemibuzo olumayelana nocwaningo. Ngelanga lokuqala lokuhlangana nomcwaningi, uzocelwa ukuthi uhlale iskhathi esingangehora kunesikhathi esijwayelekile. Yingoba umcwaningi uzobe ezokwazisa ngocwaningo, akufundele incwadi ngocwaningo, akucele ukuba unikeze imvume yokubamba iqhaza kucwaningo.

Kungenzeka ufakwe eqembini lokulekelelwa noma lokulawula. Uma useqenjini lokulekelelwa, uyothola umqhafazo okukhumbuzayo ukuba uthathe imishanguzo yakho nokuthi ulande imishanguzo yakho ngezinsuku eziqokiwe. Ngesikhathi socwaningo, umsizi wocwaningo uzozenza umngani wakho wokwelashwa, uzoxhumana nawe ngokukuthumelela imiqhafazo. Uzokukhumbuza ukuba uthathe imishanguzo yakho njalo ngelanga, nokuba ulande imishanguzo yakho ngezikhathi eziqokiwe, akusize kuzozonke izinkinga ongabhekana nazo ekuthatheni imishanguzo yokulapha isiofo sengqondo ezinyangeni eziyisithupha.Kuzoba namasethi amabili azoqoqwa kumbambi weqhaza, eyokuqala kuzoba isethi yedatha ngapahambi kokuba uvezwe ongenelweleni locwaningo bese kuthi eyisibili kube isethi yedatha ozoqoqwa ezinyangani eziyisithupha emva kokuvezwa ongenelwelelni locwaningo. Njengoba inqubo yokuqoqa idatha izothatha isikhathi, umcwaningi ngokungahleliwe uzohlela okungenani iseshini embili yokuqapha ababambiqhaza ngendlela yezingxoxo ezingahlelekile ukubheka ukuthi ababambiqhaza nomsizi womcwaningi basebenza kahle yini ngokubambisana. Ingxoxo ngayinye yokuqapha izothatha cishe imizuzu eyishumi. Lokhu kuzohlelwa kusengaphambili ukubhekana nezinye izibophezelo zabahlanganyeli. Kuzoba khona nezingxoxo ezisezingeni eliphezulu, ezizoqhutshwa ngazinye ukuze kuqoqwe isipiliyoni esijulile sokuchayeka ekusekweni ngumngani kokwelashwa okuphathekayo. Umcwaningi uzokhetha ngokungahleliwe ababambiqhaza abayishumi nanhlanu noma ngaphezulu abazobamba iqhaza ezingxoxweni ezisezingeni elifanele. Lezi zinhlolokhono ezihlelwe umuntu ngamunye zizohlelwa ungumcwaningi ukuthi zenzeke lapha emtholampilo ngosuku lwakho lokulanda imishanguzo ukuze kungabikho olunye usuke lokuvakashela umtholampilo.

Ngesikhathi kulenqubo yocwaningo uyacelwa ukuthi uqhubeke nokubheka izivumelwano ze Covid-19 zokugqokwa kwesifonyo, ukuhlanza izandla zakho nokugcina ibanga lomphakathi. Umcwaningi uzoqondisa ekugcineni izivumelwano zesifo uKhuvethe (Covid-19). Ukuze ubambe iqhaza kulolucwaningo kumele uhlangabezane nalemiqhathanga elandelayo:

- Kumele ukuthi ugula ngesifo sofufunyana.
- Kumele ube uthatha imishanguzo oyibhalelwe ngumsebenzi wezempilo ofundele ukwelapha abanesifo sengqondo
- Kumele ube usuthathe imishanguzo yezempilo isikhathi okungenani esiyizinyanga eziyisithupha.
- Kumele ube sohlelweni lokuqhubeka kokulashwa isikhathi eside.
- Kumele ube sohlelweni lokuvuselela imishanguzo yakho zinyanga zonke.
- Kumele ube ngaphezulu kweminyaka eyishumi nesishiyagalombili (18) yokuzalwa, ungedluli kumashumi ayisithupha nanhlanu yeminyaka.
- Kumele ube uyakwazi ukukhuluma isiZulu noma isiNgisi.
- Kumele ubengumhlali othola imishanguzo yakho kwisifunda sakwaZulu-Natali.

- Kumele ungatholakali unesifo sokukhubazeka njengokungaboni, ukukhubazeka emzimbeni, noma ukungezwa.

Kuyokwenzeka ukuthi ngesikhathi socwaningo, umcwaningi abhale phansi noma aqophe ingxoxo yenu. Ucwaningo luzothatha isikhathi esiyizinyanga eziyisithupha ekothi ngaso lesikhathi umcwaningi ahlele ukuthi nibonane ngezinye ngezikhathi. Ngesinye isikhathi kuyodingeka ukuthi umcwaningi akuthinte ngocingo. Uyacelwa ukuthi usebenzisane nomlekeleli wakho Kanye nemithetho yomcwaningi. Ungomunye wamalunga ayikhulu neshumi nanhlanu abaqokelwe ukubamba iqhaza kulolucwaningo. Ukhethiwe ngoba ukwazile ukumelana nomgomo sidingo obhaliwe ngenhla.

Ubungozi nokunganethezeki okungenzeka kumbambi qhaza: Kunokwenzeka ukuthi umbambi qhaza angakuthokozeli ukukhipha isifuba ngolwazi oluthile malunga nempilo yakhe kumlekeleli nokuthi mhlawumbe kebengathi umlekeleli usengene kakhulu kulokho okuyimfihlo nobuwena.

Izinzuzo:
Ucwaningo luzoholela ekwakhiweni kohlaka olungasetshenziswa ukukhuphula izinga lokuthatha imishanguzo ngabagula yisifo sengqondo. Ukusekwa kohlaka lwabalekeleli luzosiza ukunciphisa ukuzizwa ngawedwana, kulabo abanesifo sofufunyana. Isifundo socwaningo sizoshicilelwa ngalokho sandisa ulwazi olunobufakazi.

Izizathu zokuthi umbambi qhaza ahoxe kulesi sifundo:
Umbambi qhaza angahoxa kulesi sifundo uma engabambisene kahle nomcwaningi noma nomlekeleli wakhe. Ababambi qhaza bangahoxa bona mathupha kulesi sifundo noma yisiphi isikhathi ngaphandle kwemibandela uma befisa ukuhoxa.

Inkonkhelo: Angeke ibekhona inkokhelo kulabo ababambe iqhaza kulesi sifundo. Umcwaningi uzokulekelela ngemali yokugibela namasemishi ngezinsuku lapho ninomhlangano.

Inhlawulo yesifundo: Ayikho inhlawulo ekhokhwayo yokubamba iqhaza kulesi sifundo.

Imfihlo: Zonke izingxoxo ezimalunga nesifundo zohlala ziyimfihlo, kuzoqikelelwa ukuthi konke okuphathelene nolwazi ngesiguli akudluliselwa ngaphandle kolwazi noma nemvume ephuma kulowo oyisiguli. Amabhuku wonke anemininingwane yakho ayofundelwa ezindlini eziphephile zabucala masekuqediwe ngazo ziye kobekwa kwindlu ehleliwe ngendlela ehlelekile lapho zingeze zabonwa yilabo ekungamele bafinyelele kuzona. Ingxoxo zocwaningonazo zokwenzelwa kwizindlu eziphephile ezikhiyiwe, hayi obala.
Igama lakho liyovikelwa nokuthi ngeze lisetshenziswe kulolucwaningo, uyobizwa ngenombolo yombambi qhaza oyihlelelwe.
Yonke imininingwane ngocwaningo iyobekwa ngocophelelo emakhabetheni akhiyelwe, kuthi imininingwane yecomputer ivalelwe ngenombolo efihlakele eyaziwa ngumcwaningi, isikhathi seminyaka emihlanu.; bese iyacishwa noma idatshulwe ngendlela efanele.

Ukulimala okuqondene Nocwaningo: Abukho ubungozi bokulimala emzimbeni kulesi sifundo. Ukulimala komqondo kungase kwenzeke uma uzwela ukunganethezeki ukukhuluma konke ngawe kumelekeleli wakho. Makwenzeka lokhu, kuyomele uthole ukwelulekwa ngokomqondo.

Ekumele ubathinte uma kwenzeke Izinkinga noma nemibuzo:
Umcwaningi: Nomhle Mvunelo Cell No. 082 707 6869
Umphathi: Professor F.Haffejee Cell No. 0832918796
Umphathi wokucwaninga kokuziphatha kwezinhlangano: 031 373 2375.

Annexure: B

LETTER OF INFORMATION

(Treatment Buddy)

Title of the Research Study: Evaluating the effectiveness of the "buddy system" to improve adherence to treatment for patients suffering from schizophrenia in KwaZulu-Natal: a model of care.

Principal Investigator/s/researcher: Nomhle Mvunelo RN, RM, Master's Degree.

Co-Investigator/s/supervisor/s: Prof F. Haffejee and
Dr Y. Thandar

Welcome Remarks: Good Day. It is a pleasure to have you today. Thank you for showing an interest in this study.
You are welcome to participate in this study. There will be 115 participants for this research, 80 will be allocated treatment buddies and 35 form the control group. You are requested to participate in this research because you have been selected by one of our patients that is participating in the study to be his/her treatment buddy.

Brief Introduction and Purpose of the Study: Non-adherence to treatment remains a major challenge in the management of psychiatric patients. Adherence to prescribed treatment is regarded by healthcare professionals as a key to recovery, both in acute episodes and in long term management of mental illness, with psychotropic medications being the cornerstone to management of mental illness. The purpose of this study is to introduce the treatment "buddy system" as a framework that may be utilized to overcome the ongoing problem of non-adherence to treatment in the field of mental health care.

Outline of the Procedures: You are requested to participate in a research study that is being conducted at this hospital for the above stated topic. You are required to read this information letter, and to complete the consent form thereafter. The researcher will introduce the study and explain your expected role as a treatment buddy for your patient. You will be allowed an opportunity to ask any questions relevant to the study for your better understanding. The consent form is an indication that you agree to participate in the study and will only be signed once you have been informed of your role in this study and you agree to participate. The researcher will reimburse you by an amount of R100.00 for your travelling costs each time you are requested to visit the clinic for the purposes of this study. You will also be provided with a prepacked snack for the day. A treatment buddy can be the patient's relative, neighbour or friend but preferable a family member. You and your patient will be interviewed at two monthly intervals by the researcher for a period of about six months. Each interview session between you and the researcher will last approximately twenty (20) minutes and you will have two interview sessions during the six months of the study. The researcher will arrange in advanced your appointments with her to accommodate your work schedule and any other commitment you might have. The interviews and group discussions will take place here in your hospital on the days when the patient is collecting his/her medications.

During your involvement in this research process you are requested to continue observing the Covid-19 protocols of wearing a face, sanitizing your hands and maintaining social distance. The researcher will guide in maintaining the Covid-19 protocols. The hospital is currently restricting access; therefore, you will be provided by the researcher with a special access card that will enable you to pass through by the hospital gates. You will be expected to return the card to the researcher once the study is over.

To be included in this study you need to comply with the following:

- You must not be suffering from any mental illness.
- You must be between 18 and 65 years of age.
- You must be able to speak the language that the patient understands.
- You must either reside in the same household as your patient or in close proximity to the patient's place of abode so that you are able to see the patient at least three times a week.
- You must have been selected or accepted by the patient to be the treatment buddy.

The researcher will sometimes take notes or will voice record your conversation. You are allowed to agree or disagree with audio recording, but if you disagree then you will have to be withdrawn from the study. The research will take about six months and during the period the researcher will need to see you a few times. You will be contacted telephonically at times when need arises. You are expected to cooperate with the patient, nurses and the researcher instructions. A group of 80 treatment buddies will be selected for this research but they will be meeting in small groups of about 15 to 20 in each day. You have been chosen because you have met our criteria of inclusion as stated above.

Risks or Discomforts to the Participant: There is no anticipated risk to you during this study. If you do feel any discomfort please let me know, so that I can get a counsellor to assist you.

