Adherence and Treatment Outcomes among Patients with Comorbidity of Depression and Other Mental Disorders attending Psychiatric Hospitals in Rwanda

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A Thesis Submitted in Partial Fulfillment of the Requirements for the Award of the Degree of Doctor of Philosophy in Public Health in the School of Public Health of Kenyatta University

April, 2014
DECLARATION

STUDENT

This research thesis is my original work and has not been presented for a degree or other awards in any other University.

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National University of Rwanda
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This thesis is dedicated to all people suffering from mental and neurological disorders and their families.
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TABLE OF CONTENTS

DECLARATION..................................................................................................................II
DEDICATION....................................................................................................................III
ACKNOWLEDGEMENT.................................................................................................IV
TABLE OF CONTENTS....................................................................................................V
LIST OF TABLES ...............................................................................................................IX
LIST OF FIGURES ..........................................................................................................X
ABBREVIATIONS AND ACRONYMS ..............................................................................XI
OPERATIONAL DEFINITIONS OF KEY CONCEPTS AND TERMS............................XIII
ABSTRACT......................................................................................................................XVI

CHAPTER ONE: INTRODUCTION......................................................................................1
  1.1 Background to the study.........................................................................................1
  1.2 Problem statement ...............................................................................................4
  1.3 Justification of the study......................................................................................6
  1.4 Research questions...............................................................................................8
  1.5 Hypotheses .........................................................................................................9
  1.6 Research objectives .............................................................................................10
    1.6.1 Broad objective .............................................................................................10
    1.6.2 Specific objectives .......................................................................................10
  1.7 Significance of the study......................................................................................10
  1.8 Delimitation and limitation of the study...............................................................12
  1.9 Conceptual framework.......................................................................................13

CHAPTER TWO: LITERATURE REVIEW...........................................................................18
3.3.1 Choice of study sites .................................................................41
3.3.2 Presentation of the field of data collection .................................41
3.4 Target population........................................................................45
3.5 Inclusion and exclusion criteria....................................................45
3.5.1 Inclusion criteria .....................................................................45
3.5.2 Exclusion criteria ....................................................................45
3.6 Sample size determination............................................................46
3.7 Sampling and data collection procedures.......................................47
..........................................................52
3.8 Data collection techniques and measurements .................................53
3.8.1 Research instruments................................................................53
3.8.2 Measuring adherence to treatment ...........................................53
3.8.3 Measuring treatment outcomes ................................................57
3.8.4 Measuring the level of functioning ...........................................58
3.8.5 Measuring the extent of support and stress that patients perceive...........................................59
3.8.6 Calculation of the point prevalence .........................................60
3.8.7 Use of medical records (files)....................................................60
3.9 Pilot study, validity and reliability................................................61
3.10 Data Analysis.............................................................................62
3.11 Logistical and Ethical considerations..........................................62

CHAPTER FOUR: RESULTS AND DISCUSSION .................................65
4.0 Introduction..................................................................................65
4.1 Results.......................................................................................65
4.1.1 Socio-economic and demographic characteristics of participants ...............65
4.1.2 Prevalence of comorbidity of depression and other mental disorders ........68
4.1.3 Extent of perceived social support and social stress among patients ..........71
4.1.4 Factors influencing adherence to treatment ..............................................74
4.1.5 Level of functioning among patients ....................................................79
4.1.6 Relationship between treatment adherence and treatment outcomes .........81
4.2 Discussion of results ................................................................................85
4.2.1 Prevalence of comorbidity of depression and other mental disorders .......85
4.2.2 Extent of perceived social support and stress .........................................87
4.2.3 Level of functioning among patients ....................................................89
4.2.4 Factors influencing adherence to treatment ............................................90
4.2.5 Relationship between adherence to treatment and treatment outcomes ....91

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS ......................93
5.1 Conclusion ...............................................................................................93
5.2 Recommendations ..................................................................................94
5.2.1 Recommendations to the Ministry of Health and health program managers at the neuropsychiatric hospitals .................................................................94
5.2.2 Recommendations for further research ................................................95

REFERENCES ..................................................................................................97
APPENDICES .................................................................................................108
Appendix I: Research Instruments .................................................................108
Appendix II: The map of Rwanda .................................................................146
Appendix III: Approvals by Ethics Committees .............................................147
LIST OF TABLES

TABLE 1.1: NUMBER OF PATIENTS TREATED IN PSYCHIATRIC HOSPITALS FROM 2007 TO 2011..........................................................6
LIST OF FIGURES

FIGURE 1.1: CONCEPTUAL FRAMEWORK ....................................................17
### ABBREVIATIONS AND ACRONYMS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>BASIS</td>
<td>Behavior and Symptoms Identification Scale</td>
</tr>
<tr>
<td>CARAES</td>
<td>Caritate Aegrorum Servi</td>
</tr>
<tr>
<td>DF</td>
<td>Degrees of freedom</td>
</tr>
<tr>
<td>DALY</td>
<td>Disability Adjusted Life-Year</td>
</tr>
<tr>
<td>DCF</td>
<td>Department of Children and Families</td>
</tr>
<tr>
<td>DSM</td>
<td>Diagnostic and Statistical Manual of Mental Disorders</td>
</tr>
<tr>
<td>EMCDDA</td>
<td>European Monitoring Centre for Drugs and Drug Addiction</td>
</tr>
<tr>
<td>GAF</td>
<td>Global Assessment of Functioning</td>
</tr>
<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
</tr>
<tr>
<td>ICD-10</td>
<td>International Classification of Diseases -10</td>
</tr>
<tr>
<td>IRDB</td>
<td>Institute of Research and Dialogue for Peace</td>
</tr>
<tr>
<td>MhGAP</td>
<td>Mental Health Gap Action Program</td>
</tr>
<tr>
<td>MOH</td>
<td>Ministry Of Health</td>
</tr>
<tr>
<td>MPR</td>
<td>Medication Possession Ratio</td>
</tr>
<tr>
<td>N (%)</td>
<td>Number (Percentage)</td>
</tr>
<tr>
<td>P</td>
<td>P-value</td>
</tr>
<tr>
<td>PTSD</td>
<td>Post Traumatic Stress Disorder</td>
</tr>
<tr>
<td>RAMA</td>
<td>La Rwandaise d’Assurance Maladie</td>
</tr>
<tr>
<td>SD</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical Package for Social Sciences</td>
</tr>
<tr>
<td>T</td>
<td>t-test value</td>
</tr>
<tr>
<td><strong>Acronym</strong></td>
<td><strong>Full Form</strong></td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>UNODC</strong></td>
<td>United Nations Office on Drugs and Crime</td>
</tr>
<tr>
<td><strong>UNODCCP</strong></td>
<td>United Nations Office for Drug Control and Prevention</td>
</tr>
<tr>
<td><strong>US</strong></td>
<td>United States</td>
</tr>
<tr>
<td><strong>USA</strong></td>
<td>United States of America</td>
</tr>
<tr>
<td><strong>V</strong></td>
<td>Cramer’s V</td>
</tr>
<tr>
<td><strong>WHO</strong></td>
<td>World Health Organization</td>
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<tr>
<td><strong>χ²</strong></td>
<td>Chi-square</td>
</tr>
</tbody>
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OPERATIONAL DEFINITIONS OF KEY CONCEPTS AND TERMS

**Adherence to treatment:** the extent to which a patient follows the instructions that they are given for prescribed treatment. The adherence to treatment comprises a number of forms namely attending prescribed appointments, undergoing prescribed psychotherapy and other non-pharmacological treatments, taking correctly the prescribed medication, psychotropic drugs, while adhering to behavioral recommendations. In this study, a patient with an overall adherence score of greater than or equal to 80% was considered adherent optimally, between 50% inclusive and 80% exclusive was considered partial adherent and less than 50% was non-adherent (Haynes et al. 2002, Levensky and O’Donohue, 2006).

**Comorbidity:** the coexistence of two or more mental disorders in a patient (Maree and Heather, 2003).

**Depression:** a mood disorder characterized by profound and sustained feeling of sadness and lack of interest in previously enjoyable activities.

**Level of functioning:** considers psychological, social, and occupational functioning on a hypothetical continuum of mental health illness. It does not include impairment in functioning due to physical or environmental limitations. A patient is assigned a score between 0 (inadequate information) and 100 (superior functioning) by a clinician/physician indicating the symptom severity or level of functioning.
Mental disorders: comprise a broad range of problems, with different symptoms. However, they are generally characterized by some combination of abnormal thoughts, emotions, behaviour and relationships with others. Examples are schizophrenia, depression, PTSD, disorders due to drug abuse among others. Most of these disorders can be successfully treated.

Perceived social support: referred to a recipient’s (patient’s) subjective judgment that providers (family or non-family members) will offer or have offered effective help during the times of need.

Point prevalence: the prevalence measured at a particular point in time. It is the proportion of persons with a particular disease or attribute on a particular date.

Psychiatry: an art as well as a medical science concerned with mental processes of the individual, the interaction between the doctor, the patients and their relatives and workmates, in the process of identifying the problem and carrying out appropriate action. It is a medical specialty concerned with study, prevention, diagnosis and treatment of mental disorders (Ndetei, 2006).

Psychiatric hospital: a mental health facility that is primarily devoted to the specialized diagnosis, treatment and prevention of mental disorders. The three psychiatric hospitals
in this study are the national referral hospitals that offer specialized diagnosis and treatment of mental disorders in Rwanda.

**Social stress:** the stress that stems from one’s relationships with others and stress from the social environment in general.

**Stressful person:** the person who caused problems to patients or made their life more difficult.

**Supportive person:** the trustful person who was helpful to the patient, who listened to the patient and backed him up when the patient was in trouble.

**Treatment outcomes:** were defined as patient’s symptoms remission and improvement in global functioning in this study. The changes and progress made by the patient towards symptoms remission and improved global functioning were tracked using the Behaviour and Symptoms Identification Scale together with the Global Assessment of functioning Scale.
ABSTRACT

Mental disorders constitute a serious public health problem. Besides, the co-morbidities of mental disorders pose a major problem with regard to adherence and treatment outcomes. This pseudo-longitudinal study aimed to investigate adherence and treatment outcomes among patients with comorbidity of depression and other mental disorders attending psychiatric hospitals in Rwanda. A sample of 382 patients was selected using systematic random sampling from three neuropsychiatric sites. The first and second assessments of patients took place after two and four months from each date of recruitment respectively. Data was collected during interviews using validated semi-structured tools and scales and from medical records of patients and analyzed using SPSS. It was found that the point prevalence of comorbidity of depression and other mental or neurological disorders was 31.4%. Among these patients, 18.1% had comorbidity of depression and other mental disorders but without any neurological disorder and 12.3% had depression and other neurological disorders but without any other mental disorders and 1% had depression, other mental and neurological disorders. The mean perceived social support (31.4%) was low and some patients lacked the support they needed. The mean perceived social stress (11.5%) was also low but could have effects on specific patients who experienced it. The overall level of functioning among patients was 57±13.8 falling in the GAF interval of [51-60]. This means that on average patients had moderate symptoms or moderate impairments in functioning. The overall level of adherence to treatment was found to be 65.8%. This indicates that the patients did not adhere optimally to their treatment: only 32.5% of patients achieved optimal adherence (score ≥ 80%). This is a lower rate compared to developed countries. The t-tests and chi-square tests were undertaken. The significant factors (p<0.05) influencing (hindering or promoting) adherence to treatment were medication side effects, affordability of treatment regimen, poor fit between treatment requirements and patient’s lifestyles or daily routine, poor communication, attitudes of service providers, availability of appointment staff, comorbidity of depression and other disorders, being busy, forgetfulness, travelling, social support, problems in social environment, having relatives who were stressful to patients, having economic barriers to access healthcare services and stigmatization. A weak significant relationship between adherence to treatment and treatment outcomes was found (p<0.05). It was concluded that the patients do not adhere to treatment which could have a negative effect on treatment outcomes. The study recommended designing and implementing relevant interventions that can increase the number of patients who adhere optimally to treatment in order to have better treatment outcomes.
CHAPTER ONE: INTRODUCTION

1.1 Background to the study

Mental health is defined as a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community (WHO, 2010). It is more than the absence of mental disorders or disabilities; it is an integral part of health since “there is no health without mental health” (Prince et al., 2007). Mental health problems are recognized by the WHO as some of the leading causes of major morbidity and disability in the world (WHO, 2010; Njenga et al., 2005).

The people suffering from mental disorders form one of the most vulnerable groups in the world. They are often subjected to social isolation, poor quality of life and increased morbidity, disability and mortality (Njenga et al., 2005; WHO, 2010). These disorders cause immense suffering and the stigma associated to them is detrimental (Ndetei, 2006). The stigma not only affects the patients but also the family of the patient and all that are involved in the care of the patients, namely the health workers, institutions, services, treatments among others (Ndetei, 2006; WHO, mhGAP, 2008). The patients suffering from these disorders often have other medical and chronic conditions such as HIV/AIDS, cancer, heart and cardiovascular diseases, diabetes, gynecological and genitourinary conditions among others (WHO, 2010). This deteriorates the health status of the patients with mental disorders even more.
There are situations where a patient suffers from one disorder only but cases of comorbidity have also been reported in previous studies (Ndetei et al., 2008). The comorbidities worsen the health of the patient and affect the socio-economic situation of the patient and family. In addition to this, the treatment becomes difficult. The total recovery is hard to achieve as the patients relapse because of non-adherence to treatment which results in re-hospitalizations and further disabilities (Mueser and Gingerich, 2011). The relapses and re-hospitalization lead to the overuse of services and facilities which results in the increase in associated costs.

According to the WHO (2005) more than 450 million people worldwide suffer from mental or behavioral disorders. Chan (2010) noted that more than 150 million people suffer from depression, some 125 million people are affected by alcohol use disorders, as many as 40 million people suffer from epilepsy and 24 million from Alzheimer’s disease and other dementias, and nearly 1 million people take their own lives by committing suicide. The WHO (2006) estimates that neurological disorders and their sequelae affect as many as one billion people worldwide, and identified health inequalities and social stigma or discrimination as major factors contributing to the associated disability and suffering. As far as substance abuse is concerned, 4% of the global burden of the disease was attributed to alcohol (WHO, 2006). According to Rehm et al. (2003) alcohol was causally related to more than 60 International Classification of Disease codes and Room et al. (2005) noted that alcohol constitutes a serious public health problem. Worldwide, 185 million people were estimated to have used illicit drugs during 1998-2002 with cannabis being the most widely used illicit drug with 146.2 million users in 2002 (UNODC, 2004, UNODCCP, 2002).
Many mental, neurological and substance use disorders remain undiagnosed and untreated in many parts of Sub-Saharan Africa. This treatment gap and low quality of care in Sub-Saharan Africa are due to many constraints such as inability to recognize the related nature of these disorders, lack of comprehensive mental health policies, low quality data and research in mental health, limited diagnostic facilities, shortage of trained health workers, limited financial resources, stigma associated to the disorders, short supply of drugs, too expensive drugs to purchase, non-adherence to prescription regimens, lack of wide collaboration and cooperation in the care of patients among other challenges (Bruce et al., 2009). This treatment gap and burden leads to a situation whereby the families and patients have to rely on traditional healers. For instance, according to Abbo et al. (2008), an estimated 60-80% of individual with mental disorders in developing countries first seek care through traditional healers.