Benefits:
The study will lead to development of a framework that will be utilized to improve adherence to psychiatric treatment. The establishment of treatment buddies will reduce loneliness amongst the persons suffering from schizophrenia. The study will be published thereby enlarging evidence-based knowledge in the field of nursing and psychiatry.

Reason/s why the Participant May Be Withdrawn from the Study: You will only be withdrawn from the study if you fail to cooperate with the researcher or to support the patient. You can also withdraw yourself from the study at any time and there will be no adverse consequences for you, should you choose to withdraw.

Remuneration: There will be no remuneration for participating to the study. You will be assisted with transport money and a sandwich will be provided on the days that we will have interviews.

Costs of the Study: There is no payment required for participating in this research.

Confidentiality: Confidentiality of information will be maintained throughout the study by ensuring that private information about the patient is not shared. The patient's files will be read in private rooms and handed over to staff for filing without exposing them to other unauthorized persons. All interviews will be conducted in a private room, that will be locked to maintain privacy during the interview. You are expected not to share information about your patient to anyone except the researcher and the clinic healthcare team.
Your name and the patient's name will not be used on any research material, where you will only be referred to by your participant number.
Collected data will be stored safely in a locked cabinet and electronic data will be saved in password protected computer by the researcher for a period of five years; and be safely discarded thereafter. Hand notes will be shredded, recorded and electronic material will be deleted accordingly.

Research-related Injury: There is no risk of physical injury with this study. Psychological injury might occur when the patient experiences discomfort with your involvement in their condition. Psychological counselling will be undertaken, if required.

Persons to Contact in the Event of Any Problems or Queries:
Researcher: Nomhle Mvunelo Cell No. 082 707 6869
My Supervisor: Professor F. Haffejee Cell No. 0832918796
Institutional Research Ethics Administrator: 031 3732375.
DVC: Research, Innovation and Engagement Prof S. Moyo on 031 3732577 or moyos@dut.ac.za.

Isijobelelo: B (a)

INCWADI YOLWAZI

(Eyomlekeleli)

Isihloko Socwaningo: Ukuhlola ukusebenza ngempumelelo kohlelo lomlekeleli oluhlose ukuthuthukisa ukusetshenziswa ngendlela efanele kwemishanguzo ezigulini ezihlushwa isifo sofufunyana KwaZulu-Natali: imodeli yokunakekela.

Umcwaningi omkhulu: Nomhle Mvunelo RN, RM, Master's Degree.

Sekela Mphathi/Abaphathi/Umphathi/abaphathi:
Prof F.Haffejee and
Dr Y. Thandar

Amazwi Okwamukela: Sawubona. Kuyathokozisa ukuba nawe namuhla. Siyabonga ukuthi ukhombise uthando kulesifundo.

Uyamukeleka ukuzibandakanya kulolu cwaningo**.** Ucwaningo luzodinga abahlanganyeli abayikhulu neshumi nanhlanu (115), abangamashumi ayisishiyagalombili (80) bazothola abalekeleli abangamashumi amathathu nanhlanu (35) abangeze bathola abalekeleli. Ukubamba iqhaza kungokuzithandela futhi ungakwazi ukuhoxa noma ngasiphi isikhathi ngaphandle kwenhlawulo. Lokhu akungeze kwaphazamisa uhlelo lwakho lokuthola imithi.

Isingeniso Esifishane Nenhloso Yocwaningo: Ukungathathi kahle imishanguzo kusahlezi kuyinselelo enkulu ohlelweni lokulashwa kweziguli zesifo zengqondo**.** Ukuthatha imishanguzo ngendlela kufaniswa oochwepheshe kwezempilo njengokhiye wokululama kulabo abasabambekile ngamawala nalabo asebenesikhathi eside besebenzisa imishanguzo yabagula ngomqondo, lapho imishanguzo iyisihluthulelo nethemba lokulapha isifo sengqondo. Inhloso yocwaningo ukwazisa ngohlelo lomlekeleli njengohlaka olungasetshenziswa ukunqoba inkinga elokhu iqhubekile njalo yokungathathi ngendlela imishanguzo kwisigaba sabagula ngengqondo.

Okubhekelele ukuthi Ukwenze: Uyacelwa ukuthi ubambe iqhaza kulo lolucwaningo oluqhubekayo kumtholampilo wakho olunesihloko esesichaziwe ngenhla. Uyacelwa ukuthi uyifunde lencwadi yolwazi mawuqeda usayine isijobelelo**.** Ngesikhathi socwaningo uzokucelwa ukuthi ube umlekeleli womunye ogula ngokomqondo, kungaba isihlobo sakho, umakhelwane noma umngani, kungaba ingane yakho futhi. Uzothola ukwelulekwa ngumcwaningi kanye nabasebenzi bezempilo kuloluhlelo lokuba umlekeleli ozokulekelela isikhathi sezinyanga eziyisithupha. Zonke izingxoxo mayelana nocwaningo zokwenzeka lana emtholampilo

wakho ngelanga lakho lemishanguzo. Ukuze ubambe iqhaza kulolucwaningo kumele ube nalokhu okulandelayo

- Kumele ube awuguli noma yisiphi isifo somgondo noma usuthole ukululama usuyakhona ukulandela imigomo yokulashwa ngaphandle kokulekelelwa.
- Kumele ube phakathi kweminyaka eyishumi nesishiyagalombili (18) namashumi ayisithupha nanhlanu (65) yobudala.
- Awube uyakwazi ukukhuluma ulimi oluqondwa isiguli, kungaba isiZulu noma isiNgisi.
- Kumele usho noma ukhombise uthando lokubona isiguli silulama nokuzimisela ukulekelela ogulayo.
- Kumele ukuthi uhlala kanye naye ogulayo noma uhlala eduzane naye nokuthi ungakwazi ukumbona okungenani kathathu ngesonto.
- Kumele ukhethwe noma uvunywe ngogulayo ukuthi umlekelele.

Okungahambisani nokubamba iqhaza:

- Kumele ungabi umuntu ogula yisifo somgondo osaxinekile kakhulu yizimpawu zokugula noma unezikhathi zokuthi ukugula kuphinda kubuye ngamawala (relapse).
- Kumele ungabi umuntu ongaphansi kweminyaka eyishumi nesigalombili nongaphezulu kweminyaka engamashumi ayisithupha nanhlanu.
- Kumele ungatholakali unesifo sokukhubazeka njengokungaboni, ukukhubazeka emzimbeni, noma ukungezwa.

Kuyokwenzeka ukuthi ngesikhathi socwaningo, umcwaningi abhale phansi noma aqophe ingxoxo yenu. Ucwaningo luzothatha isikhathi esiyizinyanga eziyisithupha ekothi ngaso lesikhathi umcwaningi ahlele ukuthi nibonane ngezinye izikhathi. Ngesinye isikhathi kuyodingeka ukuthi umcwaningi akuthinte ngocingo. Uyacelwa ukuthi usebenzisane nesiguli osilekelelayo kanye nemithetho yomcwaningi. Ungomunye wamalunga angamashumi ayisishiyagalombili (80) aqokelwe ukubamba iqhaza kulolucwaningo. Ukhethiwe ngoba ukwazile ukumelana nomgomo sidingo obhaliwe ngenhla.

Ubungozi nokunganethezeki okungenzeka kumbambi qhaza: Kunokwenzeka ukuthi umbambi qhaza angakuthokozeli ukukhipha isifuba ngolwazi oluthile malunga nempilo yakhe kuwena ongumlekeleli nokuthi mhlawumbe kubengathi wena usungene kakhulu kulokho okuyimfihlo nobuyena. Lokho kungakwenza ukuthi uphatheke kabi.

Izinzuzo:
Ucwaningo luzoholela ekwakhiweni kohlaka olungasetshenziswa ukukhuphula izinga lokuthatha imishanguzo ngabagula yisifo sengqondo. Ukusekwa kohlaka lwabalekeleli luzosiza ukunciphisa ukuzizwa ngawedwana, kulabo abanesifo sofufunyana. Umcwaningi uzosiza ngokwenezela ulwazi olwethembekile, olusezingeni eliphezulu olungasetshenziswa kwezempilo. Isifundo socwaningo sizoshicilelwa ngalokho sandisa ulwazi olunobufakazi.

Izizathu zokuthi umlekeleli ahoxe kulesi sifundo: Umlekeleli angahoxa kulesi sifundo uma engabambisene kahle nomcwaningi noma nesiguli asilekeleyo. Ababambi qhaza bangahoxa bona mathupha kulesi sifundo noma yisiphi isikhathi ngaphandle kwemibandela uma befisa ukuhoxa.

Inkonkhelo: Angeke ibekhona inkokhelo kulabo ababambe iqhaza kulesi sifundo. Umcwaningi uzokulekelela ngemali yokugibela namasemishi ngezinsuku lapho ninomhlangano.

Inhlawulo yesifundo: Ayikho inhlawulo ekhokhwayo yokubamba iqhaza kulesi sifundo.

Imfihlo: Zonke izingxoxo ezimalunga nesifundo zohlala ziyimfihlo, kuzoqikelelwa ukuthi konke okuphathelene nolwazi ngesiguli akudluliselwa ngaphandle kolwazi noma nemvume ephuma kulowo oyisiguli. Amabhuku wonke anemininingwane yakho ayofundelwa ezindlini eziphephile zabucala masekuqediwe ngazo ziye kobekwa kwindlu ehleliwe ngendlela ehlelekile lapho zingeze zabonwa yilabo ekungamele bafinyelele kuzona. Ingxoxo zocwaningonazo zokwenzelwa kwizindlu eziphephile ezikhiyiwe, hayi obala.
Igama lakho liyovikelwa nokuthi ngeze lisetshenziswe kulolucwaningo, uyobizwa ngenombolo yombambi qhaza oyihlelelwe.
Yonke imininingwane ngocwaningo iyobekwa ngocophelelo emakhabetheni akhiyelwe, kuthi imininingwane yecomputer ivalelwe ngenombolo efihlakele eyaziwa ngumcwaningi, isikhathi seminyaka emihlanu.; bese iyacishwa noma idatshulwe ngendlela efanele.

Ukulimala okuqondene Nocwaningo: Abukho ubungozi bokulimala emzimbeni kulesi sifundo. Ukulimala komqondo kungase kwenzeke uma ngabe isiguli sizwela ukunganethezeki umelekeleli waso. Makwenzeka lokhu, kuyomele isiguli sithole ukwelulekwa ngokomqondo.

Ekumele ubathinte uma kwenzeke Izinkinga noma nemibuzo:
Umcwaningi: Nomhle Mvunelo Cell No. 082 707 6869
Umphathi: Professor F.Haffejee Cell No. 0832918796
Umphathi wokucwaninga kokuziphatha kwezinhlangano: 031 373 2375.
Umqondisi: Ezokweseka Ucwaningo Nemfundo, Prof S. Moyo on 031 3732577 or moyos@dut.ac.za.

Annexure C

LETTER OF INFORMATION

(Health Care Professional)

Title of the Research Study: Evaluating the effectiveness of virtual buddy support to improve treatment adherence for patients suffering from schizophrenia in KwaZulu-Natal: a model of care.

Principal Investigator/s/researcher: Nomhle Mvunelo RN, RM, Master's Degree.

Co-Investigator/s/supervisor/s: Prof F. Haffejee and
Dr Y. Thandar

Welcome Remarks: Good Day. It is a pleasure to have you today. Thank you for showing an interest in this study.
You are welcome to participate in this study. There will be 115 participants for this research, 80 will be allocated treatment buddies and 35 will form the control group. Participation is voluntary and you can withdraw at any time without any penalty.

Brief Introduction and Purpose of the Study: Non-adherence to treatment remains a major challenge in the management of psychiatric patients. Adherence to prescribed treatment is regarded by healthcare professionals as a key to recovery both in acute episodes and in long term management of mental illness, with psychotropic medications being the cornerstone to management of mental illness. The purpose of this study is to introduce the treatment "buddy system" as a framework that may be utilized to overcome the ongoing problem of non-adherence to treatment in the field of mental health care.