Binagwaho (2009) noted that data on mental health is widely missing in Rwanda. Although some studies on mental, neurological or substance use disorders have been carried out in Rwanda and beyond, the absence of substantive and published studies on comorbidities of mental disorders in Rwanda was noted and particularly the comorbidity of depression and other mental disorders which has great relevance in a country that experienced incredible and inhuman atrocities including the 1994 genocide against the Tutsi together with its deplorable consequences. In the context of Rwanda, there is a need to investigate some aspects of comorbidity of depression and other mental disorders such as anxiety disorders like PTSD, panic disorder, generalised anxiety disorder among other mental disorders. With the tragic history of Rwanda many people lost their relatives. It is possible that patients are confronted with family issues and lack the support they need from their immediate family members.
Although the Rwandan family has been severely affected by the war and 1994 genocide against the Tutsi together with their terrible consequences (Butera, 1999), there is evidence of lack of published research works on the support that families provide to their ill relatives. The level of social stress that the patients experience from their social environment, the adherence and treatment outcomes among patients suffering from mental disorders and their comorbidities have not yet been scientifically investigated in the Rwanda.

1.2 Problem statement

In order to enable the patients with mental disorders to have better treatment outcomes, accurate and comprehensive diagnosis of disorders and other health problems needs to be done where the bio-psycho-social model is mostly considered; appropriate treatments should be prescribed, administered and should be adhered to by patients. In addition to this, the patients should be followed-up by clinicians and the patients should be supported by family and non-family members along the illness journey towards recovery, rehabilitation and reintegration into meaningful roles in the community.

However, the above situation is not always the case in psychiatric hospitals in many developing countries including Rwanda. Due to the shortage of psychiatrists and neurologists, often the patients are diagnosed by generalist physicians with little or no specialized training in psychiatry or neurology. Besides, due to the increased number of patients every year and the small number of psychiatrists or neurologists, the patient is followed-up by different generalist physicians and sometimes psychiatric nurses. This situation disrupts the continuity of post-treatment assessments of adherence and response to treatment by the same clinician. It
affects the patient-provider relationship that has to be initiated here and then. Moreover, often the stabilized patients who are discharged are not always supported by family or non-family members in the community, which sometimes results into non-adherence to treatment, relapse and re-hospitalization. While the improvements in standard operating procedures, treatment guidelines and policies remain very important to achieve better treatment outcomes, the problematic of adherence to treatment among psychiatric patients merit the same attention. The previous studies done outside Rwanda reported that if the problem of poor adherence is not addressed, 30 - 40% of patients with depression will discontinue their medication early; 32 - 42% of patients with depression will not refill their prescriptions (WHO, 2003). The non-adherence to treatment leads to a number of negative clinical and economic consequences (WHO, 2003). The relapse and re-hospitalization often due to non-adherence to treatment may result into the overuse of services and resources together with increased associated costs. The non-adherence among psychiatric patients was significantly associated with decreased likelihood of achieving remission and recovery, increased risk of relapse and recurrence as well as hospitalization and suicide attempts (Hong et al., 2011). Roca et al. (2011) asserted that depression is associated with high rates of comorbidity with other psychiatric disorders. The researchers found that adherence rates were lower in depressive patients with psychiatric comorbidity than in patients without comorbidity (Roca et al, 2011). According to WHO (2013) People with mental disorders experience disproportionately higher rates of disability and mortality. For example, persons with major depression and schizophrenia have a 40% to 60% greater chance of dying prematurely than the general population. Between 76% and 85% of people with severe mental disorders receive no treatment for their disorder in low-income and middle-income countries (WHO, 2013).
Without effective diagnosis and management of disorders where comorbid conditions are identified and treated and where adherence to treatment and social support to patients are given special attention, there will be little improvements among patients. In fact, the cycle of hospitalization, treatment, discharge, relapse, re-hospitalization and treatment again, will never end for some patients and people will often wonder whether the treatments administered produce any good outcomes. There is therefore need to examine some clinical aspects of disorders like comorbidity of disorders, adherence and treatment outcomes which until now have not yet been scientifically studied in psychiatric hospitals in Rwanda. This study aimed to fill some of these gaps in knowledge by investigating the adherence and treatment outcomes among patients with comorbidity of depression and other mental disorders attending the psychiatric hospitals in Rwanda.

1.3 Justification of the study

Table 1.1 shows the number of patients consulted and treated in the psychiatric hospitals in Rwanda during the consecutive 5 years from 2007 to 2011 (Nkubili, 2007-2011).

<table>
<thead>
<tr>
<th>Year</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of patients</td>
<td>25830</td>
<td>31125</td>
<td>34951</td>
<td>36392</td>
<td>37644</td>
</tr>
</tbody>
</table>

Table 1.1: Number of patients treated in psychiatric hospitals from 2007 to 2011

It is noted that the number of people with mental and neurological disorders consulted and treated in the psychiatric hospitals in Rwanda is on the rise every year. Yet, Rwanda has only five psychiatrists and two neurologists. Among the health workers of the Ndera Neuropsychiatric hospital and its branches, there were only one psychiatrist, one full time neurologist and 4 clinical psychologists in 2012. Thus, the number of clinicians in psychiatric
hospitals in Rwanda is small compared to the number of in- and out- patients since the hospitals treat more than 300 in-patients and about 100 out-patients every day. The insufficiency of qualified and specialized clinical staff and the rising number of patients imply that there is little time to assess the patient and the possibility of clinical staff being overloaded. These few clinicians therefore concentrate on clinical practice which prevents them from directly contributing to the clinical research output on mental health in Rwanda.

The other stakeholders in the field of mental healthcare in Rwanda had not yet investigated the treatment outcomes among patients neither in terms of improvements (remission) nor in terms of cured, not cured or death. They had not yet estimated the extent of perceived social support and social stress which have potential influences on adherence to treatment, recovery, rehabilitation and reintegration of patients with mental illness. Yet, among the 37,644 patients treated in 2011 in psychiatric hospitals in Rwanda, 34,238(91%) patients were old cases who have been under treatment for many months if not for years for some patients. Some of them may have experienced relapse and re-hospitalization. This study contributed to filling this information gap on some aspects of adherence and treatment outcomes. It shed light on these few mental healthcare related issues in order to produce some evidence needed to find lasting solutions.

The US National Co-morbidity Survey (American Psychiatric Association, 2000) found that the life prevalence of at least one mental disorder among the US population was 48%. It was also found that of these people who experience mental illness in their lifetime, 27% will experience more than one mental disorder. In this US study, the average of 2.1 mental disorders per person was also found. In Rwanda, the prevalence of different types of
comorbidity or co-occurrence of mental disorders is not known, be it in the general population or in clinical samples. Yet, many researchers and health professionals affirmed that knowledge of the types and comorbidities of mental disorders seen in any facility is useful for clinical practice and for planning for services (Ndetei et al., 2008). In studies done outside Rwanda, the comorbidity of mental disorders has been found to have various negative consequences including non-adherence to treatment, poor treatment outcomes, overuse of services and increased associated costs among others. This affects not only the patient’s health and quality of life but also the households’ incomes, the community resources and the economy of the country in general. It is therefore necessary to know the magnitude of comorbidity of mental disorders so as to cater for its bad consequences.

Another reason why this study chose to specifically investigate the comorbidity of depression and other mental disorders was that mental disorders account for 13% of the global burden of disease and this figure will rise to nearly 15% by 2030 where depression alone is likely to be the second highest contributor to the global burden of disease by that date (WHO, 2006). In addition to this, the studies done outside Rwanda have shown that depression is known to be the most comorbid mental disorder which is related to non-adherence to treatment and yet the WHO (2003) claimed that solving the problem of non-adherence would be more beneficial than any medical discovery.

1.4 Research questions

This study sought to answer the following research questions:

1. What is the point prevalence of comorbidity of depression and other mental disorders among patients attending psychiatric hospitals in Rwanda?
2. What is the extent of perceived social support and social stress among patients attending psychiatric hospitals in Rwanda?

3. What are the factors that influence adherence to treatment among patients attending psychiatric hospitals in Rwanda?

4. What are the levels of functioning among patients attending the psychiatric hospitals in Rwanda?

5. What is the relationship between the adherence to treatment and treatment outcomes among patients attending the psychiatric hospitals in Rwanda?

1.5 Hypotheses

This study tested the following null hypotheses:

1. The patients attending psychiatric hospitals in Rwanda do not adhere optimally to their treatment.

2. The treatment regimen, clinical setting, patient-provider relationship, social support, social stress and individual characteristics of the patient are not associated with adherence to treatment among patients attending the psychiatric hospitals in Rwanda.

3. The patients attending psychiatric hospitals in Rwanda do not have a high overall level of functioning without some serious impairment in functioning.

4. There is no relationship between the adherence to treatment and treatment outcomes among patients attending the psychiatric hospitals in Rwanda.
1.6 Research objectives

1.6.1 Broad objective

The main objective of this study was to investigate the adherence and treatment outcomes among patients with comorbidity of depression and other mental disorders attending psychiatric hospitals in Rwanda.

1.6.2 Specific objectives

1. To determine the point prevalence of comorbidity of depression and other mental disorders among patients attending psychiatric hospitals in Rwanda.

2. To determine the extent of perceived social support and social stress among patients attending psychiatric hospitals in Rwanda.

3. To determine the factors that influence adherence to treatment among patients attending psychiatric hospitals in Rwanda.

4. To assess the levels of functioning among patients attending the psychiatric hospitals in Rwanda.

5. To establish the relationships between the adherence to treatment and treatment outcomes among patients attending the psychiatric hospitals in Rwanda.

1.7 Significance of the study

For the first time, this study generated useful information that can be used to plan for services and to improve the clinical practice in Rwanda. The magnitude of comorbidity of depression and other disorders, the levels and rates of adherence to treatment, the relationship between adherence to treatment and treatment outcomes and the extent of perceived social support and stress among patients attending psychiatric hospitals in Rwanda were documented. This study
has therefore filled some information gaps. Other researchers will use its findings to validate their findings in the future. The findings of this study can be used in the clinical management of patients. This can improve the treatment outcomes which can reduce the costs associated with mental healthcare and the burden of disease to patients, caregivers, families and other stakeholders.

This study fulfilled some roles of the evaluation of health programs. It produced a basis on which the stakeholders involved in mental health care in psychiatric hospitals in Rwanda can evaluate some of the outcomes of their efforts especially as far as adherence to treatment and treatment outcomes are concerned. Once this is done, the appropriate strategies should be adopted to maintain good practices and to address areas that need improvements in order to reach even better results.

The results of this study will help in the formulation of evidence-based policies, programs, projects and strategies that enhance the patients’ quality of life and overall health satisfaction. When sound policies are put in place, the proper practice centered on the patient as a key stakeholder in mental healthcare may follow. In the absence of evidence-based policies, the stakeholders are left wondering without knowing the best direction to take.

The results of this study and the subsequent publications and disseminations would be useful in advocating for the patients and their families together with all that are involved in mental health care. The appropriate and evidence-based recommendations were made at the completion of this study. The implementation of such recommendations will result in the promotion of the wellbeing of patients and their families. This study laid the foundation for
practical interventions in the future by the researcher in collaboration with other people concerned about the fate and suffering of people with mental and neurological disorders.

1.8 Delimitation and limitation of the study

Galbaud et al. (1993) remarked that comorbidity might be more prevalent in clinical samples and it is important to study patterns of comorbidity between different mental disorders in general population samples. However, it would be extremely difficult to carry out this study in the general population, primary health care facilities and even in district hospitals as reporting, examinations and diagnosis on mental disorders are very limited due to various reasons including stigma, unspecialized or insufficient staff, lack of enough experience, diagnostic equipments and machines among others. The researcher chose to conduct a hospital-based study and strictly adhered to methodological guidelines and differential diagnosis principles in order to address this limitation.

It would have been useful to do a longitudinal study over longer periods of time, say some years, to determine the treatment outcomes in terms of cure, not cure or death. However, due to time limitation, the data collection covered the period from May to October, 2012 and the treatment outcomes were studied in terms of symptoms reduction and control together with the levels of functioning among patients, which is a valid approach in psychiatric research.

It was deemed absolutely useful to translate some of the tools in French or Kinyarwanda due to English language limitation for some respondents. The experts in translation and mental health were consulted during the translation. Besides, the main investigator, who was proficient in English, French and Kinyarwanda languages, selected the research assistants
who were qualified in Clinical Psychology or mental health and who had proficiency in English, French and Kinyarwanda. This allowed the main investigator and his research assistants to maintain the original meaning of questions in the research instruments during data collection.

1.9 Conceptual framework

The previous studies (e.g. WHO, 2003) and literature have shown that among the factors that may influence adherence to treatment in a given setting or population, there were those that are related to treatment regimen itself, those that are related to the clinical setting, to the patient-provider relationship, to social stress and support, and those that are related to the patient himself or herself. Thus, the treatment adherence is a complex issue that may be hindered or promoted by a variety of factors. In addition to this, it can be conceptualized that treatment adherence influences treatment outcomes, and vice-versa. Often, people will adhere to their treatment when they perceive good treatment outcomes. In other words, the treatment outcomes may also influence the adherence to treatment. The arrows in Figure 1.1 below connote the direction of such influences. The arrows show the major groups of factors that are likely to influence adherence to treatment and the hypothesized two-way relationship between adherence to treatment and treatment outcomes among the patients.

This study classified the variables that may influence (hinder or promote) the adherence to treatment. The data was collected on these variables to determine those which were statistically significantly associated with the adherence to treatment in this study population and setting. The classification adopted in this study was as follows:

The treatment-related variables included:
• side effects associated with medication

• complexity of regimen

• affordability of medication regimen

• availability of medication regimen

• having difficulties to fit between treatment requirements and patients’ daily activities

• having difficulties to fit between treatment requirements and patients’ lifestyles

• having difficulties to fit medication dosages into daily routine

• duration of treatment up to recruitment date to participate in the study

The variables related to clinical setting and patient-provider relationships were:

• hospital hours of operation

• waiting period for services

• availability of appointment staff

• patient’s satisfaction with the quality of communication with services providers

• patient’s satisfaction with the attitudes of health workers

• patient’s satisfaction with overall quality of services

The Patient-related variables included:

• having comorbidity of depression and other disorders

• presence of other symptoms of health problem that interfere with adherence

• patient’s satisfaction with the extent of perceived recovery
• being comfortable taking medication in front of others
• patient believes that medication is effective
• patient forgets to take medication
• being too busy with other things to miss medication
• patient is sometimes away from home and misses doses (travelling)
• patient oversleeps and misses medication
• patient’s understanding of importance of adherence

The social or environmental variables that were analyzed to see their influence on adherence to treatment were:

• having problems in social environment
• the person who manages medication
• social support
• social stress
• patients have relatives who stress them
• patients have people outside their families who stress them
• being stigmatized
• having problems with (barriers to) access to healthcare services

Figure 1.1 below shows the different groups of variables that may influence adherence to treatment and the hypothesized relationship between adherence and treatment outcomes among patients with one or more co-occurring mental disorders. These variables can be
derived from the well-known and most frequently used model in studies of health behavior and adherence (Leventhal et al., 1984) that is the Health Belief Model (Rosenstock, 1974) and from a wide body of literature on adherence to treatment and treatment outcomes.
Factors related to the treatment regimen

Factors related to the clinical setting

Factors related to patient-provider relationship

Social support and social stress

Factors related to the patient

Adherence to treatment

Treatment outcomes

Independent and intermediate variables

Dependent variables

Figure 1.1: Conceptual Framework
CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

In this chapter the review of literature related to this study is presented. The chapter covers the previous studies done on mental disorders, comorbidity of depression and other disorders, adherence to treatment, treatment outcomes, among other relevant aspects to the objectives, research questions and hypotheses of this study.