Outline of the Procedures: You are requested to participate in a research study that is being conducted in your clinic for the above stated topic. You are required to read this information letter, and to complete the consent form thereafter. During the course of the research you may be asked to assist the researcher patient's files and to provide a physical space for the discussions between the researcher and participants. At the end of the research, the researcher will conduct focus group interviews with patients, and the health workers. The individual and focus group interviews will take place here in the clinic. The patients that will be selected for this study need to comply with the following criteria of inclusion:

- They must be suffering from Schizophrenia.
- They must have been prescribed psychotropic medications by a qualified psychiatric health care practitioner.
- They must have been on treatment for at least six months minimum.

- They must be on a long-term treatment plan i.e. at least one year to the minimum.
- They must be on a monthly schedule of script renewal.
- They must not be a minor i.e. below 18 years of age or above 65 years.
- They must be able to communicate in isiZulu or/and English.
- They must be living and collecting treatment in the province of KwaZulu-Natal.
- They must not suffer from physical disabilities such as blindness, intellectually challenged, or deaf.

A research assistant will be available to act as a treatment buddy, where she will send text message reminders to patients that will be receiving an intervention on a daily basis. The research assistant will be introduced to you by the researcher.

Towards the end of the research study, you and your colleagues will be interviewed by the researcher on an individual basis. The researcher will sometimes take notes or voice record your conversations. The research will take about six months and during the period the researcher will consult you a few times. You have been chosen because you are a professional healthcare worker placed in Chatsworth Psychiatric Clinic during the time when the research is getting conducted.

Covid protocols will be observed strictly, patients and researcher will continue to wear their face masks, social distance will be observed, not more than five people will be placed in one room per time, hand sanitizing will be consistently done for everyone.

Risks or Discomforts to the Participant: There is no potential risk anticipated that is directed to you. If you feel any discomfort please let me know, so that necessary arrangements can be made.

Benefits:
The study will lead to development of a framework that will be utilized to improve adherence to psychiatric treatment. The establishment of treatment buddies will reduce loneliness amongst the persons suffering from schizophrenia. The study will be published thereby enlarging evidence-based knowledge in the field of nursing and psychiatry.

Reason/s why the Participant May Be Withdrawn from the Study: You can be withdrawn from the study only if you are removed from Chatsworth Psychiatric clinic by allocation within the first three months of the study. The patients will be withdrawn from the study if they fail to cooperate with the researcher. You can also withdraw yourself from the study at any time and there will be no adverse consequences for you should you choose to withdraw, but we request that you remain a participant throughout as your participation is valuable for the success of this research and the number of healthcare workers in this department is limited.

Remuneration: There will be no remuneration for participating to the study. The patients will be provided a sandwich on the days that we will have physical consultations with them.

Costs of the Study: There is no payment required for participating in this research.

Confidentiality: Confidentiality of information will be maintained throughout the study by ensuring that private information about the patients is not shared. Patient's files will be read in private rooms and handed over to staff for filing without exposing them to other unauthorized persons. All interviews will be conducted in a private room, that will be locked to maintain privacy during the interview.
Your name will not be used on any research material, where you will only be referred to by your participant number.
Collected data will be stored safely in a locked cabinet and electronic data will be saved in password protected computer by the researcher for a period of five years; and be safely discarded thereafter. Hand notes will be shredded, recorded and electronic material will be deleted accordingly.

Research-related Injury: There is no risk of physical injury with this study. Psychological injury might occur when the patient experiences discomfort with the treatment buddy. Psychological counselling will be undertaken.

Persons to Contact in the Event of Any Problems or Queries:
Researcher: Nomhle Mvunelo Cell No. 082 707 6869
My Supervisor: Professor F. Haffejee Cell No. 0832918796
Institutional Research Ethics Administrator: 031 3732375.
DVC: Research, Innovation and Engagement Prof S. Moyo on 031 3732577 or moyos@dut.ac.za.

Annexure: D

CONSENT

(Patient)

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Nomhle Mvunelo, about the nature, conduct, benefits and risks of this study-Research Ethics Clearance Number: IREC 030/20,
- I have also received, read and understood the above written information (Information letter for research participant) regarding this study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.
- I agree/ do not agree with audio-recording of the interview.

_____	_____	_____	_____
Full Name of Participant	**Date**	**Time**	**Signature /Right Thumbprint**

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

Nomhle Mvunelo

Full Name of Researcher	**Date**	**Signature**
Full Name of Witness (If applicable)	**Date**	**Signature**
Full Name of Legal Guardian (If applicable)	**Date**	**Signature**

Isijobelelo: D(a)

IMVUME

(Eyesiguli)

Isitatimende sesivumelwano sokubamba iqhaza ocwaningweni:

- Ngiyaqiniseka ngalokhu ukuthi ngitshelwe ngumcwaningi u Nomhle Mvunelo ngemvelo, ukuziphatha, inzuzo, nobungozi balesi sisekelo sokuziphatha. – nombolo Mvume Yocwaningo Nesimilo: IREC 030/20.
- Ngithole futhi ngafunda futhi ngayiqonda imininingwane ebhalwe ngaphezulu (incwadi yombambi qhaza yolwazi)mayelananocwaning.
- Ngiqaphele ukuthi imiphumela yocwaningo, kuhlanganisa nemininingwane ngokuqondene nobulili bami, ubudala, usuku lokuzalwa, Kanye nokugula kwami ngeke kwaziwe kumbiko wocwaningo.
- Ngokubheka izidingo zokucwaninga, ngiyavuma ukuthi imininingwane eqoqwe ngalesi sifundo ingacubungulwa ohlelweni olwenziwe ngekhompyutha ngumcwaningi.
- Nginga, noma yisiphi isigaba, ngaphandle kokubandlulula, ngingahoxisa ukuvuma kwami Kanye nokuzibandakanya ocwaningweni.
- Ngithole ithuba eanele lokubuza imibuzo futhi (ngokwenkukuleko yami yokuzikhethela) ngizitshela ukuthi ngilungele ukubamba iqhaza ocwaningweni.
- Ngiyaqonda ukuthi izinto ezintsha nezibalulekile ezizothuthukisa ucwaningo nokuhlanganyea kwami kucwaningo kuyotholakala.
- Ngiyavumelana / angivumelani nokuqoshwa kwenkulumo yami kulolu cwaningo.

Igama eliphelele lombambi qhaza	**Usuku**	**Isikhathi**	**Isishicilelo/Isithupha sokudla**

Mina, Nomhle Mvunelo Ngiyavuma ukuthi umbambi qhaza obhalwe ngenhla utsheliwe ngokugcwele ngemvelo, ukuziphatha kanye nobungozi balesi sifundo esingenhla.

Nomhle Mvunelo		
Igama Eligcwele Lomcwaningi	**Usuku**	**Isishicilelo**
Igama eligcwele Lofakazi(Uma Ekhona)	**Usuku**	**Isishicilelo**
Igama Eligcwele Lombeki osemthethweni (Uma Ekhona)	**Usuku**	**Isishicilelo**

Annexure: E

CONSENT

(Treatment Buddy)

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Nomhle Mvunelo, about the nature, conduct, benefits and risks of this study-Research Ethics Clearance Number: _____,
- I have also received, read and understood the above written information (Information letter for the treatment buddy) regarding this study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.
- I agree/ do not agree with audio-recording of the interview

_____	_____	_____	_____
Full Name of Participant	**Date**	**Time**	**Signature /Right Thumbprint**

I, Nomhle Mvunelo herewith confirm that the above participant (treatment buddy) has been fully informed about the nature, conduct and risks of the above study.

Nomhle Mvunelo	_____	_____
Full Name of Researcher	**Date**	**Signature**
_____	_____	_____
Full Name of Witness (If applicable)	**Date**	**Signature**
_____	_____	_____
Full Name of Legal Guardian (If applicable)	**Date**	**Signature**

Isijobelelo: E (a)

IMVUME

(Eyomlekeleli)

Isitatimende sesivumelwano sokubamba iqhaza ocwaningweni:

- Ngiyaqiniseka ngalokhu ukuthi ngitshelwe ngumcwaningi u Nomhle Mvunelo ngemvelo, ukuziphatha, inzuzo, nobungozi balesi sisekelo sokuziphatha. – nombolo Mvume Yocwaningo Nesimilo: .
- Ngithole futhi ngafunda futhi ngayiqonda imininingwane ebhalwe ngaphezulu (incwadi yomlekeleli yolwazi)mayelananocwaningo.
- Ngiqaphele ukuthi imiphumela yocwaningo, kuhlanganisa nemininingwane ngokuqondene nobulili bami, ubudala, usuku lokuzalwa, Kanye nokugula kwami ngeke kwaziswe kumbiko wocwaningo.
- Ngokubheka izidingo zokucwaninga, ngiyavuma ukuthi imininingwane eqoqwe ngalesi sifundo ingacubungulwa ohlelweni olwenziwe ngekhompyutha ngumcwaningi.
- Nginga, noma yisiphi isigaba, ngaphandle kokubandlulula, ngingahoxisa ukuvuma kwami Kanye nokuzibandakanya ocwaningweni.
- Ngithole ithuba elanele lokubuza imibuzo futhi (ngokwenkukuleko yami yokuzikhethela) ngizitshela ukuthi ngilungele ukubamba iqhaza ocwaningweni.
- Ngiyaqonda ukuthi izinto ezintsha nezibalulekile ezizothuthukisa ucwaningo nokuhlanganyela kwami kucwaningo kuyotholakala.
- Ngiyavumelana/ angivumelani nokuqoshwa kwenkulumo yami kulolu cwaningo.

Igama eliphelele lombambi qhaza	**Usuku**	**Isikhathi**	**Isishicilelo/Isithupha sokudla**

Mina, Nomhle Mvunelo Ngiyavuma ukuthi umbambi qhaza obhalwe ngenhla utsheliwe ngokugcwele ngemvelo, ukuziphatha kanye nobungozi balesi sifundo esingenhla.

Nomhle Mvunelo		
Igama Eligcwele Lomcwaningi	**Usuku**	**Isishicilelo**
Igama eligcwele Lofakazi (Uma Ekhona)	**Usuku**	**Isishicilelo**
Igama Eligcwele Lombeki osemthethweni (Uma Ekhona)	**Usuku**	**Isishicilelo**

Annexure: F

CONSENT

(Health Care Professionals)

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Nomhle Mvunelo, about the nature, conduct, benefits and risks of this study-Research Ethics Clearance Number: _____,
- I have also received, read and understood the above written information (Information letter for health professional) regarding this study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

_____	_____	_____	_____
Full Name of Participant	**Date**	**Time**	**Signature /Right Thumbprint**

I, Nomhle Mvunelo herewith confirm that the above participant (health professional) has been fully informed about the nature, conduct and risks of the above study.

Nomhle Mvunelo	_____	_____
Full Name of Researcher	**Date**	**Signature**
_____	_____	_____
Full Name of Witness (If applicable)	**Date**	**Signature**
_____	_____	_____
Full Name of Legal Guardian (If applicable)	**Date**	**Signature**

Annexure G: Facility Request Letter

5 Oellermann Street

New Germany

3612

01/03/2021

Attention: Dr L. Sobekwa

Acting Chief Executive Officer (CEO)

R.K. Khan Hospital

R.K. Khan Circle Road

Chartsworth

Durban

4032

Request for Permission to Conduct Research

Dear Madam

My name is Nomhle Mvunelo, a PhD Health Sciences student at the Durban University of Technology. The research I wish to conduct for my Doctoral thesis involves: **Evaluating the effectiveness of virtual buddy support to improve treatment adherence by patients suffering from schizophrenia in KwaZulu-Natal: a model of care.**

I am hereby seeking your consent to select patients from your institution (Chatsworth Psychiatry Clinic) that will serve as participants in my research study.

There will be 115 participants for this research, 80 will be exposed to an intervention that provides virtual treatment buddy support and 35 will form the control group. All participants will be suffering from schizophrenia. Those in the intervention group will be sent text reminder by a research assistant. The text messages are to remind participants to take their treatment on a daily basis, to collect medications from the clinic at the appointed time and attend to problems related to taking of treatment. The research assistant will act as a treatment buddy for a period of six months, after which any changes to adherence to antipsychotics will be analysed.

All participants will be required to answer a pre- and post-intervention questionnaire. Approximately 15 participants, who were part of the intervention group, will be invited to participate in a qualitative interview with the researcher after the intervention is complete. This will provide in depth information about their experience of the intervention.

I have provided you with a copy of my proposal which includes copies of the data collection tools and consent and/ or assent forms to be used in the research process, as well as a copy of the provisional approval letter which I received from the Institutional Research Ethics Committee (IREC) of DUT.

If you require any further information, please do not hesitate to contact me at 082 707 6869, Fax: 031 401 5229 and email address: mvunelonomhle@gmail.com.

Thank you for your time and consideration in this matter.

Yours sincerely,

_____

Mrs Nomhle Mvunelo
Durban University of Technology

Annexure H: DoH Request to Conduct Research

5 Oellermann Street

New Germany

3610

12/05/2020

Attention: Dr Elizabeth Lutge

KwaZulu-Natal Department of Health (KZN DoH)

Health Research & Knowledge Management Sub-component

330 Langalibalele Street

Natalia Building, South Towers 10-102

Pietermaritzburg

3200

Request for Permission to Conduct Research

Dear Sir

My name is Nomhle Mvunelo, a PhD Health Sciences student at the Durban University of Technology. The research I wish to conduct for my Doctoral thesis involves: **Evaluating the effectiveness of the "buddy system" to improve adherence to treatment by patients suffering from schizophrenia in KwaZulu-Natal: a model of care.**

I am hereby seeking your consent to select patients from King Dinuzulu hospital, at eThekwini district, that will serve as participants in my research study.

I have provided you with a copy of my proposal which includes copies of the data collection tools and consent and/ or assent forms to be used in the research process, as well as a copy of the approval letter which I received from the Institutional Research Ethics Committee (IREC).

If you require any further information, please do not hesitate to contact me at 082 707 6869, Fax: 031 401 5229 and email address: mvunelonomhle@gmail.com.

Thank you for your time and consideration in this matter.

Yours sincerely,

_____

Mrs Nomhle Mvunelo
Durban University of Technology

Annexure I: Quantitative Pre-Intervention questionnaire - for the patient

Evaluating the effectiveness of virtual buddy support to improve treatment adherence for patients suffering from schizophrenia in KwaZulu-Natal: a model of care.

Participant Number…….

Kindly respond to the following questions by indicating your answer with an X.

(Note: all answers will be kept confidential).

General Information

1. **Indicate your gender**

☐ 1 **Male**

☐ 2 **Female**

☐ 3 **Do not wish to disclose**

2. **Select your age category**

☐ 1 **18-24**

☐ 2 **25-34**

☐ 3 **35 - 44**

☐ 4 **45 – 54**

☐ 5 **55 – 64**

☐ 6 **65 and above**

3. **Select your race**

☐ 1 **African**

☐ 2 **White**

☐ 3 **Coloured**

☐ 4 **Indian**

☐ 5 **Other**_____

4. **Select your home language**

☐ 1 **IsiZulu**

☐ 2 **English**

☐ 3 **Afrikaans**

☐ 4 **Other** _____

5. Indicate your religion

☐ 1 **Christian**

☐ 2 **Islam**

☐ 3 **Hinduism**

☐ 4 **Judaism**

☐ 5 **Buddhism**

☐ 6 **Cultural (African tradition)**

☐ 7 **Other** ----------

6. State your highest level of education

☐ 0 **None**

☐ 1 **Primary School**

☐ 2 **Secondary School, Grade**_____

☐ 3 **Tertiary (University / College)**

☐ 4 **Postgraduate**

7. Indicate your relationship status

☐ 1 **Single**

☐ 2 **Married**

☐ 3 **Divorced**

☐ 4 **Widowed**

☐ 5 **Other** _____

Admission History

8. Have you ever been admitted to an institution for psychiatric illness before?

No$_0$	
Yes$_1$	

9. If you have answered by Yes to no.8; please indicate how often you were hospitalized.
If No, to question 8, please skip to next question.

Only once$_1$	
2 times$_2$	
> 2 times$_3$	

10. For how long were you admitted?

< 1 week$_1$	
1 week$_2$	
2 weeks$_3$	
3 weeks$_4$	
1 month$_5$	
> 1 month$_6$	

Treatment factors

11. For how long have you been on treatment?

< 6 months$_1$	
6 months$_2$	
6 months – 1 year$_3$	
1-5 years$_4$	
> 5 years$_5$	

12. What type of treatment are you receiving for schizophrenia?

Medication$_1$	
Psychological treatment e.g. behavior change therapy, motivational interview etc$_2$	
Both medication and psychological treatment$_3$	
Other$_4$ Please state _____	

13. How many types of medication have you been prescribed?

1 medication$_1$	
2 to 3$_2$	
4 to 5$_3$	
≥ 6 $_4$	

14.Can you recall your medication names?

No$_0$	
Yes$_1$	

15. Have you ever stopped your treatment?

No$_0$	

Yes$_1$	

If yes, continue with question 16, if you answered 'no', then skip to question 20.

16. If your answer is Yes in no.15, then state for how long have you stopped your treatment.

<1 week$_1$	
>1 week but < 1 month$_2$	
1-6 months$_3$	
6 months$_4$	
>1 year$_5$	
Occasionally$_6$	

17. If you have stopped your medication / answered Yes in no. 15, please state whether you discontinued one or more of your medication.

only 1$_1$	
>1$_2$	

18. Indicate whether any of the factors below caused you to stop your treatment (You are allowed to select more than one response)

18.1 The treatment duration was too long.	Yes$_1$	No$_0$
18.2 I became discouraged by knowing that the disease will not be cured (chronic nature).	Yes$_1$	No$_0$
18.3 I had inadequate knowledge about the disease.	Yes$_1$	No$_0$
18.4 I often experienced odd or unusual feelings, thoughts and behaviors that did not exist before illness like hearing voices, holding certain beliefs or an urge to move around.	Yes$_1$	No$_0$
18.5 I often forgot to take the treatment.	Yes$_1$	No$_0$
18.6 I did not understand the instructions.	Yes$_1$	No$_0$
18.7 I experienced side effects.	Yes$_1$	No$_0$
18.8 I felt as though people have labeled me as worthless.	Yes$_1$	No$_0$
18.9 I did not have support from my family.	Yes$_1$	No$_0$
18.10 Transport Issues prevented me from obtaining my medication.	Yes$_1$	No$_0$
18.11 Being unemployed prevented me from obtaining my medication.	Yes$_1$	No$_0$
18.12 I did not have time to visit the clinic/hospital because of work, or personal commitments.	Yes$_1$	No$_0$
18.13 The long queue when attending the clinic/hospital prevented me from obtaining my medication.	Yes$_1$	No$_0$
18.14 Financial problems prevented me from obtaining my medication.	Yes$_1$	No$_0$
18.15 The unwelcoming attitude of health care workers prevented me from obtaining my medication.	Yes$_1$	No$_0$
18.16 The treatment was often unavailable in the clinic/hospital.	Yes$_1$	No$_0$
18.17 Suffering from substance use disorder caused me to forget my treatment for schizophrenia.	Yes$_1$	No$_0$
18.18 Other reason. Please state		

19.I have experienced these effects as a result of not taking the treatment (You are allowed to choose more than one response)

19.1 Return or worsening of symptoms of schizophrenia after partial recovery.	Yes$_1$	No$_0$
19.2 Rehospitalization.	Yes$_1$	No$_0$
19.3 Loss of a job.	Yes$_1$	No$_0$
19.4 Had to stop schooling/university/studies.	Yes$_1$	No$_0$
19.5 Loss of family support.	Yes$_1$	No$_0$
19.6 Financial loss.	Yes$_1$	No$_0$
19.7 Had to be referred to many specialist doctors.	Yes$_1$	No$_0$
19.8 Got prescribed more medications that are strong.	Yes$_1$	No$_0$
19.9 Symptoms became chronic – no remission.	Yes$_1$	No$_0$
19.10 Decreased productivity in daily activities/chores.	Yes$_1$	No$_0$
19.11 Removal from the rehabilitation program.	Yes$_1$	No$_0$
19.12 Other. Please state		

Intervention Factors

20. Would you like someone to assist you in adhering to your prescribed treatment?

No$_0$	
Yes$_1$	

21. If you have answered Yes to no. 20, state who you would prefer to assist you in taking the treatment?

Parent$_1$	
Spouse$_2$	
Child$_3$	
Relative$_4$	
Friend$_5$	
Neighbour$_6$	
Other$_7$	

22. Have you ever heard of a treatment buddy?

No$_0$	
Yes$_1$	

Thank you for participating in this study.
Mrs N.Mvunelo – Researcher.

<u>Isijobelelo I (a)</u>: Imibuzo ngocwaningo olufingqiwe ngaphambi kokungenelela-Eyesiguli

Ukuhlola ukusebenza ngempumelelo kohlelo lomlekeleli oluhlose ukuthuthukisa ukusetshenziswa ngendlela efanele kwemishanguzo ezigulini ezihlushwa isifo sofufunyana KwaZulu-Natali: imodeli yokunakekela.

Inombolo Yombambiqhaza…….

Phendula ngokufaka uphawu X.

(Qaphela: Zonke izimpendulo zizogcinwa ziyimfihlo).

<u>ULWAZI OLUVAMILE</u>

1. **Khombisa ubulili bakho**

☐ 1 Owesilisa

☐ 2 Owesifazane

☐ 3 Angathandi ukukhombisa ubulili bami

2. **Khetha iminyaka yakho**

☐ 1 **18-24**

☐ 2 **25-34**

☐ 3 **35 - 44**

☐ 4 **45 – 54**

☐ 5 **55 – 64**

☐ 6 **65 nangaphezulu**

3. **Khetha ubuhlanga bakho**

☐ 1 **Umuntu omnyama**

☐ 2 **Umuntu omhlophe**

☐ 3 **Ikhaladi**

☐ 4 **Indiya**

☐ 5 **Okunye**_____

4. **Khetha ulwimi lwakho lwasekhaya**

☐ 1 **IsiZulu**

☐ 2 **Isilungu**

☐ 3 **Isibhunu**

☐ 4 **Okunye** _____

5. Khombisa inkolo yakho

☐ 1 **Ikholwa**

☐ 2 **Ubusulumani**

☐ 3 **Ubuhindu**

☐ 4 **Ubujuda**

☐ 5 **Ibubhudanisi**

☐ 6 **Inkolo yesintu**

☐ 7 **Okunye** ----------

6. Isho izinga lakho lemfundo

☐ 0 **Awufundanga**

☐ 1 **Amabanga aphansi**

☐ 2 **Amabanga aphezulu, Isigaba:**_____

☐ 3 **Esikhungweni Semfundo ephakeme (enyuvesi / ekolishi)**

☐ 4 **Imfundo enomsila**

7. Khombisa ubudlelwano bakho ngokomshado

☐ 1 **Awushadile**

☐ 2 **Ushadile**

☐ 3 **Wahlukanisa**

☐ 4 **Ungumfelokazi/ ungumfelwa**

☐ 5 **Okunye** _____

<u>Imininingwane Yokulaliswa Esikhungweni Sezempilo</u>

8. Usuwake walaliswa esikhungweni sezifo zomqondo ngaphambili?

Cha$_0$	
Yebo$_1$	

9. Uma impedulo kungu Yebo, kunombolo 8; yisho izikhathi ezingakanani lapho wawulalisiwe eskhungweni sezempilo.
Uma impendulo kungu Cha, kunombolo 8, yeqela kunombolo 11.