2.1 Mental disorders

According to the WHO (2007), mental disorders are “psychiatric illnesses” which appear primarily as abnormalities of thought, feeling or behavior, producing either distress or impairment of function. DSM- IV Axis I includes clinical disorders which include major mental disorders, learning disorders and substance use disorders and axis II include personality disorders and intellectual disabilities. Mental disorders can be classified as mood disorders, anxiety disorders, adjustment disorders, schizophrenia and other psychotic disorders, somatoform disorders, dissociative disorders, personality disorders, alcohol and other substance related disorders, sexual disorders among others. Mental disorders include clinical depression, bipolar disorder, schizophrenia, psychosis, generalized anxiety disorder, panic disorder, agoraphobia, phobic disorders, PTSD, alcohol and other substance-related disorders, sexual dysfunction, antisocial personality disorder, obsessive-compulsive personality disorder, paranoid personality disorder among others (DSM-IV-TR, ICD-10).
2.2 Depression and other disorders

According to the WHO, depression is a prevalent mental disorder affecting more than 150 million people worldwide. It presents with depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy, and poor concentration (WHO, 2010). The problems associated with depression can lead to substantial impairments in an individual ability to take care of his or her everyday responsibilities and at its worse, depression can lead to suicide, a tragic fatality that is associated with the loss of about one million lives every year (WHO, 2010). In 2000, depression was a leading contributor to the global burden of disease and it is projected that by the year 2020, depression will reach the second place of the ranking of DALYs calculated for all ages (WHO, 2010). The WHO further reported that fewer than 25% (in some countries fewer than 10%) of those affected by depression have access to effective treatments, yet the antidepressant medication and brief, structured forms of psychotherapy are effective for 60-80% of those affected (WHO, 2010). Shekhar (WHO, 2010) estimates that nearly 95 million people with depression living in developing countries do not receive any treatment or care. According to Ndetei (2006) the lifetime prevalence of depression is 8-12% for men and 20-26% for women. About 12-20% of individual who experience an acute episode of depression will develop a chronic depressive syndrome mainly due to inappropriate diagnosis and wrong drug management, and 15% of those who suffer from depression will eventually die of suicide (Ndetei, 2006).

The burden of mental and neurological disorders is significant in Sub-Saharan Africa where the majority of the World’s poorest countries are found. For instance the burden of epilepsy, depression, drug and alcohol abuse affect the lives of millions of Africans, disrupting the daily course of life, challenging families and weighing on the social and economic fabric of
the region (Prince et al., 2007). Mental disorders such as depression, substance use disorders, seizures and psychological conditions carry social stigma in all parts of the world and more so in Africa where simple changes in behavior such as confusion can be seen as madness and seizures can be seen as possession by evil or angry spirits (Baskind and Birbeck, 2005). According to Acuda and Kuria (2005), alcohol is by far the most frequently used and abused psychoactive substance in Sub-Saharan African countries with 20% of psychiatric hospital admissions and 20-30% of admissions in general medical wards having alcohol dependence problems. Despite the seriousness of mental disorders, Gureje (2009) noted that only approximately half of the countries in Sub-Saharan Africa have mental health policies in place, which in most cases are outdated.

Mental and neurological disorders are also prevalent in Rwanda (MOH, 2009). Some studies have been done on mental or neurological disorders in Rwanda where PTSD and other trauma related studies have received much attention in recent years. In a study on somatic panic-attack equivalents in a community sample of Rwandan widows who survived the 1994 genocide, Hagengimana et al. (2003) found that the rate of panic disorder was 35%. In their research on trauma and PTSD symptoms in Rwanda, Pham et al. (2004) found that among the 2091 participants who survived the 1994 genocide, 24.8% met the symptom criteria for PTSD. In a study to determine the prevalence of PTSD disorder and depression in HIV-infected and at-risk Rwandan women, Cohen et al. (2009) found that PTSD was prevalent in HIV-positive (58%) and HIV-negative women (66%). They further reported that women with HIV had a higher prevalence of depressive symptoms than HIV-negative women (81% vs. 65%, p <0.0001). Sebera and Nyariamazaire (2006) found that the prevalence of epilepsy, which is a neurological disorder, was 4.9% in Rwanda.
2.3 Comorbidity of depression and other disorders

A patient may be diagnosed with one, two or more disorders. In this study, comorbidity will refer to the co-occurrence of two or more disorders in a patient (Maree and Heather, 2003). Thus, the comorbidity of depression and other mental disorders can be defined as the co-occurrence of depression and one or more other mental disorders.

Ndetei (2010) noted that people who are depressed or have other psychiatric conditions, especially schizophrenia, are likely to drift to cannabis use and that those who use the drug on a long-term basis are at double risk of developing a mental disorder especially if they are genetically predisposed or have a family history of drug use. In the study on comorbidity of major depression and anxiety disorders: recognition and management in primary care in USA, Robert and Hirschfeld (2001) found that between 10% and 20% of adults in any given 12-month period will visit their primary care physician during an anxiety or depressive disorder episode, and more that 50% of these patients suffered from a co-morbid second depressive or anxiety disorder (Robert and Hirschfeld, 2001).

Lowe et al. (2008) reported that more than 50% of the clinical population diagnosed with anxiety disorder was simultaneously diagnosed with depression where panic disorder, generalized anxiety disorder, PTSD, obsessive compulsive disorders and some phobias were the most co-morbid anxiety disorders with depression (DSM-IV). In the study done in Korea on the comorbidity of PTSD and depression, Ikin et al. (2010) found that 75% of veterans met the criteria for comorbid PTSD and depression, 15% has PTSD without depression and a further 6% had depression without PTSD.
Other studies have shown the comorbidity of schizophrenia and other mental disorders with mood disorders being the most prevalent (Escamilla, 2001). According to Siris (2001), the patients with schizophrenia are more likely than the general population to experience depressive symptoms. The American Psychiatric Association (2000) in its National Comorbidity Study reported that 59% of patients with schizophrenia met the DSM-IV criteria for major or minor depression. Other studies have reported the rates of occurrence of depression in schizophrenia between 7% (Siris, 2000) and 75% (Koreen et al., 1993). Siris (2000) reported that the modal rate of depression in schizophrenia for all study reports was 25%.

According to DSM-IV, all depressive states occurring any time after a psychotic episode would qualify as postpsychotic depression while diagnosing postpsychotic depression using ICD-10 requires that depressive symptoms develop within a year period following the acute psychotic episode. Jeczmien (2001) remarked that often postpsychotic depression can be mistaken for extrapyramidal-like symptoms as the secondary effect of antipsychotic medication. Iqbal et al. (2004) noted that postpsychotic depression can occur independently of the symptoms of schizophrenia.

Iqbal et al. (2000) found that during the months prior to the development of postpsychotic depression, the patients developed greater loss, humiliation and feelings of entrapment in comparison to those who relapsed and did not develop depression. These researchers also found that patients who developed a postpsychotic depression were also more likely to see themselves in a lower status with lower self-esteem, better insight and a heightened awareness
of the diagnosis (Iqbal et al., 2004). Wittmann and Keshavan (2007) observed that grief and mourning occur in patients with schizophrenia and depression following the first episode of psychosis as the patients attempt to actively cope with their realization of their illness. For Siris (2000) dysphoria and demoralization were often the main presentations of clinically significant depressive symptoms in patients with schizophrenia once psychotic symptoms were stabilized.

Siris (2000) noted that the occurrence of the phenomenology of depression in a substantial percentage of patients with schizophrenia (as well as psychosis in patients with depression) has kept alive the twin issues of the appropriate descriptive boundaries between the two disorders and the best approaches to treatment, antipsychotic agents or antidepressants. According to Felmet et al. (2011), the diagnosis and treatment of patients with schizophrenia and co-occurring depression is challenging for both clinicians and researchers due to the overlap of symptomatology between depression and depressive disorders.

In a study done in Iran to assess mood, anxiety and psychotic disorders in patients with epilepsy, Amir et al. (2006) found that the lifetime prevalence of major psychiatric disorders including mood, anxiety and psychotic disorders was 68.3% in individual with epilepsy and 36.7% in controls without epilepsy. Major depressive disorder was the most prevalent co-morbidity with 33% while obsessive-compulsive disorder and depressive disorder not otherwise specified were in the second and third ranks with 20% and 13.3% respectively (Amir et al., 2006). Pruerter and Norra (2005) also found that depression was the most prevalent psychiatric co-morbidity with epilepsy. In another study to determine the psychiatric disorders associated with Epilepsy, Vuilleumier and Jallon (1998) estimated that
20-30% of patients with epilepsy have psychiatric disturbances with the most prevalent disorders being depression, anxiety and psychoses.

The comorbidity of depression and headache disorders was reported in Italy by Beghi et al. (2007) where MINI interview detected a depressive episode in 59.9% of patients with migraine, 68.3% of patients with tension-type headache and 69.6% of patients with combined migraine and tension-type headaches.

2.4 Comorbidity and functioning

It is generally known that the comorbidities of mental disorders cause poor functioning and disability (Maree and Heather, 2003; Gordon, 2008; WHO, 2007; WHO, 2010). In a study on prevalence, comorbidity, disability and service utilization in Australia, Gavin et al. (2001) found that comorbidity was associated with disability and service use. Phillips et al. (2009) found in a study done in China that among individuals with a diagnosable mental illness, 24% were moderately or severely disabled by their illness. In a study on disability associated with psychiatric comorbidity and health status in Bosnia refugees living in Croatia, Mollica et al. (1999) found that 25.5% of participants had disability. It was also found that refugees who reported symptoms co-morbid for both depression and PTSD were associated with an increased risk for disability compared with asymptomatic refugees and old age, cumulative trauma and chronic medical illness were also associated with disability.

2.5 Comorbidity and families of patients

The patient and family history, past and ongoing social and relationship issues, living and financial circumstances, and any other ongoing stressful life events are some of the important
elements to consider during assessment of mental disorders in patients (WHO, 2010). The WHO (2010) advised to use family and community resources to contact people who have not returned to hospitals for regular follow-up, to be sensitive to social challenges that the patient may face and note how these may influence the physical and mental health and wellbeing, to involve the family member in the person’s care and to encourage involvement in self-help and family support groups. Besides, McGraw (1980) defined the family as the only department of health, education and welfare that works. She stated that the family is the vital center of development for individual, a function that cannot be duplicated or replaced by any other institution. The family provides day-to-day reality that is authentic in human experience and hence it plays an important role in the mental wellbeing of the individual in the African society (Njenga, et al., 2005).

According to Njenga et al. (2005), people with mental disorders are at increased risk of drug and alcohol abuse which are precursor of violence at home. The researchers noted that there was evidence of pressure on African family to modernize, become nuclear and hence westernize while on the other hand there was a powerful force in the opposite direction to retain and respect tradition. In addition to this, there are many challenges that families have to face today in Africa. These include abuse, infidelity, irresponsibility and other dysfunction, poor communication and relationships, ignorance among others which can be risk factors for major depression. Indeed the family should play an important role in the treatment and rehabilitation of people with mental disorders by changing the attitudes towards mental disorders, reducing stress on ill members, supporting attempts at reintegration into a meaningful social role (WHO, 2010, Njenga et al., 2005).
A synergy between health service providers and the family is unavoidable if good treatment outcome is to be achieved (Maree and Heather, 2003). The patients with comorbidity of depression and other mental disorders live in families. These patients need enablers that can include spouse, children, other family members, friends, and co-workers to help them recover from the disorders. The patients with a co-morbid condition place a heavy burden on a range of public services (Hall, 1996) but also on their families. Severe psychotic disorder and substance misuse may be accompanied by a range of social issues such as homelessness, poverty, criminality, unemployment and marginalization (Hodges et al., 2006). With these social issues among others, the family should remain the primary source of social support to patients.

2.6 Comorbidity and adherence to treatment

Adherence can be defined as the extent to which patients follow instructions they are given for prescribed treatments (Haynes et al., 2002). Adherence has replaced the term compliance which has been judged to suggest passivity and obedience on the part of patients. The term adherence implies patient-provider collaboration and an active role of patients in their treatment (Rogers and Bullman, 1995).

According to Levensky and O’Donohue (2006), non-adherence to treatments can take a number of forms namely not attending or coming late to appointments, not initiating a recommended treatment, not completing behavioral recommendations or homework such as increases in physical activities, changes in diet, self-monitoring, in vivo exposure and relaxation exercises, not taking medication as prescribed which include taking too many or too few pills, taking medication at incorrect times, not following dietary restrictions, and
terminating the treatment prematurely. Levensky and O’Donohue (2006) recommended that when studying regimen adherence, it is important to assess the patterns of adherence which are never initiating the regimen, discontinuing the regimen, regimen holidays, adherence tracking with symptoms experience and non-adherence with no apparent pattern. When a patient never initiates the regimen, it means that he/she does not take a single dose of the regimen. Some other patients will start the regimen, follow it for a while but stop it later and never resume it. The other situation of regimen holiday is that in which a patient stops the regimen for some period of time and then resumes. A patient may also adhere differently based on whether he or she feels better or worse. The case of no apparent pattern is that pattern of doses taken is erratic and unpredictable (Levensky and O’Donohue, 2006).

The comorbidity of some disorders has been associated with premature discontinuation of treatment, earlier relapse, poorer treatment response, and worse long-term outcome (Zikos et al., 2010). The consequence of non-adherence to medical and behavioral health treatments is often that the beneficial impact of potentially effective treatments is reduced, and substantial and unnecessary health, social and financial costs are incurred (Christensen, 2004).

2.7 Factors influencing adherence to treatment

Levensky and O’Donohue (2006) noted that the factors related to non-adherence to treatment include those related to the patient, those related the treatment regimen itself, those related to features of the disease or target problem such as comorbidity, those related to the patient-provider relationship and those related to the clinical setting.
Among the factors related to the patient, lack of knowledge of treatment requirements, cognitive, language or literacy deficits, lack of self-management and coping skills, lack of tangible resources including financial, housing and transportation, stressful life events like death of a loved one and ending of important relationship, inadequate social support, side effects to the patient, fear of stigma for health problem among others can be cited.

The treatment may also be highly complex and demanding such as in the case of large number of pills to be taken, long duration, high cost and frequent and severe side effects of treatment regimen. When there is a poor fitting between treatment requirements and patient’s lifestyle and daily activities such as eating and sleeping patterns, work schedule, social life and other daily activities, then non-adherence to treatment may follow (Levensky and O’Donohue, 2006).

Among the factors related to the disease itself, Levensky and O’Donohue (2006) reported the level of seriousness of the health problem, long-term duration of the health problem, lack of symptoms, or symptoms interfering with adherence such as problems with memory, mobility or vision can be given as examples.

Poor communication between patient and provider, lack of trust and/or comfort with provider are few of non-adherence factors related to the patient-provider relationship. The factors related to the clinical setting include poor accessibility of services, availability of appointment staff, hours of operation, wait time for services, unfriendly or unhelpful staff among others (Levensky and O’Donohue, 2006).
In a study to elucidate predictors of non-adherence among psychiatric patients presenting at a tertiary care hospital of Pakistan, Fawad et al. (2008) found that out of 128 patients, those with medical comorbidity represented 32.8% and were less adherent than those without comorbidity (p=0.002). They also found that the reasons for non-adherence included sedation (30%), medication cost (22%), forgot to take medication (36%) and inability of the physicians to explain the timing and dose (92%) or benefit of medication (76%).

2.8 Comorbidity and socio-demographic factors

It is important to determine the socio-demographic factors associated with comorbidities of mental disorders if interventions targeting the most vulnerable subgroups of the population are to be planned and implemented.

In a study on prevalence, treatment and associated disability of mental disorders in four provinces in China during 2001-2005, Phillips et al. (2009) found that rural residents were more likely to have depressive disorders and alcohol dependence than were urban residents. Besides, alcohol use disorders were 48 times more prevalent in men than in women. In addition to this, mood disorders and anxiety disorders were more prevalent in women than in men, and in individuals 40 years and older than in those younger than 40 years. In another study to determine the socio-demographic factors associated with co-morbid major depressive episodes and alcohol dependence in the general population, Wang and El-Guebaly (2004) found that young age (12-24 years), single marital status (divorced, separated and widowed) and low family income were potential risk factors for co-morbid major depressive episodes and alcohol dependence. In a 12-month comorbidity patterns and associated factors in Europe, Alonso et al. (2004) found that associated factors for comorbidity of mood and anxiety
disorders were female gender, younger age, lower educational level, higher degree of urbanicity, not living with a partner and unemployment. They also found that only younger people were at greater risk for comorbidity of alcohol disorder with mood, anxiety disorders or both. In a study to determine the burden of comorbidity among the homeless at a drop-in clinic, Lundy (1999) found that comorbidity was significant with 20% patients reporting all the three types of pathology namely physical, mental health and substance abuse. Besides, the homeless patients were at high risk of two or more co-morbid conditions if they lived in an emergency shelter or on the street as opposed to living with family or friends.

2.9 Comorbidity and treatment outcomes

According to studies, patients with comorbidity have a poor prognosis and poor treatment outcome. The most consistent predictor of poor outcome for clients in treatment for substance misuse is the presence of psychopathology (Rounsaville et al., 1987). Similarly, substance misuse is a predictor of poor treatment for mentally ill patients (Carey et al., 1991). Researchers have observed that cases of self-destructive and antisocial behaviors may develop in extreme situations, leading to homelessness, disengagement from family and community, and the presentation of high risk behaviours such as offending, intravenous drug use, needle-sharing, suicide attempts, unsafe sex, and binge consumption (Murray et al. 1999). All these factors contribute to increased risk of early mortality (Evans and Willey, 2000). Swofford et al. (1996) found that comorbidity was associated with high rates of relapse and Linszen et al. (1994) found that it was associated with re-hospitalization. The violence, arrest, imprisonment, homelessness and poor housing stability were also negative factors associated with comorbidity (Clark et al., 1999; Osher et al., 1994). In a study to determine the influence of psychiatric comorbidity on recovery and recurrence in generalized anxiety disorder, social
phobia and panic disorder, Bruce et al. (2008) reported that the overall clinical course was worsened by several co-morbid psychiatric conditions, including major depression and alcohol and other substance use disorders, and by comorbidity of generalized anxiety and panic disorder with agoraphobia. It was also found that the presence of particular co-morbid psychiatric disorders significantly lowered the likelihood of recovery from anxiety disorders and increased the likelihood of their recurrence.

The studies have revealed that integrated treatment that is provided in a mental health or a substance misuse service or in a special comorbidity program or service yielded better outcomes than sequential or parallel treatment (Drake et al., 1998, 2000). Integrated treatments are based on the notion that a single tailored program caters for both mental health and substance misuse issues by the same specialist clinicians (Drake et al., 2000).

2.10 Assessment of adherence

The assessment of adherence is a complex task that requires a creative approach to measure the levels of patients’ adherence to treatment since there is no gold standard by which adherence to treatment can be quantified (Farmer, 1999) with the exception of actually observing individuals taking their medication (Bosworth, 2006). Besides, according to Bosworth et al. (2006), measurement issues may vary with the disease being studied. For instance, to receive benefits for HIV/AIDS treatment requires complete adherence, whereas the patients with many chronic diseases can miss some medication doses and still receive the benefits (Bosworth, 2006). In addition to this, adherence to medication is not a dichotomy and patients can demonstrate a wide variety of patterns of medication use (Bosworth, 2006). Given the various challenges to conceptualizing and measuring regimen adherence, it is not
surprising that research reviews find wide ranges of adherence among patients, ranging from 0% to over 100% (overuse) with 50% adherence being an average (Haynes et al. 1996; Eraker et al., 1984; Rudd, P., 1995). A commonly used, but arbitrary measure of optimal adherence has been 80% (Haynes et al., 1976; Psaty et al., 1990).

In a study by Woltmann et al. (2007), the Medication Possession Ratio (MPR) was calculated for each medication, and in the event of concurrent prescriptions for multiple antipsychotic medications, the weighted average of the MPRs was computed. Besides, in their methodology, the patients were given credit for "days adherent" for days spent in inpatient hospitalization. Patients who received less than 80% of antipsychotic medication were considered to have partial adherence. Researchers noted that although published reports do not yet suggest a specific threshold at which partial adherence with antipsychotics becomes problematic, taking 80% or more of one's prescribed medications has often been used as a traditional cutoff point for "good adherence" (Gilmer et al., 2004; Osterberg and Blaschke, 2005). This cutoff point of 80% will be chosen for optimal adherence in this study.

According to Velligan et al. (2009), experts endorsed a percentage of medication not taken as the preferred method of defining adherence, with 80% or more of medication taken endorsed as an appropriate cut-off for adherence in bipolar disorder and schizophrenia. Besides, Velligan et al. (2009) noted that although self-and physician report are the most common methods used to assess adherence in clinical settings, they are often inaccurate and may underestimate non-adherence. Hence, the experts recommended that if possible, clinicians also use more objective measures such as pill counts, pharmacy records, serum levels, validated self-reports among others (Velligan et al., 2009).
2.11 Assessment of treatment outcomes

In psychiatry, there is often a combination of pharmacological and non-pharmacological treatments which include various forms of psychotherapy among others. Treatment outcome measurement is more complicated due to difficulties in tracking clients post-treatment and a lack of clarity on what measurement indicators to use (McCaffrey, 1996). For example, some of the results and outcomes that define the effective treatment outcomes among drug users include reduced use of primary drug, improved functioning of drug users in terms of employment, improved educational status, improved interpersonal relationships, improved medical status and general improvement in health, improved legal status, improved mental health status and improved non-criminal public safety factors (McCaffrey, 1996; Gerstrein, 2004). The treatment outcomes among patients with mental disorders and their comorbidities can be studied in light of the chronic and relapsing nature of the disorders, that is, not in terms of cure versus failure to cure during the course of treatment but in terms of the extent of remission and the degree of improvement and functioning over time (Gerstrein, 2004). This is one of the reasons why the regular assessment of functioning is required to identify symptoms which impair functioning and take appropriate action to restore normal functioning in various dimensions of health and life.

2.12 Factors predisposing Rwandans to depression and other disorders

The DSM-IV multi-axial classification in its Axis IV shows that the psychosocial and environmental problems may predispose individuals to mental disorders, may trigger the start of mental illness or worsen the patient’s health condition. These factors may also affect the diagnosis, treatment and prognosis of mental disorders (Ndetei et al., 2006).
Ndetei et al. (2006) noted that the problems with the primary support group due to death of a family member, health problems in the family, disruption of family by separation or divorce, remarriage of parent, sexual or physical abuse, child neglect, and discord with siblings are among those psychosocial and environmental problems that should merit the attention of health workers. In addition to this, the authors mentioned problem related to social environment, educational problems, occupational problems, housing and economic problems, problems with access to health care services and those related to interaction with legal system, exposure to disaster, war and other hostilities as key factors that may affect the mental health of people (Ndetei et al., 2006).

In the Rwandan context, all these serious psychosocial and environmental problems are prevalent. Since 1990, Rwanda was in a period of civil war. In these years, there were some internally displaced persons. In 1994, the people were slaughtered in an unforgettable horrible genocide against the Tutsi. The children who experienced genocide in Rwanda are currently young adults. It is not surprising if some of them are mentally disturbed today given the magnitude of such atrocities that affected them in one way or another at a tender age. The genocide against the Tutsi was followed by a massive exodus of internally displaced persons in Rwanda. The thousands if not millions of Rwandans fled the country to take refuge in the Democratic Republic of Congo, and other neighboring countries like Tanzania and Burundi where they lived in refugee camps. They later experienced the wars in the Democratic Republic of Congo that followed this period. A massive return of refugees to Rwanda took place in those years.
The Rwandans of all age groups lived in inhuman conditions during those years. There were considerable number of cases of rape, sexual and physical abuse, the violations of human rights and international humanitarian laws. Rwanda had a big number of orphans, widowers, widows, prisoners, homeless, separated families among other situations that none would wish any other country to experience.

There was much suffering and pain among Rwandans. Many people lost their dear relatives. The houses were burnt, property was destroyed and people lost their jobs and other opportunities they had before. The health workers were killed and many health facilities demolished. The neighbors became enemies to some extent since it was too much to bear for many Rwandans. There was need for some to reconsider remarrying or to remain in an imposed single marital status by the events they had no control over. A number of Rwandans remarried and in some cases remarriage brought about other challenges of conflicts in the households, conflicts between step parents and children among others. There were minors who headed households after their parents and their other relatives were killed. To put it in the terms of Ansoms (2005), there was need of resurrection after civil war and 1994 genocide against the Tutsi which left many traumatized and mentally disturbed.

It is well known that the poverty remains a significant factor that influences not only the physical health of people worldwide but also their mental health. For example, in a study done in Rwanda, Munyandamutsa et al. (2012) reported that living in extreme poverty, having endured the murder of a close relative in 1994, being widowed or remarried, having lost both parents, were among the factors found to be related to PTSD in Rwanda. It is worth noting that the prevalence of some major physical diseases like HIV/AIDS and other chronic
diseases contributes also to the occurrence of some mental disorders like depression (WHO, 2010).

### 2.13 Social support and social stress among psychiatric patients

The social support and social stress are factors that affect positively or negatively both the physical and mental health of people. In a study done in Poland to assess the social support of mentally ill persons, Bronowski and Zaluska (2005) found that the patients’ social networks were small with 9 persons on average but had a broad scope of functions. These authors further noted that the therapists from community rehabilitation services constituted the biggest group of persons included in the individual network of social support of mentally ill persons and lack of emotional support was observed by these researchers especially among the schizophrenic patients (Bronowski and Zaluska, 2005). The social support was provided in terms of giving advice, providing emergency help, providing consolation, sharing personal problems, providing unconditional support, helping out, backing up and nursing (Bronowski and Zaluska, 2005).

The previous other researches carried out reported that schizophrenic patients, especially those who were chronically ill had much worse social support networks in terms of quantity which was 4-5 persons on average (Simon, 1994). It was further reported that most patients received support from close family members namely parents, spouses or children (Bronowski and Zaluska, 2005).

Krull (2012) noted that social support was critical for depression recovery. The researcher emphasized that social support helps to overcome damaging isolation that is characteristic of
depressed individuals and it can keep the patient connected with life. In addition to this, the social support enables the patient to find new solutions to challenges of life (Krull, 2012). In another study by Ayfer et al. (2011) it was concluded that Turkish hemodialysis patients experienced depression and those patients who were dissatisfied with their social relationships had higher depression scores.

In their study to examine the relationship between objective and subjective social support and recovery in people with serious mental illnesses, Corrigan and Phelan (2004) found that people with larger overall network size and more network satisfaction were likely to report higher scores on the Recovery Assessment Scale. Sharir et al. (2007) studied social support and quality of life among psychiatric patients in residential homes and reported that that social support from friends has a strong positive impact upon quality of life in residential home clients with severe mental illness who reduced the connection to family members and had an inability to sustain a relationship with a significant other person.

In a study done in Netherlands by Bovier et al. (2004), about perceived stress, internal resources, and social support as determinants of mental health among young adults, it was found that perceived social stress was an important risk factor for low mental health. Besides, Hampton et al. (2012) found that chronic stress causes symptoms of depression and antidepressant medications were successful in treating them.

2.14 Synopsis of reviewed literature

Depression and other mental disorders are some of the leading causes of disability and suffering in the world where a large number of people is affected by these disorders. Rwanda
is one of the countries in the world where the citizens have been exposed to risk factors for developing mental disorders such as depression, PTSD, panic disorder among others. The prevalence of few mental, neurological or substance use disorders in Rwanda is found in some studies in literature. However, many aspects of these mental disorders have not yet been investigated in Rwanda. The comorbidity of depression and other mental disorders is not a new phenomenon. It has been investigated elsewhere and was found to be associated with non-adherence to treatment and poor treatment outcomes. Despite the influence of comorbidity on adherence and treatment outcomes, the extensive literature search revealed a gap on the existence of substantive studies on comorbidity of depression and other disorders in Rwanda and its influence on adherence to treatment in this set-up. Besides, the treatment adherence itself has not yet been scientifically and thoroughly investigated among patients attending Rwanda’s few psychiatric facilities. Yet, non-adherence has been associated with relapse and re-hospitalization among psychiatric patients. These phenomena lead to the overuse of services and increase the costs of mental health care.

The social support known to be an important factor that facilitates recovery among patients with depression and other mental disorders has not yet been deeply studied in Rwandan context where many people lost their relatives and friends who are supposed to be the sources of social support. Despite its potential effects on mental health in Rwanda, a post-conflict country, the social stress among patients and their families has not yet been investigated in Rwanda in the reviewed literature.