Kanye kuphela$_1$	
Kabili$_2$	
Ngaphezulu kunokubili$_3$	

10. Uma impedulo kungu Yebo, kunombolo 8; yisho ubude bezikhathi lapho wawulalisiwe eskhungweni sezempilo.

Ngaphansi kwesonto$_1$	
Isonto elilodwa$_2$	
Amasonto amabili$_3$	
Amasonto amathatu$_4$	
Inyanga eyodwa$_5$	
Ngaphezulu kwenyanga$_6$	

Izimo Zokulashwa

11. Usulashwe ngemithi isikhathi esingakanani?

Ngaphansi kwezinyanga ezisithupha$_1$	
Izinyanga eziyisithupha$_2$	
Phakathi kwezinyanga eziyisithupha nonyaka owodwa$_3$	
Unyaka owodwa kuya kwemihlanu$_4$	
Ngaphezu kweminyaka emihlanu$_5$	

12. Yinhloboni yokwelashwa kwesifo samafufunyana oyitholayo?

Imithi$_1$	
Ukwelashwa ngokomqondo okufana nokuxoxisana, noma inkulumo yokugqugquzelwa$_2$	
Kokubili okushiwo ngenhla$_3$	
Okunye$_4$ Ngicela ukusho _____	

13. Izinhlobo ezingaki zemithi ozibhalelwe?

Umuthi owodwa$_1$	
Emibili kuya kwemithatu$_2$	
Emine kuya kwemihlanu$_3$	
Eyisithupha noma ngaphezulu $_4$	

14. Ungawakhumbula amagama emithi yakho?

Cha$_0$	
Yebo$_1$	

15. Usuke wayeka ukusebenzisa imithi yakho?

Cha$_0$	
Yebo$_2$	

16. Uma impendulo kungu Yebo kunombolo 14, yisho ukuthi wayiyeka isikhathi esingakanani ukuyidla imithi.

Ngaphansi kwesonto$_1$	
Ngaphezu kwesonto elilodwa kodwa ngaphansi kwenyanga$_2$	
Inyanga eyodwa kuya kwezisithupha$_3$	
Izinyanga eziyisithupha$_4$	
Isikhathi esingaphezu konyaka$_5$	
Kuyaqabukela$_6$	

17. Uma ubuke wayeka ukusebenzisa imithi / waphedula ngo Yebo kunombolo 14, ngicela usho ukuthi izinhlobo ezingaki zemithi obukade uyekile ukuzisebenzisa.

Eyodwa$_1$	
Ngaphezulu kweyodwa$_2$	

18. Kulezizathu ezilandelayo yiziphi ezenze ungasaqhubeki ukuthatha imithi yakho. Uvumelekile ukukhetha okaningi okuvumelana nawe.

18.1 Imithi ithathwa isikhathi eside kakhulu.	Yebo$_1$	Cha$_0$
18.2 Ngadikibala ngokwazi ukuthi isifo asilapheki.	Yebo$_1$	Cha$_0$
18.3 Angibanga nolwazi olwenele ngesifo.	Yebo$_1$	Cha$_0$
18.4 Ngibe nemizwa ehlukile ngokomcabango, nangokwenza, obekungenzeki ngingakaguli; njengokuzwa amazwi, nemidlinzo noma inkoleloze, nomuzwa wokuzula.	Yebo$_1$	Cha$_0$
18.5 Bengilokhu ngikhohlwa ukuthatha imithi.	Yebo$_1$	Cha$_0$
18.6 Angiyiqondanga imiyalelo yokuthatha imithi.	Yebo$_1$	Cha$_0$
18.7 Ngibe nezimpawu zokungezwani nemithi.	Yebo$_1$	Cha$_0$
18.8 Ngizizwe sengathi abantu bangibona ngingelutho.	Yebo$_1$	Cha$_0$
18.9 Bekungekho ukwesekwa umndeni wami.	Yebo$_1$	Cha$_0$
18.10 Benginenkinga yokugibela uma ngiyothatha imithi.	Yebo$_1$	Cha$_0$
18.11 Ukungasebenzi kungidikibalisile ukuthatha imithi.	Yebo$_1$	Cha$_0$
18.12 Angibanga naso isikhathi sokuyolanda imithi ngenxa yokusebenza, kanye nezinye izivimbelo.	Yebo$_1$	Cha$_0$
18.13 Ukugcwala nolayini abade emtholampilo kungidikibalisile ukuthatha imithi.	Yebo$_1$	Cha$_0$
18.14 Inkinga yemali ingidikibalisisle ukuthatha imithi.	Yebo$_1$	Cha$_0$
18.15 Ukungakhombisi ukwemukeleka ngabasebenzi basemtholampilo.	Yebo$_1$	Cha$_0$
18.16 Imithi yayihleze ingekho emtholampilo/ esibhedlela.	Yebo$_1$	Cha$_0$
18.17 Ukusebenzisa izidakamizwa kwenze ngilibale ukuthatha imithi yesifo samafufunyana.	Yebo$_1$	Cha$_0$
18.18 Ezinye izizathu. Ngicela usho		

19. Nakhu engahlangabezana nakho ngenxa yokungathathi imithi. (Uvumelekile ukukhetha okuningi ovumelana nakho).

19.1 Ukubuya ngamandla kwezimpawu zokuphazamiseka ngengqondo kade sewungcono.	Yebo$_1$	Cha$_0$
19.2 Ukulaliswa futhi esibhedlela.	Yebo$_1$	Cha$_0$
19.3 Ukulahlekelwa umsebenzi.	Yebo$_1$	Cha$_0$
19.4 Ukungakwazi ukuqhubeka nemfundo esikoleni noma enyuvesi.	Yebo$_1$	Cha$_0$
19.5 Ukulahlekelwa ukwesekelwa umndeni.	Yebo$_1$	Cha$_0$
19.6 Ukushayeka kwezezimali.	Yebo$_1$	Cha$_0$
19.7 Kwamele ngidluliselwe kochwepheshe bezengqondo.	Yebo$_1$	Cha$_0$
19.8 Kwandiswa imithi ebengiyidla.	Yebo$_1$	Cha$_0$
19.9 Izimpawu zesifo zabhebhetheka azabe zisanqandeka.	Yebo$_1$	Cha$_0$
19.10 Ngakhinyabezeka ngisho ukwenza imisebenzi yasendlini.	Yebo$_1$	Cha$_0$
19.11 Ngakhishwa ohlelweni lokuhlumelelisa	Yebo$_1$	Cha$_0$
19.12 Ezinye. Ngicela uzisho		

Izindlela Zokusizakala

20. Ungaludinga yini usizo lokuthi uthathe kahle imithi yakho?

Cha$_0$	
Yebo$_1$	

21. Uma uphendule ngo Yebo kunombolo 20, yisho ongathanda abe ngumekeleli wakho ukuthi uthathe imithi yakho.

Umzali$_1$	
Engishade naye$_2$	
Ingane$_3$	
Isihlobo$_4$	
Umngani$_5$	
Umakhelwane$_6$	
Omunye$_7$	

22. Uke wezwa “ngohlelo lomlekeleli’ wokusiza ekudleni imithi yakho?

Cha$_0$	
Yebo$_1$	

Siyabonga ngokubamba iqhaza kulolucwaningo.
Mrs N.Mvunelo – Umcwaningi.

Annexure J: Quantitative Post-Intervention Questionnaire for the Patient

Evaluating the effectiveness of virtual buddy support to improve treatment adherence for patients suffering from schizophrenia in KwaZulu-Natal: a model of care.

Participant Number…….

Kindly respond to the following questions by indicating your answer with an X.

(Note: all answers will be kept confidential).

General Information

8. Indicate your gender

☐ 1 **Male**

☐ 2 **Female**

☐ 3 **Do not wish to disclose**

9. Select your age category

☐ 1 **18-24**

☐ 2 **25-34**

☐ 3 **35 - 44**

☐ 4 **45 – 55**

☐ 5 **55 – 64**

☐ 6 **65 and above**

10. Select your race

☐ 1 **African**

☐ 2 **White**

☐ 3 **Coloured**

☐ 4 **Indian**

☐ 5 **Other**_____

11. Select your home language

☐ 1 **IsiZulu**

☐ 2 **English**

☐ 3 **Afrikaans**

☐ 5 **Other _____**

12. Indicate your religion

☐ 1 **Christian**

☐ 2 **Islam**

☐ 3 **Hinduism**

☐ 4 **Judaism**

☐ 5 **Buddhism**

☐ 6 **Cultural (African tradition)**

☐ 7 **Other ----------**

13. State your highest level of education

☐ 0 **None**

☐ 1 **Primary School**

☐ 2 **Secondary School, Grade_____**

☐ 3 **Tertiary (University / College)**

☐ 4 **Postgraduate**

14. Indicate your relationship status

☐ 1 **Single**

☐ 2 **Married**

☐ 3 **Divorced**

☐ 4 **Widowed**

☐ 5 **Other _____**

Admission History

8. Have you ever been admitted to an institution for psychiatric treatment in the past six months?

No$_0$	
Yes$_1$	

9. If you have answered by Yes to no. 8; please indicate how often you were hospitalized. If No, to question 8, please skip to next question.

Only once$_1$	
2 times$_2$	
> 2 times$_3$	

10. For how long were you admitted?

< 1 week$_1$	
1 week$_2$	
2 weeks$_3$	
3 years$_4$	
1 month$_5$	
> 1 month$_6$	

11. Do you fully understand the disorder that you are having

No$_0$	
Yes$_0$	

Treatment factors

12. For how long have you been on treatment?

< 6 months$_1$	
6 months – 1 year$_2$	
6 months$_3$	
1-5 years$_4$	
> 5 years$_5$	

13. What type of treatment have you received in the last 6 months?

Medications$_1$	
Psychological treatment e.g. behavior change therapy, motivational interview etc.$_2$	
Both$_3$	
Other$_4$	

14. How many types of medications have you been prescribed in the last 6 months?

1 type$_1$	
2 to 3 types$_2$	
4 to 5 types$_3$	
≥ 6 types$_4$	

15.Can you recall your medication by names?

No$_0$	
Yes$_1$	

16. Have you ever stopped any of your treatment in the past six months?

No$_0$	
Yes$_2$	

17. If your answer is Yes in no.16, then state for how long have you stopped your treatment.

<1 week$_1$	
1 week$_2$	
2 weeks$_3$	
3 weeks$_4$	
>1 month$_5$	
Occasionally$_6$	

18. If you have stopped your medication / answered yes in Q15, please state whether you discontinued with one or more medications.

Never stopped$_0$	
only 1$_1$	
>1$_2$	

19.In the past 6 months, which of the reasons listed below caused you to stop your treatment? (You may pick as many from the list that applies to you).

191 The treatment duration was too long.	Yes$_1$	No$_0$
19.2 I became discouraged by knowing that the disease will not be cured (chronic nature).	Yes$_1$	No$_0$
19.3 I had inadequate knowledge about the disease.	Yes$_1$	No$_0$
19.4 I often experienced odd or unusual feelings, thoughts and behaviors that did not exist before illness like hearing voices, holding certain beliefs, an urge to move around.	Yes$_1$	No$_0$
19.5 I often forgot to take the treatment.	Yes$_1$	No$_0$
19.6 I did not understand the instructions.	Yes$_1$	No$_0$
19.7 I experienced side effects.	Yes$_1$	No$_0$
19.8 I felt as though people have labeled me as worthless$_8$.	Yes$_1$	No$_0$
19.9 I did not have support from my family.	Yes$_1$	No$_0$
19.10 Transport Issues prevented me from obtaining my medication.	Yes$_1$	No$_0$
19.11 Being unemployed prevented me from obtaining my medication.	Yes$_1$	No$_0$
19.12 I did not have time to visit clinic/hospital because of work, or personal commitments.	Yes$_1$	No$_0$
19.13 The long queue when attending clinic/hospital prevented me from obtaining my medication.	Yes$_1$	No$_0$
19.14 Financial problems prevented me from obtaining my medication.	Yes$_1$	No$_0$

19.15 The unwelcoming attitude of health care workers prevented me from obtaining my medication.	Yes$_1$	No$_0$
19.16 The treatment was often unavailable in the clinic/hospital.	Yes$_1$	No$_0$
18.17 Suffering from substance use disorder caused me to forget my treatment for schizophrenia.	Yes$_1$	No$_0$
19.18 Other reason. State the reasons.		