A number of factors were found to be associated with treatment adherence. Some of these factors hinder adherence to treatment while other promote it. Yet, these are not known in the
Rwandan context so as to initiate interventions that can address them to facilitate adherence to treatment and thus achieve better treatment outcomes. Another gap that was revealed by the reviewed literature is the lack of studies on treatment outcomes in Rwanda. The reviewed literature did not find the scientific studies that followed-up the patients during their post-treatment periods to investigate whether they recovered, were disabled or died in Rwanda. Even studies that could track changes in symptomatology or functioning among patients were missing. In a nutshell, the treatment outcomes among the patients treated in these facilities especially those who never returned to these mental hospitals remain a gap to be investigated although the mental health professionals of the psychiatric facilities in Rwanda visit patients in their families from time to time and follow-up patients in post-treatment appointments at the psychiatric hospitals.
CHAPTER THREE: MATERIALS AND METHODS

3.0 Introduction

In this chapter, the research methodology is presented. The issues related to the research design, location of the study, target population, sample size determination, research instruments, validity and reliability, data collection techniques and data analysis, among other methodological aspects such as the ethical considerations are specified.

3.1 Research design

This was a pseudo-longitudinal study, in which repeated measurements on adherence to treatment; treatment outcomes and level of functioning variables were carried out on each patient who participated in the study in the period between May and October, 2012. The researcher and his assistants did not carry out any intervention on any patient. The participants were under their usual treatments prescribed and administered by the hospitals clinicians and other health workers at the said psychiatric facilities.

3.2 Variables

3.2.1 Independent variables

In this study, the independent variables included the socio-economic and demographic characteristics of the patients such as age, gender, level of formal education, marital status, spoken languages, occupation, religion, income, number of dependants, family characteristics, place of residence and employment status among other various variables that may influence adherence to treatment. Some tests of hypotheses were carried out to find out if there was any relationship between independent variables and dependent variables.
3.2.2 Intermediate variables

Three variables were taken as intermediate variables. These are the level of functioning, the comorbidity and the extent of perceived social support and stress.

3.2.3 Dependent variables

In this study, the dependent variables are the level of adherence to treatment and treatment outcomes. The measurements for the dependent variables are specified under the section 3.8.

3.3 Location of the study

3.3.1 Choice of study sites

The study sites were CARAES Ndera Neuropsychiatric Hospital located in Kigali and its branches of Butare Psychiatric Hospital in the Southern Province and Icyizere Psychotherapeutic Center in Kigali, Rwanda. These are the only psychiatric hospitals in Rwanda where patients are referred by the general referral hospitals or district hospitals throughout the country and even foreign patients from neighboring countries sometimes seek services at these facilities. The context of Rwanda which is familiar to the researcher, the availability of research participants, equipment and other research facilities, the experience of hospitals in diagnosis and treatment of mental and neurological disorders justify the choice of these study sites.

3.3.2 Presentation of the field of data collection

Rwanda is a landlocked country situated in Central Africa. The country is bordered by Uganda to the north, Tanzania to the east, Burundi to the south and the Democratic Republic of Congo to the west. Rwanda lies 75 miles or 2 degree south of the Equator in the Tropic Capricorn. The average temperature is between 24.6 °C and 27.6°C. Its altitude ranges from 950 to 4507 meters above the sea level. The highest point is Karisimbi volcano with 4507
meters. The land area of Rwanda is 26,338 square kilometers. The population of Rwanda is approximately 12 million. The official languages of Rwanda are Kinyarwanda, English and French. It was in this tiny country that the data collection was done in three psychiatric facilities.

The historical documents show that CARAES Ndera was established in 1968 by the Brothers of Charity, an international pontifical religious congregation. This was because of the request from the Government of Rwanda in agreement with the local Catholic Church to release the psychiatric patients from the prisons of the country in those years. The first patients were received in the hospital in 1972. The adopted approach was to develop quality mental health services rooted in the social and cultural context of Rwanda (Stockman, 1980).

For the data collection, this study opted for CARAES Ndera Neuropsychiatric Hospital in Kigali and its two branches. These branches are the Butare Psychiatric Hospital in the Southern Province of Rwanda and the Icyizere Psychotherapeutic Centre in Kigali. These three sites are the only referral psychiatric facilities in the whole Rwanda and they are under the same general administration and management. They practice the same main clinical and nursing approaches in providing mental health services to the patients who attend these institutions with minor differences due to the equipment, settings, and location. They have experience in diagnosis and treatment of mental disorders for patients referred from all over the country and beyond. They contribute to the training of mental health professionals and play a role in the supervision of the integration of mental health services into primary care. They have a dedication for the cause of the people with various acute and chronic mental illnesses. The needed research equipment and facilities including laboratories and well
stocked pharmacies with psychotropic drugs and other medication are available at these study sites.

CARAES Ndera and its branches of Butare and Icyizere serve both in- and out-patients on a daily basis throughout the year. The hospitalization of patients is organized in separate wards for children, female and male patients. The official hospital report of activities shows that in 2011, a total number of 37644 patients attended the hospitals for consultation and treatment. The outpatients represented 34312(91.1%) of the total number of patients, while the remaining 3332(8.9%) were in-patients. In 2011, among the 37644 patients who attended the facilities, 16102 (42.8%) were females, 15466(41.1%) were males and 6078(16.1%) were children under 18 years of age. A total of 25288(67.2%) patients attended the main CARAES Ndera hospital, 9189(24.4%) patients attended Butare Psychiatric Hospital and 3167(8.4%) patients attended Icyizere Psychotherapeutic Centre. Analyzing the reports of activities for the years 2007, 2008, 2009, 2010 and 2011, it was noted that the total number of patients attending the three mental health facilities increases every year. In 2011, the hospital and its affiliated centres had about 321 beds and 245 health workers of various categories and professions (Nkubili, 2012).

The mental healthcare providers play an extremely important role in prevention, diagnosis, treatment and rehabilitation of patients at CARAES Ndera Neuropsychiatric Hospital. The care for patients in a therapeutic environment is directed by an interdisciplinary treatment team. The health workers include psychiatrists, neurologists, general practitioners, clinical psychologists, psychiatric nurses, general nurses, laboratory technicians, pharmacists, physiotherapists, administrative and support staff. Each category of health workers has
responsibilities and role to play in the provision of services. For management purposes, the hospital is divided into departments. These are medical department, nursing department, the social services department, logistic and maintenance department, occupational therapy and rehabilitation department, administration and finance department, neurology department and VCT department.

The hospital provides a variety of services which include outpatient care, in-patient care, referral services, pharmacy having somatic and psychotropic drugs, social work services, laboratory services, electroencephalogram (EEG), neurology, services to chronic patients, psychotherapy, counseling, drug rehabilitation services, physiotherapy and orthopedic services, occupational therapy and HIV voluntary counseling and testing services among others.

The CARAES Ndera Neuropsychiatric Hospital and its branches have played a major role in the training of psychiatric nurses in Rwanda in collaboration with the Kigali Health Institute which is currently part of the College of Health Sciences of the University of Rwanda. Besides, many university students and researchers have been doing their internship in the same hospital. The hospital employees participate actively in the training of health workers at district and provincial level in response to the decentralization and deinstitutionalization processes of mental health services.

The Rwandan Government through the Ministry of Health supports the main hospital and its two branches in the allocation and management of clinical, nursing and administrative staff while the congregation of the Brothers of Charity owns and manages the hospital, finances the
establishment and maintenance of infrastructures, equipments, drug supply and other daily activities, pays the support staff and other staff not covered by the Government of Rwanda. All the activities of the hospital and its branches are under the control and supervision of the Ministry of Health and the mission of the hospitals meet the policy objectives of Health Sector in Rwanda.

3.4 Target population

The target population consisted of all the in- and out-patients who sought services at CARAES Ndera Neuropsychiatric Hospital and its branches namely Butare Psychiatric Hospital and Icyizere Psychotherapeutic Centre during the period from May to October, 2012. These patients come from all over the country and beyond to seek services at the study sites. About 3000 patients attend these three study sites monthly.

3.5 Inclusion and exclusion criteria

3.5.1 Inclusion criteria

For a patient to participate in this study, all the following three criteria should be fulfilled:

i. To be an in- or out-patient who is above 18 years old.

ii. To be in a state of mind to be engaged in a meaningful interview.

iii. To freely give informed consent by signing the consent form.

3.5.2 Exclusion criteria

The following criteria were used to exclude the patients from participating in this study:

i. The patients who were in a state of mind that cannot allow him or her to give informed consent.

ii. The patients who did not consent to participate in the study
iii. The patients who lived in a home or center of chronic patients.

3.6 Sample size determination

The sample size was determined using the following Fisher’s formula (Fisher et al., 1998; Mugenda, 2003):

\[ n = \frac{z^2 pq}{e^2} = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2} = 384 \]

Where

\[ n \] is the estimated sample size, \( p \) is the assumed probability that is the prevalence of some possible comorbidity of depression and other mental disorders, \( q = 1 - p \) which is the assumed proportion of patients without the comorbidity of depression and other mental disorders, \( e \) is the error and \( z \) is the standard normal deviate at 95% confidence interval.

The number of patients who strictly fulfilled all the criteria to participate in the study was estimated to be 3530 which was less than 10,000 patients using annual reports of activities of the hospitals in 2010. Therefore, the following formula was used to find the desired adjusted sample size:

\[ n_f = \frac{n}{1 + \frac{n}{N}} = \frac{384}{1 + \frac{384}{3530}} = 347 \]

(Fisher et al., 1998; Mugenda, 2003)

The number of patients who fell out of treatment in 2010 did not exceed 10%. This meant that it was important to add 10% of 347 patients which is equivalent to 35 patients that could
fall out of treatment during the data collection period. The final number of study participants recruited to participate in the study became $347 + 35 = 382$.

3.7 Sampling and data collection procedures

The annual reports of activities (Nkubili, 2007-2011) allowed the researcher to estimate the proportions of patients per study site who could fulfill the set criteria. These percentages were used to determine the number of patients who were selected from each study site to participate in the study during the period of data collection as presented in Table 3.1.

<table>
<thead>
<tr>
<th>Study Sites</th>
<th>Estimated cases</th>
<th>%</th>
<th>Sample: 382*%</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARAES Ndera Neuropsychiatric Hospital</td>
<td>2,795</td>
<td>79%</td>
<td>302</td>
</tr>
<tr>
<td>Butare Psychiatric Hospital</td>
<td>485</td>
<td>14%</td>
<td>53</td>
</tr>
<tr>
<td>Icyizere Psychotherapeutic Centre</td>
<td>250</td>
<td>7%</td>
<td>27</td>
</tr>
<tr>
<td>Total</td>
<td>3,530</td>
<td>100%</td>
<td>382</td>
</tr>
</tbody>
</table>

Table 3.1: Number of patients selected from each study site

Since there were about 3000 patients who attend the hospitals monthly, and a sample of 382 patients was needed then a sampling interval of 8 in systematic random sampling was used. Every 8th patient who attended the study site on the day of data collection was selected and included in the sample if he or she fulfilled all the study inclusion criteria stated above.

The patients were interviewed and assessed at the hospitals as they were hospitalized or given regular appointments to come back to hospitals to monitor progress, to collect medication or to attend to non-pharmacological treatment sessions such as psychotherapy or physiotherapy. Five research assistants who were qualified and experienced in mental healthcare provision
and clinical psychology were trained on this research and hired to assist the main investigator in the data collection process.

During data collection process, the first step was to select using systematic random sampling a patient among those who attended the study sites from May 2012 onwards and fulfilled the inclusion criteria. A patient who was recruited was approached to get the informed consent after ascertaining that he was in a good state of mind to participate in the study. The inclusion and exclusion criteria were strictly followed during the recruitment period which lasted less than two months to reach the 382 study participants that were needed in this study.

Once a patient was selected and gave informed consent to participate in the study, he/she was accompanied to a private quite room in which interviews and assessments were carried out after the patients had received their health services for which they had come to the hospitals. The socio-demographic characteristics of the patient were also collected and confirmed from respective medical records/file of each patient who was selected to participate in the study.

The first specific objective of this study was to determine the point prevalence of comorbidity of depression and other mental disorders among patients attending psychiatric hospitals in Rwanda. To achieve this objective, medical records for each of the patients who freely participated in the study were first scrutinized to identify the diagnosis given by doctors in the hospitals. These diagnoses were assumed to be the primary diagnoses for which the patients were mainly undergoing treatments. Each study participant with a primary diagnosis other than depression was screened during a structured clinical interview with the MINI International Neuropsychiatric Interview. The patients whose primary diagnosis was
depression were also assessed to ascertain whether they suffered from other comorbid mental or neurological disorders or not. After this procedure, the patients with depression only, those with comorbidity of depression and other disorders and those without depression were identified taking into account the differential diagnostic methods. The point prevalence and types of comorbidities of depression were determined.

The second specific objective of this study was to determine the extent of perceived social support and social stress among patients attending psychiatric hospitals in Rwanda. The respondents were interviewed using the Duke Social Support and Stress Scale. During the interviews, the respondents were asked to report the kind of social support they perceived from other people (family and non-family members apart from their service providers at the psychiatric hospitals). The social support score and social stress score percent were determined for each participant in the study and the overall mean score percent was calculated for the sample.

The third specific objective of this study was to determine the factors that influence adherence to treatment among patients attending psychiatric hospitals in Rwanda. It was first necessary to measure the level of adherence to treatment in order to be able to find out the factors that influence it. In this study, a combination of four different methods was used to quantify adherence to treatment since there was no single gold standard that could be used to estimate it.

The fourth specific objective of this study was to assess the level of functioning among patients attending the psychiatric hospitals in Rwanda. In order to do this, the patients were
assessed during clinical interviews using the Modified Global Assessment of Functioning Scale.

In the normal operations of the hospitals and according to the hospitals’ treatment plan, most of the patients are given medications for one month after which they report back to the hospital to refill medication and to attend follow-up sessions organized by the hospital clinicians and other health workers. The monthly appointments by date and time given to each patient who participated in the study were recorded by the research assistant using appropriate research data collection forms. The number of pills that the patient goes home with from the hospital pharmacy was counted and recorded. The patient was reminded that on coming back to hospital at the end of one month according to the appointment given by clinicians, the patient should bring the remaining pills to allow the researcher and his assistants to do the pill count.

At the second interview after two months since recruitment, the study participants underwent the first assessment to track changes in level of functioning and in symptoms reduction (remission) using both GAF scale and BASIS-32 research instruments. During the interviews, data on the extent of perceived social support and stress were also collected for each research respondent. Besides, the self-reported adherence tool was administered to each patient who participated in this study. The patient was assessed again for the second time after four months since recruitment. The changes for each patient were determined and recorded. The data collected on these changes was used to achieve the fifth objective of the study.
The patients voluntarily and generously participated in the planned interviews and two assessments in which they also asked personal questions and requested advice on some personal problems sometimes from the interviewers who were clinical psychologists or mental health professionals. The process of data collection was done in good collaboration of the health workers at the facilities to avoid disrupting the normal working hours and operations. The highly professional and deontological standards were observed during the whole process of data collection. Figure 3.1 shows the steps that were followed during the data collection period.
Patients attending Ndera, Butare and Icyizere study sites

Select a sample of 382 patients who fulfill the inclusion criteria

On the date of recruitment for each participant:
Point prevalence of comorbidity
Levels of functioning

Patients with depression

Patients without depression

Patients with depression only

Patients with comorbidity of depression and other disorders

Follow up and assess the patients every two months for:
Adherence to treatment
Treatment outcomes
Levels of functioning
Extent of perceived support and stress

Follow up and assess the patients every two months for:
Adherence to treatment
Treatment outcomes
Levels of functioning
Extent of perceived support and stress

Figure 3.1: Flowchart for the study
3.8 Data collection techniques and measurements

3.8.1 Research instruments

In this study, the researcher used semi-structured instruments and designed appropriate forms to collect the data from medical records/files and from interviews with the respondents. Some validated research structured instruments and scales previously used in other studies elsewhere were adapted to the context of Rwanda and used to collect the needed data. The authors of these tools have been recognized and cited in this research report.

The primary diagnosis of the study participant was extracted from his or her medical records. To screen for depression and other mental disorders, the MINI International Neuropsychiatric Interview (Sheehan and Lecrubier, 2006) instruments based on DSM-IV and ICD-10 was used. The results of screening were cross-checked using symptoms and assigned psychiatric and neurological diagnoses in medical files. The point prevalence of comorbidity of depression and other mental disorders was thereafter determined. The Modified Global Assessment of Functioning (Caldecott-Hazard and Hall, 1995, adapted 2004) was used to determine the levels of functioning among patients. The other validated instruments and scales such as the Modified Morisky Scale (Morisky, 1986), the Behaviour and Symptoms Identification Scale-32 (Eisen, 2009) and the Duke Social Support and Stress Scale (Duke University, 1986-2005; Parkerson et al., 1991) were adapted and used to collect data to answer the other research questions.

3.8.2 Measuring adherence to treatment

According to Foster et al. (2011), a combination of measures to estimate adherence may be best. In this study, the adherence to treatment was measured using four different techniques
3.8.2.1 Two-week self-report recall

The patients were asked to report how they took their medication (psychotropic and other drugs) in the last two weeks. Modified Morisky Scale self-rated measure of medication adherence was used to measure knowledge and motivation about treatment adherence. The Modified Morisky Scale consists of six questions, three of which are about motivation to adhere to treatment and three others are about knowledge about treatment adherence. On each question, a respondent scores 0 or 1 depending on his/her response. A total score of 0-1 indicates low motivation or knowledge, while a total score of 2-3 indicates high motivation or knowledge about treatment adherence. A total score out of 6 or percent can be calculated for each respondent. In this study, the overall score was translated into a percentage score for each patient and an overall mean score percent for all patients participating in the study was computed.

3.8.2.2 Pharmacy refill records

Pharmacy refill data for individual patients was collected and examined during the follow-up period to assess adherence to treatment. It is known that pharmacy refill records provide a reliable and non-intrusive longitudinal measure of medication adherence especially for chronic illnesses (Bosworth, 2006). It is also well known that the psychotropic drugs in Rwanda are available in few pharmacies if not only in the pharmacies located at the study sites. Therefore, it was possible to track the pharmacy refill records of the study respondents.
Medication Possession Ratio (MPR) measures the percentage of time the patient has access to medication (Dezii, 2001). In this study, the medication possession ratio was calculated as the ratio between the number of days between the last refill and the next expected refill to the number of days between the last refill and the next actual refill. Thus the following formula was used:

\[
\text{MPR} = \frac{\text{Next expected refill date} - \text{prescription date}}{\text{Next actual refill date} - \text{prescription date}} \times 100
\]

The MPR for each prescription refill and the average MPR for the sample were calculated. To calculate the average MPR over a given period, all the MPRs for each refill were summed and divided by the number of refills during that period. The average included only the actual refills obtained. In this method again the individual score percent and the sample mean score percent were computed.

### 3.8.2.3 Pill count

The patients attending psychiatric hospitals in Rwanda are normally given monthly clinical appointments to come back to the hospitals to refill their medication. The selected respondents attended their clinical appointments and refilled their psychotropic and other medication at the respective sites where they had been recruited to participate in the study.

During the first interview, each respondent was requested to bring the remaining pills on next clinical appointments given by doctors or on next medication refill at the respective hospital’s pharmacy. The number of pills left over since the previous refill was determined. Then the score was determined by taking the total number of pills supposed to have been taken over a
given period minus the number of pills returned and divide the result by the total number of pills supposed to have been taken in a given period of time. The result was multiplied by 100 to get the percentage score.

\[
\text{Pill count adherence rate} = \frac{(\text{Total Number of pills dispensed} - \text{the number of pills returned})}{\text{Total Number of pills dispensed}} \times 100
\]

This reflected the percentage of doses presumably taken by an individual participant and for the entire study sample an overall score was computed.

3.8.2.4 **Adherence to psychotherapy and other non-pharmacological treatments**

The proportions of patients who dropped out of or completed planned non-pharmacological treatments were determined during the follow up period. The percentage score on adherence to appointments, psychotherapy sessions and/or other non-pharmacological therapies was computed. The number of times a patient failed to attend scheduled appointments, psychotherapy or other non-pharmacological therapy sessions was recorded. The scores were determined using the following formulae:

\[
\text{Score percent} = \frac{(\text{N of clinical appointments} - \text{N of failed clinical appointments})}{\text{N of clinical appointments}} \times 100.
\]

3.8.2.5 **Composite adherence score**

The overall adherence score percent was calculated by computing the average score obtained on the four above mentioned methods of measurement. If a patient was not concerned with one or more of the above methods, scores on other methods were computed and his or her composite score percent was calculated. A patient with an overall score of greater than or
equal to 80% was considered adherent optimally, between 50% inclusive and 80% exclusive was considered partial adherent and less than 50% was non-adherent. The overall composite mean score percent was determined by calculating the average percent for all the study participants on all the methods used above. An overall sample score significantly greater than or equal to 80% meant the patients’ optimal adherence to their treatment while that which is significantly less than 80% meant that patients do not optimally adhere to their treatment meaning that they are partially adherent or non-adherent.

3.8.3 Measuring treatment outcomes

During data collection, the instruments that were used to assess the treatment outcomes were the Behavior and Symptoms Identification Scale known as BASIS-32 (Eisen, 2009, rev. January) and Modified Global Assessment of Functioning (Caldecott-Hazard and Hall, 1995, adapted 2004) where the extent of difficult experienced by the patient in different areas of functioning together with the level of functioning were assessed after every two months.

The BASIS-32 is a tool that provides patient profiles and measures the changes in self-reported symptom and problems difficulty over the course of time. According to Eisen (2009) BASIS-32 is an outcomes measurement tool, geared for pre- and post-treatment administration for mental health patients aged 14 and older. This tool consists of 32 questions that can be classified into five domains namely the relation to others, depression and anxiety, daily living and role functioning, impulsive and addictive behaviour, and psychosis. For each question, a score of 0-4 is allocated depending on the extent of difficulty experienced by the patient.
The GAF scale is based on a continuum of mental health and mental illness. It is a 100-point scale where a score of 100 represents the highest level of functioning in all areas. After considering the psychological, social and occupational functioning of the patients, the interviewer gave a score to each of the study participants. A score corresponds to a given intensity of symptoms.

Each study participant was assessed twice during the period from May to October, 2012 using these treatment outcome instruments. Although each of the above instruments is a stand-alone tool, it was decided to use both instruments to include both the assessment views and results from the patient and from the health worker who assesses the patient. Apart from individual patient’s scores, an average was computed to get the final score on treatment outcomes for the sample. The overall mean score percent was used to determine the extent of difficulty and level of functioning, and the changes in time; hence the treatment outcomes among patients.

### 3.8.4 Measuring the level of functioning

In this study, the Modified Global Assessment of functioning (Caldecott-Hazard and Hall, 1995, adapted 2004) was used as the main instrument to assess the level of functioning among patients with mental disorders. Each patient who participated in this study completed two assessments using GAF at the interval of two months after the first assessment done on recruitment date. In this study, the results of these measurements were compared to those of BASIS-32 to ascertain the validity although GAF has been used for long time to determine the level of functioning among patients with mental disorders; and its validity and reliability were reported in other previous studies (DSM-IV-TR). The level of functioning was studied since
depression and other mental disorders affect significantly different domains of patient’s functioning such as psychological functioning, social interactions and relationships, performing day to day activities among others. The extent of impairment in functioning was analysed and discussed in this study.

3.8.5 Measuring the extent of support and stress that patients perceive

The Duke Social Support and Stress Scale (Duke University, 1986-2005; Parkerson et al., 1991) has been selected to measure the extent of family and other social support and stress during data collection. The Duke Social Support and Stress Scale consists of 12 questions. Each question score is either 0 for no support or stress, 1 for some support or stress, 2 for a lot of support or stress or 0 for there is no such person who is supportive or stressful. The first six questions are used to measure the extent of social support or stress that the patient experiences from nuclear and extended family members. A score out of 14 can be calculated for each patient when the scores on the six questions are combined with the type of person who is supportive or stressful to the patient. The score can lie between 0 and 14. The social support or social stress from non-family members is calculated using the scores obtained on the 4 questions on the extent of social support or stress perceived from neighbors, co-workers, church members and friends in combination with the type of person who is supportive or stressful to the patient. A score out of 10 can be computed for each patient and it lies between 0 and 10. An overall score was computed to obtain an overall social support or social stress for each patient and for the sample. When the score is high, the better the social support or the worse the social stress respectively. The tool allows the participant to give multiples responses on people or groups of people from whom he/she perceives social support or stress. However, this does not prevent the researcher from calculating the mean scores.
During data analysis, this instrument allows for computing a percentage family support score, non-family support score, social support score, family stress score, non-family stress score and social stress score. In this study, the individual and sample social scores for social support and social stress were determined. For the patient with high scores, it meant that they had a big network of family and non-family relations which were either supportive or stressful.

3.8.6 Calculation of the point prevalence

After determining the primary diagnoses and comorbidities from medical records, the MINI International Neuropsychiatric Interview was administered to study participants. The results obtained from both medical records and MINI screenings were cross-checked. The negative symptomatology of some disorders like schizophrenia or other psychotic disorders and side effects of medication were taken care of during cross-checking. In this study the point prevalence was calculated using the following formula:

\[
\text{Point prevalence} = \frac{\text{Number of patients with comorbidity of depression and other disorders}}{\text{Total number of patients who participated in the study}} \times 100
\]

3.8.7 Use of medical records (files)

In this study, the medical records or files were combined with other tools to increase the quality of data collected using different tools, techniques and sources. For each selected patient to participate in the study, his or her medical records/files were scrutinized. The relevant data in relation to the study objectives was extracted from these records or files. In total 382 medical files of 382 study participants were scrutinized and data was collected from them after obtaining the informed consent.
3.9 Pilot study, validity and reliability

The main instruments chosen for data collection in this study were standard and tested for validity and reliability in previous studies elsewhere. Their validity and reliability had been well established and documented in literature.

The systematic random sampling technique was applied to choose a representative and large sample during data collection. In this study, using the inclusion and exclusion criteria, the effects of chronic patients have been excluded. To ensure the quality of data, the instruments were pilot tested on 20 improved hospitalized patients fulfilling the criteria during the first week of data collection. The suggestions from the pilot study were analyzed and incorporated where necessary. Besides, the cross-checking of data from patients and their respective medical records (files) was done during data collection. The process of data collection was defined and evaluated during the pilot survey which facilitated the smooth running of data collection and entry process.

All the necessary forms for data collection were prepared and placed in envelops to maintain confidentiality. The research assistants were trained before data collection and closely supervised during data collection. The translation in Kinyarwanda and French of the research instruments were done by different relevant experts in language and mental health care and comparison were done before adopting the final version.

The data entry was concurrent with data collection so that if any error in data collection was noted then it was rectified in good time and research assistants were briefed about any error
that was observed every morning of data collection. The data was double-entered in SPSS. Missing data, outliers and inappropriate values were identified and appropriate corrections and data cleaning were done before starting the analysis. During data analysis, the possible relationships between independent and dependent variables were tested. The results of analysis were compared to those of other studies in literature.

3.10 Data Analysis

The data analysis was carried out using SPSS for windows during the period that followed data collection. The descriptive and inferential statistical analyses were performed. The frequencies and percentages together with other descriptive measures such as mean, median and standard deviation were used for descriptive analysis. As for inferential statistical analysis, Chi-square tests, t-tests and correlational analysis were carried out.

3.11 Logistical and Ethical considerations

While it is true that during the onset of the illness or during periods of relapse, patients may have some difficulty with decision-making, it is highly stigmatizing and false to assume that all people with mental illness are not able to make decisions and therefore unable to give consent (Ndetei, 2006). The mental disorders affect the patients differently and with different degrees of severity and impairments. In this study as in that of Fawad et al. (2008), the patients with cognitive deficit or acute psychosis and patients in deep crisis were not selected to take part in this research especially when they attended the hospitals for the first time and were in unstable state of mind (Fawad et al., 2008).
In this research, adherence and treatment outcomes could not be well studied without involving patients. Besides, this research is intended to promote the wellbeing of patients and their families. After carefully ascertaining that the patient fulfilled the inclusion criteria to participate in the study, he/she was approached in a private quite room. The consent form was read to the patient and the objectives of the study were clarified to him/her. Those who were able to read received a copy of the consent form as it was being read to them. Some patients who needed further clarification were given the opportunity to ask questions about the research objectives, time and procedures of data collection. The patient was invited to freely participate in the research. The right of the patient to refuse taking part in this research at any time was fully respected. Those who accepted to participate in the study signed the consent form. Only 4 patients approached refused to participate in the study giving reasons of not having enough time since their daily programs were tight. In this study, the observance of professional ethics, confidentiality, the research design which respected the principle of no-harm to subjects, non-interventional nature of the study on the side of the investigator and the researcher and his assistants’ integrity are reasonable and sufficient assurances that the rights of patients were respected during the research process.

The approval by the Institutional Research and Ethics Committee for Bio-Medical Research of Kenyatta University, the approval by the Faculty of Medicine Research Ethics Committee of the National University of Rwanda and the authorization to collect data by the administration of concerned health facilities were obtained before embarking on data collection. The participation was on voluntary basis and participants could freely withdraw from the study at any time. The researcher and his carefully selected research assistants maintained absolute confidentiality and anonymity. The research assistants had at least a
Bachelor's degree in Clinical Psychology or Mental Health and a proven therapeutic or clinical experience of interviewing psychiatric patients and working in psychiatric hospitals in Rwanda. The names of the respondent were not indicated on any of the research instruments.
CHAPTER FOUR: RESULTS AND DISCUSSION

4.0 Introduction

This study sought to achieve five specific objectives and test four hypotheses. This chapter has two main parts namely the presentation and discussion of results. First, presentation of the socio-economic and demographic characteristics of study participants is given. Then, the presentation and discussion of results were done by each specific objective. The decisions to reject or not reject each of the null hypotheses are also given in this chapter.