20.In the past six months, have you ever experienced any of these effects as a result of not taking your treatment? (You are allowed to choose more than one response)

20.1 Return or worsening of symptoms of schizophrenia after partial recovery.	Yes$_1$	No$_0$
20.2 Rehospitalization.	Yes$_1$	No$_0$
20.3 Loss of a job.	Yes$_1$	No$_0$
20.4 Had to stop schooling/university/studies.	Yes$_1$	No$_0$
20.5 Loss of family support.	Yes$_1$	No$_0$
20.6 Financial loss.	Yes$_1$	No$_0$
20.7 Had to be referred to many specialist doctors.	Yes$_1$	No$_0$
20.8 Got prescribed more medication.	Yes$_1$	No$_0$
20.9 Symptoms became chronic – no remission$_9$.	Yes$_1$	No$_0$
20.10 Decreased productivity in daily activities/chores.	Yes$_1$	No$_0$
20.11 Removal from the rehabilitation program.	Yes$_1$	No$_0$
20.12 Other	Yes$_1$	No$_0$

Intervention Factors

21.Did you have a good relationship with your treatment buddy

No$_0$	
Yes$_1$	
Not always $_2$	

22.Did the treatment buddy help you to take your medication?

Yes$_1$	
No$_0$	
Sometimes$_3$	

23.The treatment buddy assisted me in taking the medication as follows:

23.1 Reminded me to take my medications every day.	Yes$_1$	No$_0$
23.2 Phoned to check that I was taking my treatment.	Yes$_1$	No$_0$
23.3 Other. Please specify.	Yes$_1$	No$_0$

24. Do you think all patients with your condition, should have a treatment buddy?

No$_0$	
Yes$_1$	

25.Would you use the treatment buddy services in the future?

No$_0$	
Yes$_1$	
Unsure$_3$	

26.Do you think that if you stop using the treatment buddy you will default on your medication again?

No$_0$	
Yes$_1$	

27.Would you have preferred someone else as a buddy?

No$_0$	
Yes$_1$	

28.If yes in no. 27. above, who would you like to have had as a buddy?

Parent$_1$	
Spouse$_2$	
Child$_3$	
Relative$_4$	
Friend$_5$	
Neighbour$_6$	
Other$_7$	

29. How would you prefer a buddy to be chosen?

29.1 By asking me to select the person$_{1.}$	Yes$_1$	No$_0$
29.2 Discuss it with me and my family$_{2.}$	Yes$_1$	No$_0$
29.3 The health professional to choose on my behalf$_{3.}$	Yes$_1$	No$_0$
29.4 All parties (I, family and health worker) to be involved$_{4.}$	Yes$_1$	No$_0$

Thank you for participating in this study.
Mrs N. Mvunelo – Researcher.

Isijobelelo J (a): Imibuzo ngocwaningo olufingqiwe ngemuva kokungenelela – okuqondene nesiguli.

Ukuhlola ukusebenza ngempumelelo kohlelo lomlekeleli oluhlose ukuthuthukisa ukusetshenziswa ngendlela efanele kwemishanguzo ezigulini ezihlushwa isifo sofufunyana KwaZulu-Natali: imodeli yokunakekela.

Inombolo Yombambiqhaza…….

Phendula ngokufaka uphawu X.

(Qaphela: Zonke izimpendulo zizogcinwa ziyimfihlo).

ULWAZI OLUVAMILE

15. Khombisa ubulili bakho

☐ 1 Owesilisa

☐ 2 Owesifazane

16. Khetha iminyaka yakho

☐ 1 **18-24**

☐ 2 **25-34**

☐ 3 **35 - 44**

☐ 4 **45 – 55**

☐ 5 **55 – 64**

☐ 6 **65 nangaphezulu**

17. Khetha ubuhlanga bakho

☐ 1 **Umuntu omnyama**

☐ 2 **Umuntu omhlophe**

☐ 3 **Ikhaladi**

☐ 4 **Indiya**

☐ 5 **Okunye**_____

18. Khetha ulwimi lwakho lwasekhaya

☐ 1 **IsiZulu**

☐ 2 **Isilungu**

☐ 3 **Isibhunu**

☐ 6 **Okunye** _____

19. Khombisa inkolo yakho

☐ 1 **Ikholwa**

☐ 2 **Ubusulumani**

☐ 3 **Ubuhindu**

☐ 4 **Ubujuda**

☐ 5 **Ibubhudanisi**

☐ 6 **Inkolo yesintu**

☐ 7 **Okunye** ----------

20. Isho izinga lakho lemfundo

☐ 0 **Awufundanga**

☐ 1 **Amabanga aphansi**

☐ 2 **Amabanga aphezulu, Isigaba:**_____

☐ 3 **Esikhungweni Semfundo ephakeme (enyuvesi / ekolishi)**

☐ 5 **Imfundo enomsila**

21. Khombisa ubudlelwano bakho ngokomshado

☐ 1 **Awushadile**

☐ 2 **Ushadile**

☐ 3 **Wahlukanisa**

☐ 4 **Ungumfelokazi/ ungumfelwa**

☐ 5 **Okunye** _____

Imininingwane Yokulaliswa Esikhungweni Sezempilo

8. Esikhathini sezinyanga eziyisithupha ezedlulile, usuwake walaliswa esikhungweni sezifo zomqondo?

Cha$_0$	
Yebo$_1$	

9. Uma impedulo kungu Yebo, kunombolo 8; yisho izikhathi ezingakanani lapho wawulalisiwe esikhungweni sezempilo.
Uma impendulo kungu Cha, kunombolo 8, yeqela kunombolo 11.

Kanye kuphela$_1$	
Kabili$_2$	
Ngaphezulu kunokubili$_3$	

10. Uma impedulo kungu Yebo, kunombolo 8; yisho ubude bezikhathi lapho wawulalisiwe esikhungweni sezempilo.

Ngaphansi kwesonto$_1$	
Isonto elilodwa$_2$	
Amasonto amabili$_3$	
Amasonto amathatu$_4$	
Inyanga eyodwa$_5$	
Ngaphezulu kwenyanga$_6$	

11. Unalo yhini ulwazi oluphelele mayelana nesifo ogula yiso

Cha$_0$	
Yebo$_2$	

Izimo Zokulashwa

12. Usulashwe ngemithi isikhathi esingakanani?

Ngaphansi kwezinyanga eziyisithupha$_1$	
Izinyanga eziyisithupha$_2$	
Phakathi kwezinyanga eziyisithupha nonyaka owodwa$_3$	
Unyaka owodwa kuya kwemihlanu$_4$	
Ngaphezu kweminyaka emihlanu$_5$	

13. Esikhathini esiyizinyanga eziyisithupha ezedlulile, yinhloboni yokwelashwa kwesifo somqondo samafufunyana oyitholayo?

Imithi$_1$	
Ukwelashwa ngokomqondo okufana nokuxoxisana, noma inkulumo yokugqugquzelwa$_2$	
Kokubili esekushiwo ngenhla$_3$	
Okunye$_4$	

Ngicela ukusho _____	

14. Esikhathini sezinyanga eziyisithupha ezedlulile, izinhlobo ezingaki zemithi ozibhalelwe?

Umuthi owodwa$_1$	
Emibili kuya kwemithatu$_2$	
Emine kuya kwemihlanu$_3$	
Eyisithupha noma ngaphezulu $_4$	

15. Ungawakhumbula amagama emithi yakho?

Cha$_0$	
Yebo$_1$	

16. Esikhathini sezinyanga eziyisithupha ezedlulile, usuke wayeka ukusebenzisa imithi yakho?

Cha$_0$	
Yebo$_2$	

17. Uma impendulo kungu Yebo kunombolo 14, yisho ukuthi wayiyeka isikhathi esingakanani ukuyidla imithi.

Ngaphansi kwesonto$_1$	
Ngaphezu kwesonto elilodwa kodwa ngaphansi kwenyanga$_2$	
Inyanga eyodwa kuya kwezisithupha$_3$	
Izinyanga eziyisithupha$_4$	
Isikhathi esingaphezu konyaka$_5$	
Kuyaqabukela$_6$	

18. Uma ubuke wayeka ukusebenzisa imithi / waphedula ngo Yebo kunombolo 14, ngicela usho ukuthi izinhlobo ezingaki zemithi obukade uyekile ukuzisebenzisa.

Eyodwa$_1$	
Ngaphezulu kweyodwa$_2$	

19. Esikhathini sezinyanga eziyisithupha ezedlule, yiziphi izizathu kulolu hla olungezansi ezenza ukuthi uyekele ukusebenzisa imithi oyibhalelwe. (Uvumelekile ukukhetha okuningi okuvumelana nawe).

19.1 Imithi ithathwa isikhathi eside kakhulu.	Yebo$_1$	Cha$_0$
19.2 Ngadikibala ngokwazi ukuthi isifo asilapheki.	Yebo$_1$	Cha$_0$
19.3 Angibanga nolwazi olwenele ngesifo.	Yebo$_1$	Cha$_0$
19.4 Ngibe nemizwa ehlukile ngokomcabango, nangokwenza, obekungenzeki ngingakaguli; njengokuzwa amazwi, nemidlinzo noma inkoleloze, nomuzwa wokuzula.	Yebo$_1$	Cha$_0$
19.5 Bengilokhu ngikhohlwa ukuthatha imithi.	Yebo$_1$	Cha$_0$
19.6 Angiyiqondanga imiyalelo yokuthatha imithi.	Yebo$_1$	Cha$_0$
19.7 Ngibe nezimpawu zokungezwani nemithi.	Yebo$_1$	Cha$_0$
19.8 Ngizizwe sengathi abantu bangibona ngingelutho.	Yebo$_1$	Cha$_0$

19.9 Bekungekho ukwesekwa umndeni wami.	Yebo$_1$	Cha$_0$
19.10 Benginenkinga yokugibela uma ngiyothatha imithi.	Yebo$_1$	Cha$_0$
19.11 Ukungasebenzi kungidikibalisisle ukuthatha imithi.	Yebo$_1$	Cha$_0$
19.12 Angibanga naso isikhathi sokuyolanda imithi ngenxa yokusebenza, kanye nezinye izivimbelo.	Yebo$_1$	Cha$_0$
19.13 Ukugcwala nolayini abade emtholampilo kungidikibalisile u9uthatha imithi.	Yebo$_1$	Cha$_0$
19.14 Inkinga yezimali ingidikibalisisle ukuthatha imithi.	Yebo$_1$	Cha$_0$
19.15 Ukungakhombisi ukwemukeleka ngabasebenzi basemtholampilo.	Yebo$_1$	Cha$_0$
19.16 Imithi yayihleze ingekho emtholampilo/ esibhedlela.	Yebo$_1$	Cha$_0$
19.17 Ukusebenzisa izidakamizwa kwenze ngilibale ukuthatha imithi yesifo samafufunyana.	Yebo$_1$	Cha$_0$
19.18 Ezinye izizathu. Ngicela usho		

20. Ezinyangeni eziyisithupha ezedlelile, nakhu engahlangabezana nakho ngenxa yokungathathi imithi. (Uvumelekile ukukhetha okaningi ovumelana nakho).