4.1 Results

4.1.1 Socio-economic and demographic characteristics of participants

Table 4.1 below summarizes the results of socio-economic and demographic characteristics of the study participants.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Female (n=188)</th>
<th>Males (n=194)</th>
<th>Total (n=382)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age group</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 20</td>
<td>20(10.6%)</td>
<td>14(7.2%)</td>
<td>34(8.9%)</td>
</tr>
<tr>
<td>20-29</td>
<td>74(39.4%)</td>
<td>112(57.7%)</td>
<td>186(48.7%)</td>
</tr>
<tr>
<td>30 - 39</td>
<td>40(21.3%)</td>
<td>42(21.7%)</td>
<td>82(21.5%)</td>
</tr>
<tr>
<td>40 - 49</td>
<td>32(17%)</td>
<td>12(6.2%)</td>
<td>44(11.5%)</td>
</tr>
<tr>
<td>50 and more</td>
<td>22(11.7%)</td>
<td>14(7.2%)</td>
<td>36(9.4%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>188(100%)</td>
<td>199(100%)</td>
<td>382(100%)</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single (Never married)</td>
<td>97(51.6%)</td>
<td>144(74.2%)</td>
<td>241(63.1%)</td>
</tr>
<tr>
<td>Cohabitating/Illegal marriage</td>
<td>11(5.9%)</td>
<td>15(7.7%)</td>
<td>26(6.8%)</td>
</tr>
<tr>
<td>Married legally</td>
<td>44(23.4%)</td>
<td>27(13.9%)</td>
<td>71(18.6%)</td>
</tr>
<tr>
<td>Divorced</td>
<td>2(1.1%)</td>
<td>1(0.5%)</td>
<td>3(0.8%)</td>
</tr>
<tr>
<td>Separated</td>
<td>18(9.6%)</td>
<td>5(2.6%)</td>
<td>23(6%)</td>
</tr>
<tr>
<td>Widowed</td>
<td>16(8.5%)</td>
<td>2(1.0%)</td>
<td>18(4.7%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>188(100%)</td>
<td>194(100%)</td>
<td>382(100%)</td>
</tr>
<tr>
<td><strong>Religion</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Catholics</td>
<td>64(34%)</td>
<td>86(44.3%)</td>
<td>150(39.3%)</td>
</tr>
<tr>
<td>Protestants</td>
<td>104(55.3%)</td>
<td>85(43.8%)</td>
<td>189(49.5%)</td>
</tr>
<tr>
<td>Muslims</td>
<td>11(5.9%)</td>
<td>6(3.1%)</td>
<td>17(4.5%)</td>
</tr>
<tr>
<td>Others</td>
<td>9(4.8%)</td>
<td>17(8.8%)</td>
<td>26(6.8%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>188(100%)</td>
<td>194(100%)</td>
<td>382(100%)</td>
</tr>
<tr>
<td><strong>Education level</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>14(7.4%)</td>
<td>12(6.2%)</td>
<td>26(6.8%)</td>
</tr>
</tbody>
</table>
Table 4.1: Socio-economic and demographic characteristics of study participants

A total of 382 patients participated in this study. Among them, 194 (50.8%) respondents were male and 188(49.2%) were female. The majority 186 (48.7%) were between 20-29 years compared with other age groups. The respondents’ mean age was 30.73 ± 11.30 (range 18-73) years. A majority of 241(63.1%) respondents were single (never married). Ninety seven

<table>
<thead>
<tr>
<th>Primary</th>
<th>85(45.2%)</th>
<th>71(36.6%)</th>
<th>156(40.8%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary</td>
<td>68(36.2%)</td>
<td>74(38.1%)</td>
<td>142(37.2%)</td>
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<tr>
<td>Tertiary</td>
<td>21(11.2%)</td>
<td>37(19.1%)</td>
<td>58(15.2%)</td>
</tr>
<tr>
<td>Total</td>
<td>188(100%)</td>
<td>194(100%)</td>
<td>382(100%)</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Language spoken</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kinyarwanda only</td>
<td>116(61.7%)</td>
<td>100(51.5%)</td>
<td>216(56.5%)</td>
</tr>
<tr>
<td>Kinyarwanda and French</td>
<td>17(9%)</td>
<td>8(4.1%)</td>
<td>25(6.5%)</td>
</tr>
<tr>
<td>Kinyarwanda and English</td>
<td>17(9%)</td>
<td>18(9.3%)</td>
<td>35(9.2%)</td>
</tr>
<tr>
<td>Kinyarwanda, English and French</td>
<td>38(20.2%)</td>
<td>68(35.1%)</td>
<td>106(27.8%)</td>
</tr>
<tr>
<td>Total</td>
<td>188(100%)</td>
<td>194(100%)</td>
<td>382(100%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Occupation</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Full time employment</td>
<td>13(6.9%)</td>
<td>22(11.3%)</td>
<td>35(9.2%)</td>
</tr>
<tr>
<td>Part-time/Temporary employment</td>
<td>9(4.8%)</td>
<td>22(11.3%)</td>
<td>31(8.1%)</td>
</tr>
<tr>
<td>Business</td>
<td>19(10.1%)</td>
<td>14(7.2%)</td>
<td>33(8.6%)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>147(78.2%)</td>
<td>136(70.1%)</td>
<td>283(74.1%)</td>
</tr>
<tr>
<td>Total</td>
<td>188(100%)</td>
<td>194(100%)</td>
<td>382(100%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Income</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;3500 Rwandan Francs</td>
<td>125(66.5%)</td>
<td>112(57.7%)</td>
<td>237(62%)</td>
</tr>
<tr>
<td>&gt;=3500 Rwandan Francs</td>
<td>63(33.5%)</td>
<td>82(42.3%)</td>
<td>145(38%)</td>
</tr>
<tr>
<td>Total</td>
<td>188(100%)</td>
<td>194(100%)</td>
<td>382(100%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health insurance</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Has health insurance</td>
<td>187(99.5%)</td>
<td>191(98.5%)</td>
<td>378(99%)</td>
</tr>
<tr>
<td>Does not have</td>
<td>1(0.5%)</td>
<td>3(1.5%)</td>
<td>4(1%)</td>
</tr>
<tr>
<td>Total</td>
<td>188(100%)</td>
<td>194(100%)</td>
<td>382(100%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Residence</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>82(43.6%)</td>
<td>93(47.9%)</td>
<td>175(45.8%)</td>
</tr>
<tr>
<td>Urban</td>
<td>106(56.4%)</td>
<td>101(52.1%)</td>
<td>207(54.2%)</td>
</tr>
<tr>
<td>Total</td>
<td>188(100%)</td>
<td>194(100%)</td>
<td>382(100%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Province</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kigali</td>
<td>91(48.4%)</td>
<td>93(47.9%)</td>
<td>184(48.2%)</td>
</tr>
<tr>
<td>Southern Province</td>
<td>40(21.3%)</td>
<td>52(26.8%)</td>
<td>92(24.1%)</td>
</tr>
<tr>
<td>Eastern Province</td>
<td>40(21.3%)</td>
<td>30(15.5%)</td>
<td>70(18.3%)</td>
</tr>
<tr>
<td>Northern Province</td>
<td>11(5.9%)</td>
<td>15(7.7%)</td>
<td>26(6.8%)</td>
</tr>
<tr>
<td>Western Province</td>
<td>6(3.2%)</td>
<td>4(2.1%)</td>
<td>10(2.6%)</td>
</tr>
<tr>
<td>Total</td>
<td>188(100%)</td>
<td>194(100%)</td>
<td>382(100%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Household</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lives alone</td>
<td>7(3.7%)</td>
<td>6(3.1%)</td>
<td>13(3.4%)</td>
</tr>
<tr>
<td>Lives with other people</td>
<td>181(96.3%)</td>
<td>188(96.9%)</td>
<td>369(96.6%)</td>
</tr>
<tr>
<td>Total</td>
<td>188(49.2%)</td>
<td>194(50.8%)</td>
<td>382(100%)</td>
</tr>
</tbody>
</table>
67

(25.4%) respondents lived with a spouse. Among them 71(18.6%) were legally married and were illegally cohabitating 26 (6.8%).

The majority 339 (88.7%) of respondents were Christians. Of these, the majority 189(49.5%) were from various protestant denominations while Catholics represented 150(39.3%). The majority 182(47.6%) of respondents did not study beyond primary level of education. In addition to this the majority 216 (56.5%) of all respondents fluently spoke only the mother tongue namely Kinyarwanda. One hundred and six (27.7%) respondents spoke Kinyarwanda, English and French. Some respondents who attained tertiary or secondary levels of education mainly formed the category of trilingual people.

The majority 283(74.1%) of respondents were unemployed. It was found that 237(62%) earned less than 3500 Rwandan Francs equivalent to Kenya Shillings 500 a month. Only 145(38%) could have at least 3500 Rwandan Francs a month by their own efforts, assets or work. Sources of income were full time employment, part-time, temporary or casual employment, business, assets like houses to lend, agricultural products or temporary benefits. It was also found that the median monthly income was 0.00 Rwandan Francs. This means that 50% respondents could pass a month without getting any coin by themselves. However, three hundred and seventy eight (99%) had health insurances. The majority 339(88.7%) had the community-based health insurance that is compulsory for all people in Rwanda (Mutuelle de Santé) to access health services and 24(6.3%) had RAMA Insurance Scheme.

The proportion of respondents who lived in urban areas was 207(54.2%). All provinces were represented with Kigali having majority of respondents 184(48.2%), followed by Southern
Province having 92(24.1%). Twenty six of the 30 districts of Rwanda had at least two respondents each with majority coming from Gasabo 85(22.3%), Kicukiro 61(16%), Huye 35(9.2%), Nyarugenge 31 (8.1%) and Rwamagana 16(4.2%) districts among others which are closer to the mental health facilities which were the study sites. Burera District in Northern Province and Karongi District in Western Province had one respondent each. None of the respondents was from Ngororero and Rutsiro districts both of which are part of Western Province and far from the study sites.

Only 13(3.4%) lived completely alone while others lived in households with other people or children. The majority 244(63.9%) did not have any dependant under 18 years of age. The number of respondents that could be contacted through their personal phones or those of other close persons or relatives was 289(76.5%) while only 13(3.4%) had their personal email accounts.

4.1.2 Prevalence of comorbidity of depression and other mental disorders

4.1.2.1 Point Prevalence of comorbidity

It was found that 245(64.1%) patients did not have depression, 17(4.5%) had depression only and 120(31.4%) had depression and other disorders, be they mental or neurological disorders. It was specifically found that the point prevalence of comorbidity of depression and other mental disorders (without any neurological disorder) was 69(18.1%) and the most comorbid mental disorder with depression was schizophrenia and other psychotic disorders, followed by PTSD and somatoform disorders. Besides, the study found that the point prevalence of
comorbidity of depression and other neurological disorders (without any other mental disorder apart from depression) was 47(12.3%). The most comorbid neurological disorders with depression were epilepsy and headache disorders (migraine, tension-type headache, among others). Four (1%) patients were found to have comorbidity of depression, other mental disorders and neurological disorders. Figure 4.1 illustrates the findings.

![Pie chart showing the prevalence of depression and other disorders]

Figure 4.1: Point prevalence of depression and other disorders

The study sought to identify different types of comorbidity of depression and other disorders. The results of this investigation are displayed in Table 4.2.
Table 4.2: Comorbidity of depression and other disorders

From Table 4.2, it can be deduced that 120 respondents out of 382 study participants (31.4%) had comorbid mental or neurological disorders with depression. The four most prevalent types of comorbidity were depression and schizophrenia or other psychotic disorders, depression and epilepsy, depression and headache disorders and depression and PTSD in that order among other types of comorbidity.
4.1.3 Extent of perceived social support and social stress among patients

4.1.3.1 Social support

Eighty seven (23.3%) respondents declared to have mainly received tangible support in terms of financial assistance, 71(18.6%) respondents were totally dependent on other people to fulfill most of their basic needs, 65(17%) respondents perceived information support in the form of advice, guidance, reminder to take or refill their medication, 55(14.4%) respondents perceived both financial assistance and information, 37(9.7%) were supported with companionship support expressed in terms of accompaniment to hospitals or home visits while 13(4.7%) respondents cited emotional support expressed in forms of empathy, love, affection, concern and acceptance by other people.

The proportion of patients who reported to have at least one particular person in the family who is trustworthy and whom they can go to with their personal difficulties and get supported was 263(68.8%). Eighty seven (22.8%), 52(13.6%), 30(7.9%), 26(6.8%) and 25(6.5%) respondents perceived social support from their parents, their brothers, their sisters, their husbands and their wives respectively.

The proportion of patients who reported to have at least one particular non-family person who is trustworthy and whom they could go to with their personal difficulties and get supported was 94(24.6%). Forty five (11.7%), 18(3.9%), 15(3.9%) and 11(2.9%) respondents declared to perceive social support from their friends, their church members, their neighbours and the genocide survivors’ organizations respectively. The proportion of respondents who perceived social support from both relatives and non-family people was 22(5.8%).
Table 4.3 shows the frequency distribution of the overall social support (family and non-family) scores obtained by respondents.

<table>
<thead>
<tr>
<th>Perceived social support score percent</th>
<th>Number of respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-25</td>
<td>140</td>
<td>36.6</td>
</tr>
<tr>
<td>26-50</td>
<td>209</td>
<td>54.7</td>
</tr>
<tr>
<td>51-75</td>
<td>32</td>
<td>8.4</td>
</tr>
<tr>
<td>76-100</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Total</td>
<td>382</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4.3: Frequency distribution of perceived social support

It was found that only 33(8.6%) respondents had a social support score greater than 50%. The median number of people missing in the respondents' network of relations was 3 out of 10 categories of the Duke Social Support and Stress Scale used to collect data and to compute the mean social support score percent. In other words, 50% of respondents did not have 3 different categories of people (there were no such persons) in the social network who were supposed to be sources of support.

The mean score percent of perceived social support scores obtained using the Duke Social Support and Social Stress Score are presented in Table 4.4 below.

<table>
<thead>
<tr>
<th>Type of perceived social support</th>
<th>Mean score %</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social support from relatives of patients in extended families</td>
<td>33.5</td>
<td>18.2</td>
</tr>
<tr>
<td>Social support from people outside the patients’ extended families</td>
<td>22.4</td>
<td>17.1</td>
</tr>
<tr>
<td>Social support from both relatives and other people in the community</td>
<td>31.4</td>
<td>14.3</td>
</tr>
</tbody>
</table>

Table 4.4: Mean of social support scores
It was found that the patients perceived more social support from their family members (relatives) than from other people or organizations outside their respective families. The mean perceived social support score was statistically significantly less than 50% (p<0.05) which is the mid-point score on a [0-100] interval of possible perceived social support scores.

4.1.3.2 Social stress

The three most frequently reported causes of social stress were conflicts (family conflicts, land/property conflicts, etc) reported by 105(27.5%) respondents, stressful words reported by 24(6.3%) respondents and stressful belief that the patient became ill because of sorcery was reported by 10(2.6%) respondents.