20.1 Ukubuya ngamandla kwezimpawu zokuphazamiseka kwengqondo kade sewungcono.	Yebo$_1$	Cha$_0$
20.2 Ukulaliswa futhi esibhedlela.	Yebo$_1$	Cha$_0$
20.3 Ukulahlekelwa umsebenzi.	Yebo$_1$	Cha$_0$
20.4 Ukungakwazi ukuqhubeka nemfundo esikoleni noma enyuvesi.	Yebo$_1$	Cha$_0$
20.5 Ukulahlekelwa ukwesekelwa umndeni.	Yebo$_1$	Cha$_0$
20.6 Ukushayeka kwezezimali.	Yebo$_1$	Cha$_0$
20.7 Kwamele ngidluliselwe kochwepheshe bezengqondo.	Yebo$_1$	Cha$_0$
20.8 Kwandiswa imithi ebengiyidla.	Yebo$_1$	Cha$_0$
20.9 Izimpawu zesifo zabhebhetheka azabe zisanqandeka.	Yebo$_1$	Cha$_0$
20.10 Ngakhinyabezeka ngisho ukwenza imisebenzi yasendlini.	Yebo$_1$	Cha$_0$
20.11 Ngakhishwa ohlelweni lokuhlumelelisa	Yebo$_1$	Cha$_0$

Izindlela Zokusizakala

21. Kade ninobudlelwane obuhle nomelekeleli na?

Cha$_0$	
Yebo$_1$	
Ngesinye Isikhathi$_2$	

22. Ingabe umelekeleli wakho ukusizile yini ukuthatha imithi yakho?.

Cha$_0$	
Yebo$_1$	
Ngesinye isikhathi$_2$	

23. Umelekeleli ungisizile ukuthi ngenze lokhu okulandelayo:

23.1 Ungikhumbuze izinsuku zokuya emtholampilo/ esibhedlela.	Yebo$_1$	Cha$_0$
23.2 Ubelandela ukuthi ngiyayithatha imithi ngocingo.	Yebo$_1$	Cha$_0$
23.3 Okunye. Ngicela uchaze.	Yebo$_1$	Cha$_0$

24. Ngokwakho, ucabanga ukuthi bonke abantu abanalesisigulo kumele babe nomlekeleli?

Cha$_0$	

Yebo$_1$	

25. Ungathanda ukusebenzisa umelekeleli ngesikhathi esizayo?

Cha$_0$	
Yebo$_1$	
Anginasiqiniseko$_3$	

26. Ucabanga ukuthi uma uyeka ukusebenzisana nomlekeleli ungaphutha ukuthatha imithi yakho?

Cha$_0$	
Yebo$_1$	

27. Ubungakhetha ukuba nomunye umlekeleli?

Cha$_0$	
Yebo$_1$	

28. Uma uphendule ngo Yebo kunombolo 29. Ungathanda bani?

Umzali$_1$	
Oshade naye$_2$	
Ingane$_3$	
Isihlobo$_4$	
Umngani$_5$	
Umakhelwane$_6$	
Omunye$_7$	

29. Ungathanda umelekeleli akhethwe kanjani?

29.1 Ukhethe wena$_{1.}$	Yebo$_1$	Cha$_0$
29.2 Kubuzwe wena nomndeni$_{2.}$	Yebo$_1$	Cha$_0$
29.3 Ukhethelwe abezempilo$_{3.}$	Yebo$_1$	Cha$_0$
29.4 Akhethwe ngokubambisana (wena, umndeni kanye nabezempilo$_{4.}$	Yebo$_1$	Cha$_0$

Siyabonga ngokubamba iqhaza kulolucwaningo.
Mrs N.Mvunelo – Umcwaningi.

Annexure K: Qualitative Post-Intervention Questionnaire for the patient.

Evaluating the effectiveness of virtual buddy support to improve treatment adherence for patients suffering from schizophrenia in KwaZulu-Natal: a model of care.

Researcher: Mvunelo, N.- 21959402

Group Number……..

Introduce the interview

Give your name and ask them to introduce their names

Explain the aims of the interview

Review the information sheet and consent form and ensure that consent is provided.

Get permission to audiotape the conversation.

Ask the respondents if they have any questions before you start.

Remind the respondents that they can stop at any time.

Begin interview by asking participants to introduce themselves to the group

Questions to guide the interview

1. Seeing that you have treatment buddy support in the past six months, what would you say about getting the text message reminders.

2. Explain how your treatment buddy helped you in taking your medication.

3. What other functions would you expect from a treatment buddy besides sending reminders for your medications. Please elaborate how)

4. Was there any other assistance provided? (Not related to treatment).

5. Would you personally prefer to continue having a treatment buddy for yourself in future?

6. Would you encourage other persons suffering from schizophrenia to have treatment buddies for themselves?

Thank You for participating in this interview

Nomhle Mvunelo – Researcher

Isijobelelo K (a): Imibuzo ngocwaningo olusabalele ngemuva kokungenelela – okuqondene nesiguli.

Ukuhlola ukusebenza ngempumelelo kohlelo lomlekeleli oluhlose ukuthuthukisa ukungasebenzisi ngokwanele kwemishanguzo ezigulini ezihlushwa isifo sofufunyana KwaZulu-Natali: imodeli yokunakekela.

<u>Umcwaningi: Mvunelo, N.- 21959402</u>

Inombolo Yenhlangano……..

Yazisa Ingxoxo

Zazise wena ucele nabo bazazise

Chaza injongo yengxoxo

Bukeza imininingwane nemvume uqiniseke ukuthi isayiniwe.

Cela imvume yokuqopha ingxoxo.

Baphe ithuba lokubuza imibuzo ngaphabi kokuba uqale.

Cacisa ukuthi bangayeka ukuba yingxenye yocwaningo noma nini.

Cela ababambi qhaza baqale ngokuzazisao munye nomunye kumalunga omhlangano

<u>Imibuzo ezohola ingxoxo.</u>

1. Njengoba kade ezinyangeni ezisithupha ezedlulile ubunikezwe umlekeleli, Ngokwakho ungathi yhini umsebenzi wakhe?

2. Chaza iqhaza lomlekeleli wakho ekuthini uthathe imithi yakho

3. Kukhona okunye akusize ngakho malunga nokuthatha imithi? (Chaza kabanzi).

4 Lukhona olunye usizo olutholile kuyena (okungahambelani nokuthatha imithi)

5. Ubungathanda wena ukuqhubeka nomlekeleli esikhathini esizayo?

6. Ungabagqugquzela abanye abaphethwe ngamafufunyana ukuthi bazitholele abalekeleli?

Siyabonga ngokubamba iqhaza kule ngxoxo

Nomhle Mvunelo – Umcwaningi

Annexure L: Qualitative Post-Intervention Questionnaire for the Treatment Buddy.

Evaluating the effectiveness of the "buddy system" to improve adherence to treatment from patients suffering from schizophrenia in KwaZulu-Natal: a model of care.

Researcher: Mvunelo, N.- 21959402

Group Number……..

Introduce the interview

Greet the research assistant and welcome her to the interview session.

Explain the aims of the interview

Ensure that consent to participate in the research is provided.

Get permission to audiotape the conversation.

Ask the respondent if she has any questions before you start.

Remind the respondent that she can stop at any time.

Questions to guide the interview

1.In the past six months you were asked to act as a treatment buddy for a group of patients and you were sending reminders to patients, please explain your experience of sending text messages to patients on daily basis.

2. In your opinion, do you think you were capable of assisting your patient improve his/her adherence to their prescribed treatment?

3. In your opinion was sending of the reminders the best method of providing buddy support or you would have preferred another approach. Explain your views.
4. What has encouraged you to become effective in your role of being a treatment buddy for your patient?

5.Were there any factors or barriers that discouraged you from effectively performing your treatment buddy functions?

6. In your opinion, do you think a treatment buddy can help improve the rate of adherence to treatment for a psychiatric patient suffering from schizophrenia?

7.Would you encourage relatives/ friends/ neighbours to take an active role of being treatment buddies for the persons struggling with their psychiatric treatment?

8. Would you encourage other persons suffering from schizophrenia to have treatment buddies for themselves?

Thank You for participating in this interview

Nomhle Mvunelo - Researcher

Isijobelelo L (a): Imibuzo ngocwaningo olusabalele ngemuva kokungenelela – okuqondene nomlekeleli.

Ukuhlola ukusebenza ngempumelelo kohlelo lomlekeleli oluhlose ukuthuthukisa ukusetshenziswa ngendlela efanele kwemishanguzo ezigulini ezihlushwa isifo sofufunyana KwaZulu-Natali: imodeli yokunakekela.

<u>Umcwaningi: Mvunelo, N.- 21959402</u>

Inombolo Yenhlangano……..

Yazisa Ingxoxo

Zazise wena ucele nabo bazazise

Chaza injongo yengxoxo

Bukeza imininingwane nemvume uqiniseke ukuthi isayiniwe.

Cela imvume yokuqopha ingxoxo.

Baphe ithuba lokubuza imibuzo ngaphabi kokuba uqale.

Cacisa ukuthi bangayeka ukuba yingxenye yocwaningo noma nini.

Cela ababambi qhaza baqale ngokuzazisaomunye nomunye kumalunga omhlangano kanye nobudlelwano babo koguayo.

<u>Imibuzo ezohola ingxoxo.</u>

1. Chaza indlela okhethwe ngayo ukuthi ube ngumlekeleli? (ubani owakukhetha? Chaza ubuhlobo bakho kulowo okhethelwe yena? Uhlala eduze yini naye?)
2. Ezinyangeni eziyisithupha ezedlule zokukhwthwa kwakho, ngokwazi kakho unaqhaza lini umelekeleli?
3 Ngokubona kwakho, ucabanga ukuthi umsizile yini okade umelekelela ukuthi athathe kangcono imithi ayibhalelwe?
4. Chaza indlela yokwamukeleka kwakho kulowo ogulayo nokuthi wakhombisa ukukuthakasela yini ukusebenzisana nawe.
5. Chaza indlela omsize ngayo ogulayo eyenze athathe imithi yakhe ngendlela.
6. Ukhe waphutha ukuthatha imithi ogulayo? (uma kunjalo, yini eyenza ucabange lokho na? Makungenjalo – ucabanga ukuthi kumsizile ukuthola umlekeleli?).
7. Yini ekukhuthazile ukuthi umelekelele ngempumelelo obukade umsiza?
8. Yikuphi ocabanga ukuthi kuyamdikibalisa umelekeleli?
9. Ucabanga ukuthi umelekeleli angasiza yini ukukhuphula izinga lokuthathwa kangcono kwemithi ngabagulayo?
10. Ungabakhuthaza yini abomndeni, abangani, omakhelwane ukuthi babeyingxenye yokulekelela labo abangathathi imithi yabo ngendlela?
11. Ungagqugquzela ukuthi nabanye abagula ngomqondo bathole abalekeleli?

12. Ungancoma yini ekuthi umelekeleli akhethwe kanjani.

13. Ubungathanda yini ukuqhubeka nokulekelela lona kade umelekelela ngaphambili (Chaza izizathu zalokho).

14. Ubungathanda ukusiza abanye abantu abagula ngomqondo ukuthi bathathe imithi ngendlela.(Chaza izizathu zalokho).

Siyabonga ngokubamba iqhaza kulengxoxo

Nomhle Mvunelo - Umcwaningi

Annexure M: Qualitative Post-Intervention Questionnaire for the Health Care Professionals.

Evaluating the effectiveness of the "buddy system" to improve adherence to treatment from patients suffering from schizophrenia in KwaZulu-Natal: a model of care.

Researcher: Mvunelo, N. - 21959402

Group Number……

1. Introduce the interview

Give your name and ask them to introduce their names

Explain the aims of the interview

Review the information sheet and consent form and ensure that consent is provided.

Get permission to audiotape the conversation.

Ask the respondents if they have any questions before you start.

Remind the respondents that they can stop at any time.

Questions to guide the interview

1. Having been exposed to virtual treatment buddy support in your unit, how would you describe your understanding of a treatment buddy.

2. In your own opinion, would you regard sending of reminders to the patients as beneficial for patients and the clinic, elaborate on this.

3. In your own opinion is there any other approach that you would have preferred for treatment buddy services to follow. Elaborate.

4. In your understanding, what role is a treatment buddy expected to perform in order to assist schizophrenia patients improve the rate of adherence to their prescribed treatment?

5. Do you feel that the treatment buddy was able to assist the patients in taking their medication/ (Have they come regularly for their prescription? Have the symptoms improved?)

4. What kind of support can a health professional provide to render the treatment buddy support effective?

5. Would you encourage psychiatric patients to have treatment buddies? Elaborate on your response.

6. Of what benefit will they be for the mental healthcare services?

7. Would you encourage mental healthcare services to practice the treatment ‘buddy system ’in their institutions?

8. Would you suggest the process of selecting a treatment buddy for mentally ill persons?

Thank You for participating in the interview

Nomhle Mvunelo-Researcher

Isijobelelo M(a): Imibuzo ngocwaningo olusabalele ngemuva kokungenelela – okuqondene nomsebenzi wezempilo.

Ukuhlola ukusebenza ngempumelelo kohlelo lomlekeleli oluhlose ukuthuthukisa ukusetshenziswa ngendlela efanele kwemishanguzo ezigulini ezihlushwa isifo sofufunyana KwaZulu-Natali: imodeli yokunakekela.Umcwaningi: Mvunelo, N.-21959402

Inombolo Yenhlangano……..

Yazisa Ingxoxo

Zazise wena ucele nabo bazazise

Chaza injongo yengxoxo

Bukeza imininingwane nemvume uiniseke ukuthi isayiniwe.

Cela imvume yokuqopha ingxoxo.

Baphe ithuba lokubuza imibuzo ngaphabi kokuba uqale.

Cacisa ukuthi bangayeka ukuba yingxenye yocwaningo noma nini.

Cela ababambi qhaza baqale ngokuzazisaomunye nomunye kumalunga omhlangano kanye nemisebenzi abayenzayo.

Imibuzo ezohola ingxoxo.

1. Njengoba kade usebenzisana nabalekeleli egumbini lakho lokesebenza, ngolwakho ulwazi ungathi yini umsebenzi wabo.

2. Chaza indlela ekumele basize ngayo abalekelei ukusiza abanesifo samafufunyana ukuthi bathathe kangcono imithi abayiphalelwe?

3. Ucabanga ukuthi abalekeleli bakwazile ukweseka iziguli ukuthi ziyithathe ngendlela imithi (zikwazile ukufika zizobhalelwa imithi ngendlela nokuthi zibonakale zilulama?)

4. Yikuphi okungenziwa abezempilo ukukhuphula izinga labalekeleli?

5. Yini engenziwa engagqugquzela abalekeleli ukuthi basebenze ngempumelelo?

6. Yini engaholela ekuthini badikibale abalekeleli ekwenzeni umsebenzi wabo?

7. Ungathanda ukugqugquzela abagula ngomqondo ukuthi bathole abalekeleli?

8. Zingasizakala kanjani izikhungo zempilo kuloluhlelo lwabalekeleli?

9. Ungagqugquzela yini abomnyango wezempilo ukuthi basebenzise uhlelo lwabalekeleli ezikhungweni zabo?

10. Ungancoma ukuthi bakhethwe kanjani abalekeleli.

Siyabonga ngokubamba iqhaza kulengxoxo.

Nomhle Mvunelo-Umcwaningi

Annexure N: Application for amendment

APPLICATION FOR APPROVAL OF AMENDMENT

To be completed electronically by the principal investigator/researcher in accordance with the Standard Operating Procedures of the IREC.

Title of the study: Evaluating the effectiveness of virtual buddy support to improve the treatment adherence by patients suffering from schizophrenia in KwaZulu-Natal: a model of care.

Institution: Durban University of Technology - Faculty of Health Sciences.	Date: 19/04/2021
Name and qualification of principal investigator/researcher: Nomhle Mvunelo: Master's Degree in Health Sciences	Name and qualification of supervisor(s): Prof. Firoza Haffejee, PhD and Dr Yasmeen Thandar, PhD
Name of qualification: PhD in Health Sciences	Student Number: 021959402
Ethical approval number: IREC 030/20 (Provisional Approval).	Research site: Chatsworth Psychiatric Clinic of R.K.Khan Hospital

Nature of amendment:

Change of research site - The original site could not release permission to conduct the study because they felt they could not have enough numbers of patients to recruit as their population size has been reduced. The gate keeper permission has already been obtained from R.K.Khan Hospital which permits the researcher to use patients from Chatsworth psychiatry clinic .Please see attached gatekeeper permit.

Change in method - The researcher will no longer use full treatment buddies but will now provide virtually managed treatment buddy support by sending text message reminders to participants. A research assistant will be used to act as the treatment buddy for all participants in the intervention group. This change was made to respond to clinic staff who was afraid of overcrowding the clinic with treatment buddies which could lead to spreading of Covid-19 disease to patients and staff members.

Change to aim: The aim of the study will now evaluate a text message managed "buddy system" instead of evaluating full treatment "buddy system" that uses selected individuals to be treatment buddies. Aims had to be in line with the new method of virtual buddy support that will be used in the study.

Amendment to the topic: The change in method led to change in title. The topic changed from: Evaluating the effectiveness of the "buddy system" to improve adherence to treatment for patients suffering from schizophrenia in KwaZulu-Natal: a model of care. To: Evaluating the effectiveness of virtual buddy support to improve the treatment adherence by patients suffering from schizophrenia in KwaZulu-Natal: a model of care.			
Effect on risk benefit profile of participants: Change brings no risk to the participants.			
Please submit the following documentation: • Amended proposal (changes to be underlined) • Changes to letter of information and consent • Any other relevant documentation			
Signature:	**Date:**		
Researcher:	19/04/2021		
Supervisor:			
Head of Department:			
Chairperson of FRC			
TO BE COMPLETED BY THE CHAIRPERSON OF THE IREC.			
Date received:	Review required: Expedited		
TO BE COMPLETED BY THE CHAIRPERSON OF THE IREC			
The amendment is:	Yes	No	N/A
Approved – there are no evident grounds for concern or further investigation.			
Approved subject to minor changes			
Needs to be re-submitted after recommendations are met			
Approved however a site inspection is recommended.			
Denied (please see attached)			
	Signature:	**Date:**	
Chairperson of IREC			

Annexure O: Approval of ammendment

Institutional Research Ethics Committee
Research and Postgraduate Support Directorate
2nd Floor, Berwyn Court
Gate 1, Steve Biko Campus
Durban University of Technology

P O Box 1334, Durban, South Africa, 4001

Tel: 031 373 2375
Email:

lavishad@dut.ac.za
http://www.dut.ac.za/research/institutional_research_ethics

www.dut.ac.za

10 May 2021

Mrs N Mvunelo
P O Box 1307
New Germany
3610

Dear Mrs Mvunelo

Application for Amendment of Approved Research Proposal

Evaluating the effectiveness of virtual buddy support to improve the treatment adherence by patients suffering from schizophrenia in KwaZulu-Natal: a model of care

I am pleased to inform you that your application for amendment has been approved.

Yours Sincerely

Prof J K Adam
Chairperson: IREC

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

Physical Address : R.K. Khan Circle
Physical Address : CHATSWORTH
Tel: [031] 4596001 Fax:[031] 4011247 Email:Dianne.naicker@kznhealth.gov.za
www.kznhealth.gov.za

DIRECTORATE:
R.K. KHAN HOSPITAL
OFFICE OF THE SENIOR
MANAGER: MEDICAL SERVICES

ENQUIRIES: DR B.S. MADLALA

2 MARCH 2021

Mrs N. Mvunelo
P.O. Box 1307
New Germany
3610

Dear Mrs Mvunelo

RE: PERMISSION TO CONDUCT RESEARCH: EVALUATING THE EFFECTIVENESS OF THE "BUDDY SYSTEM" TO IMPROVE ADHERENCE TO TREATMENT BY PATIENTS SUFFERING FROM SCHIZOPHRENIA IN KWAZULU-NATAL: A MODEL OF CARE

Permission is granted to conduct the study at this institution.

Please note the following:

1. Please ensure that you adhere to all the policies, procedures protocols and guidelines of the Institution with regards to this research.
2. Please ensure this office is informed before you commence your research and your University's Ethics approval must be attached.
3. **You will be expected to provide feedback on your findings to this institution.**
4. You will be liaising with: Dr Y. Asmal / OM Reena Dawood
   EXT. 6144/6406
   Psych Department

DR B.S. MADLALA
SENIOR MANAGER: MEDICAL SERVICES

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

Physical Address: 330 Langalibalele Street, Pietermaritzburg
Postal Address: Private Bag X9051
Tel: 033 395 2805/ 3189/ 3123 Fax: 033 394 3782
Email: [redacted]
www.kznhealth.gov.za

DIRECTORATE:
Health Research & Knowledge Management

NHRD Ref: KZ_202103_008

Dear Mrs N. Mvunelo
(DUT)

Approval of research

1. The research proposal titled **'Evaluating the effectiveness of virtual buddy support to improve treatment adherence by patients suffering from schizophrenia in KwaZulu-Natal: a model of care.'** was reviewed by the KwaZulu-Natal Department of Health (KZN-DoH).

   The proposal is hereby **approved** for research to be undertaken at RK Khan Hospital.

2. You are requested to take note of the following:
   a. *All research conducted in KwaZulu-Natal must comply with government regulations relating to Covid-19. These include but are not limited to: regulations concerning social distancing, the wearing of personal protective equipment, and limitations on meetings and social gatherings.*
   b. *Kindly liaise with the facility manager BEFORE your research begins in order to ensure that conditions in the facility are conducive to the conduct of your research. These include, but are not limited to, an assurance that the numbers of patients attending the facility are sufficient to support your sample size requirements, and that the space and physical infrastructure of the facility can accommodate the research team and any additional equipment required for the research.*
   c. *Please ensure that you provide your letter of ethics re-certification to this unit, when the current approval expires.*
   d. *Provide an interim progress report and final report (electronic and hard copies) when your research is complete to* ***HEALTH RESEARCH AND KNOWLEDGE MANAGEMENT, 10-102, PRIVATE BAG X9051, PIETERMARITZBURG, 3200*** *and e-mail an electronic copy to hrkm@kznhealth.gov.za*
   e. *Please note that the Department of Health shall not be held liable for any injury that occurs as a result of this study.*

For any additional information please contact Mr X. Xaba on 033-395 2805.

Yours Sincerely

Dr E Lutge
Chairperson, Health Research Committee
Date: 20/05/2021

Annexure R: Ethical Clearance

DUT
DURBAN UNIVERSITY OF TECHNOLOGY
INYUVESI YASETHEKWINI YEZOBUCHWEPHESHE

INSTITUTIONAL RESEARCH ETHICS COMMITTEE

Institutional Research Ethics Committee
Research and Postgraduate Support Directorate
2nd Floor, Berwyn Court
Gate 1, Steve Biko Campus
Durban University of Technology

P O Box 1334, Durban, South Africa, 4001

Tel: 031 373 2375
Email:

lavishad@dut.ac.za
http://www.dut.ac.za/research/institutional_research_ethics

www.dut.ac.za

24 May 2021

Mrs N Mvunelo
P O Box 1307
New Germany
3610

Dear Mrs Mvunelo

Evaluating the effectiveness of the "buddy system" to improve adherence to treatment for patients suffering from schizophrenia in KwaZulu-Natal: a model of care Ethical Clearance number IREC 030/20

The Institutional Research Ethics Committee acknowledges receipt of your final data collection tool for review.

We are pleased to inform you that the data collection tool has been approved. Kindly ensure that participants used for the pilot study are not part of the main study.

In addition, the IREC acknowledges receipt of your gatekeeper permission letters.

Please note that FULL APPROVAL is granted to your research proposal. You may proceed with data collection.

Any adverse events [serious or minor] which occur in connection with this study and/or which may alter its ethical consideration must be reported to the IREC according to the IREC Standard Operating Procedures (SOP's).

Please note that any deviations from the approved proposal require the approval of the IREC as outlined in the IREC SOP's.

Yours Sincerely

Prof J K Adam
Chairperson: IREC