The results indicated that 139(36.4%) have stressful relatives. Among the most frequently reported relatives were parents, husband, wife, aunts and children of patients who were stressful to 21(5.5%), 16(4.2%), 11(2.9%), 11(2.9%) and 10(2.36%) patients respectively.

It was found that 59(15.4%) patients reported having stressful people outside of their nucleus or extended family. Thirty (7.9%), 11(2.9%) and 10(2.6%) patients reported neighbors, friends and coworkers respectively as persons from outside their respective families who caused them to experience stress. The patients who reported to have both stressful persons from their respective families and outside their families were 12(3.1%).

Table 4.5 shows the frequency distribution of the overall social stress (family and non-family) scores obtained by respondents.

<table>
<thead>
<tr>
<th>Perceived social stress score percent</th>
<th>Number of respondents</th>
<th>Percentage</th>
</tr>
</thead>
</table>

Table 4.5: Frequency distribution of perceived social stress

The majority 318(83.2%) had lower scores on social stress stemming from family and non-family relationships of the patients. The mean score percent of perceived social stress scores obtained using the Duke Social Support and Social Stress Score are presented in Table 4.6 below.

<table>
<thead>
<tr>
<th>Type of perceived social stress</th>
<th>Mean score</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social stress stemming from relatives of the patients</td>
<td>13.7</td>
<td>16.7</td>
</tr>
<tr>
<td>Social stress stemming from people outside extended family</td>
<td>6.1</td>
<td>12.0</td>
</tr>
<tr>
<td>Social stress from both relatives and other people in the community</td>
<td>11.5</td>
<td>12.3</td>
</tr>
</tbody>
</table>

Table 4.6: Mean of social stress scores

The patients perceived more social stress stemming from the relationships with their family members than from other people outside their respective families. The mean perceived social stress score was statistically significantly less than 50% (p<0.05) which is the mid-point score on a [0-100] interval of possible perceived social stress scores.

4.1.4 Factors influencing adherence to treatment

4.1. Level of adherence to treatment

4.1.4.1 Modified Morisky Scale

In this study, it was found that the mean score for motivation was 2 out of 3 and for knowledge it was 2.6 out of 3. The overall mean score on Modified Morisky Scale was 4.6
out of 6. In general, the respondents were motivated and knowledgeable about adherence to treatment. However, the mean score percent using two-week self-report recall was 76.6% which is statistically significantly less than 80% chosen as cut-off score (p<0.05). The proportion of patients who scored less than 80% was 38.2% using this method alone.

4.1.4.1.2 Medication Possession Ratio (MPR)

It was found that the MPR was 65.4% which significantly less than the cut-off score of 80% (p<0.05). The proportion of respondents who scored less than 80% was 39.8% considering the MPR alone.

4.1.4.1.3 Pill count

It was found that the overall pill count rate was 85.8% which was significantly higher than 80% (p<0.05). This means that 85.8% of prescribed pills were presumably taken. The proportion of patients who scored less than 80% using this method was 17.8%.

4.1.4.1.4 Adherence to psychotherapy and other non-pharmacological treatments

The number of scheduled clinical appointments and failed clinical appointments were recorded for each respondent during the follow-up period. The percentage score on adherence to appointments, psychotherapy sessions and/or other non-pharmacological therapies like physiotherapy was computed. The mean adherence score using this method was found to be 35.3% which is far less than 80% (p<0.05). The proportion of patients who scored less than 80% was 66.2%.

4.1.4.1.5 Composite adherence to treatment

The overall adherence score percent was calculated using the scores obtained on the above four methods. In case a method was not applicable to a given respondent, other methods were
used to determine the composite adherence score. It was found that the overall adherence mean score was 65.8% which is significantly less than the cut-off score of 80% (p<0.05). It can be noted that the patients attending psychiatric hospitals in Rwanda adhere partially to their treatment (50% < 65.8% < 80%). Thus the optimal adherence to treatment was not achieved by patients. Therefore, the hypothesis that the patients attending psychiatric hospitals in Rwanda do not adhere optimally to their treatment was not rejected.

The proportion of patients who are non-adherent (composite adherence score less than 50%) was found to be 24.6%. The proportion of patients with partial adherence to medication (score from 50% to less than 80%) was 42.9%. It means that 67.5% of all respondents do not achieve optimal adherence. Alternatively, it can be reported that 75.4% of all respondents achieve at least partial adherence. Therefore the proportion of patients who attained at least the mean adherence score of 80% was 32.5%. These are patients who optimally adhere to their treatment. Figure 4.2 illustrates the composite adherence to treatment among patients.
4.1.4.2 Significant factors influencing adherence to treatment

Table 4.7 shows the factors that were found in this study to statistically significantly influence the adherence to treatment ($p<0.05$) and the strength of the relationship ($n=382$) in this study.
<table>
<thead>
<tr>
<th>Variables</th>
<th>Non-adherence n=94</th>
<th>Partial Adherence n=164</th>
<th>Optimal adherence n=124</th>
<th>$\chi^2$</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>De-motivation by side effects associated with medication</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>31(33%)</td>
<td>27(16.5%)</td>
<td>23(18.5%)</td>
<td>$\chi^2=10.529$</td>
<td>0.166</td>
</tr>
<tr>
<td>No</td>
<td>63(67%)</td>
<td>137(83.5%)</td>
<td>101(81.5%)</td>
<td>DF=2</td>
<td>P=0.005</td>
</tr>
<tr>
<td>Affordable medication regimen</td>
<td></td>
<td></td>
<td></td>
<td>$\chi^2=8.835$</td>
<td>0.152</td>
</tr>
<tr>
<td>Yes</td>
<td>72(76.6%)</td>
<td>148(90.2%)</td>
<td>103(83.1%)</td>
<td>DF=2</td>
<td>P=0.012</td>
</tr>
<tr>
<td>No</td>
<td>22(23.4%)</td>
<td>16(9.8%)</td>
<td>21(16.9%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interference of medication with lifestyles</td>
<td></td>
<td></td>
<td></td>
<td>$\chi^2=7.734$</td>
<td>0.142</td>
</tr>
<tr>
<td>Yes</td>
<td>38(40.4%)</td>
<td>40(24.4%)</td>
<td>34(27.4%)</td>
<td>DF=2</td>
<td>P=0.021</td>
</tr>
<tr>
<td>No</td>
<td>56(59.6%)</td>
<td>124(75.6%)</td>
<td>90(72.6%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulties to fit dosages into daily routine</td>
<td></td>
<td></td>
<td></td>
<td>$\chi^2=19.716$</td>
<td>0.227</td>
</tr>
<tr>
<td>Yes</td>
<td>30(31.9%)</td>
<td>21(12.8%)</td>
<td>14(11.3%)</td>
<td>DF=2</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>No</td>
<td>64(68.1%)</td>
<td>143(87.2%)</td>
<td>110(88.7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appointment staff is available</td>
<td></td>
<td></td>
<td></td>
<td>$\chi^2=8.384$</td>
<td>0.148</td>
</tr>
<tr>
<td>Yes</td>
<td>84(89.4%)</td>
<td>155(94.5%)</td>
<td>122(98.4%)</td>
<td>DF=2</td>
<td>P=0.015</td>
</tr>
<tr>
<td>No</td>
<td>10(10.6%)</td>
<td>9(5.5%)</td>
<td>2(1.6%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction with the quality of communication</td>
<td></td>
<td></td>
<td></td>
<td>$\chi^2=13.142$</td>
<td>0.185</td>
</tr>
<tr>
<td>Satisfied</td>
<td>81(86.2%)</td>
<td>154(93.9%)</td>
<td>122(98.3%)</td>
<td>DF=2</td>
<td>P=0.001</td>
</tr>
<tr>
<td>Not satisfied</td>
<td>13(13.8%)</td>
<td>10(6.1%)</td>
<td>2(1.6%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction with attitudes of service providers</td>
<td></td>
<td></td>
<td></td>
<td>$\chi^2=6.061$</td>
<td>0.126</td>
</tr>
<tr>
<td>Satisfied</td>
<td>83(88.3%)</td>
<td>153(93.3%)</td>
<td>120(96.8%)</td>
<td>DF=2</td>
<td>P=0.048</td>
</tr>
<tr>
<td>Not satisfied</td>
<td>11(11.7%)</td>
<td>11(6.7%)</td>
<td>4(3.2%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comorbidity of depression and mental or neurological disorders</td>
<td></td>
<td></td>
<td></td>
<td>$\chi^2=9.911$</td>
<td>0.161</td>
</tr>
<tr>
<td>Yes</td>
<td>40(42.6%)</td>
<td>52(31.7%)</td>
<td>28(22.5%)</td>
<td>DF=2</td>
<td>P=0.007</td>
</tr>
<tr>
<td>No</td>
<td>54(57.4%)</td>
<td>112(68.3%)</td>
<td>96(77.4%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient forgets to take medication</td>
<td></td>
<td></td>
<td></td>
<td>$\chi^2=37.444$</td>
<td>0.313</td>
</tr>
<tr>
<td>Yes</td>
<td>65(69.1%)</td>
<td>53(32.3%)</td>
<td>43(34.7%)</td>
<td>DF=2</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>No</td>
<td>29(30.9%)</td>
<td>111(67.7%)</td>
<td>81(65.3%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patients are too busy with other things to miss medication</td>
<td></td>
<td></td>
<td></td>
<td>$\chi^2=14.639$</td>
<td>0.196</td>
</tr>
<tr>
<td>Yes</td>
<td>34(36.2%)</td>
<td>29(17.7%)</td>
<td>21(16.9%)</td>
<td>DF=2</td>
<td>P=0.001</td>
</tr>
<tr>
<td>No</td>
<td>60(63.8%)</td>
<td>135(82.3%)</td>
<td>103(83.1%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sometimes away from home and miss doses (travelling)</td>
<td></td>
<td></td>
<td></td>
<td>$\chi^2=22.735$</td>
<td>0.244</td>
</tr>
<tr>
<td>Yes</td>
<td>42(44.7%)</td>
<td>36(22%)</td>
<td>22(17.7%)</td>
<td>DF=2</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>No</td>
<td>52(55.3%)</td>
<td>128(78%)</td>
<td>102(82.3%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problems in social environment</td>
<td></td>
<td></td>
<td></td>
<td>$\chi^2=6.056$</td>
<td>0.126</td>
</tr>
<tr>
<td>Yes</td>
<td>39(41.5%)</td>
<td>52(31.7%)</td>
<td>32(25.8%)</td>
<td>DF=2</td>
<td>P=0.048</td>
</tr>
<tr>
<td>No</td>
<td>55(58.5%)</td>
<td>112(68.3%)</td>
<td>92(74.2%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Having a family member who is stressful to the patient</td>
<td></td>
<td></td>
<td></td>
<td>$\chi^2=13.674$</td>
<td>0.189</td>
</tr>
</tbody>
</table>
### Table 4.7: Significant factors influencing adherence to treatment

The Cramer’s V gives the strength of the relationship between adherence to treatment and each of the various factors influencing it. For each of the Cramer’s V- values reported in Table 4.7 above, it was found that $p<0.05$, hence significant association. It was found that the strength of the relationship between each significant factor and adherence to treatment was from small to medium. Given the above findings, the null hypothesis that the treatment regimen, clinical setting, patient-provider relationship, social support, social stress and individual characteristics of the patient are not associated with adherence to treatment among patients attending the psychiatric hospitals in Rwanda was rejected.

**4.1.5 Level of functioning among patients**

**4.1.5.1 Classification of patients into major groups of GAF**

Based on the scores given to respondents during clinical interviews, the respondents were classified into major GAF groups and the results are displayed in Table 4.8.
<table>
<thead>
<tr>
<th>Code</th>
<th>General note</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>Immediate danger from serious neglect or self-injurious behavior</td>
<td>2</td>
<td>0.5</td>
</tr>
<tr>
<td>11-20</td>
<td>Suffering from neglect or in danger of hurting self or others</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>21-30</td>
<td>Inability to function in almost all areas</td>
<td>10</td>
<td>2.6</td>
</tr>
<tr>
<td>31-40</td>
<td>Major impairment in several areas of functioning</td>
<td>28</td>
<td>7.3</td>
</tr>
<tr>
<td>41-50</td>
<td>Some serious symptoms or serious impairment in functioning</td>
<td>90</td>
<td>23.6</td>
</tr>
<tr>
<td>51-60</td>
<td>Moderate symptoms or moderate impairment in functioning</td>
<td>99</td>
<td>25.9</td>
</tr>
<tr>
<td>61-70</td>
<td>Some persistent mild symptoms or persistent mild impairment in functioning</td>
<td>96</td>
<td>25.1</td>
</tr>
<tr>
<td>71-80</td>
<td>Some persistent mild symptoms or persistent mild impairment in functioning</td>
<td>44</td>
<td>11.5</td>
</tr>
<tr>
<td>81-90</td>
<td>Some transient mild symptoms or temporarily mild impairment in functioning</td>
<td>12</td>
<td>3.1</td>
</tr>
<tr>
<td>91-100</td>
<td>Absent or minimal symptoms and no impairment in functioning</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>38</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 4.8: Classification of respondents into major groups of GAF

From Table 4.8 above, it can be deduced that majority of patients 99(25.9) have moderate impairments in functioning. These are closely followed by 96(25.1%) patients who have some persistent mild symptoms or persistent mild impairment in functioning and 90(23.6%) patients who have some serious symptoms or serious impairment in functioning. None of the respondents had a superior functioning in a wide range of activities (91-100). It can also be derived from Table 4.8 that 131(34.3%) respondents got a GAF score less than or equal to 50%.

4.1.5.2 Level of functioning among patients

It was found that the overall mean score percent was 57 ± 13.8. The overall mean score percent of 57 falls in the group of 51-60 which indicates that on overage the patients have moderate symptoms or moderate impairment in functioning.
The one-sample t-test was thereafter performed at 95% confidence level. The results of the t-test indicated that the sample mean was greater than the hypothesized mean of 50% (t=9.906, d f=381, p<0.001). Since p<0.05, the null hypothesis was rejected. It was therefore found that the patients attending psychiatric hospitals in Rwanda have high overall level of functioning on average since majority had some mild, minimal and moderate impairment in functioning. As it can also be seen in Table 4.8 above, 251(65.7%) patients had moderate or mild impairment in functioning that does not qualify to be serious impairment nor dangerous to self or others. The changes in levels of functioning are presented in the next section which deals with the relationship between adherence to treatment and treatment outcomes.

4.1.6 Relationship between treatment adherence and treatment outcomes

The fifth objective of this study was to establish the relationships between adherence to treatment and treatment outcomes among patients attending the psychiatric hospitals in Rwanda. The data was collected on adherence to treatment and treatment outcomes in order to test the null hypothesis that there is no relationship between the adherence to treatment and treatment outcomes among patients attending the psychiatric hospitals in Rwanda. The results on adherence to treatment were explored in previous sections of this chapter. In this section of the chapter, the results on treatment outcomes are presented and the relationship between adherence to treatment and treatment outcomes was established.

4.1.6.1 Relationship between adherence and treatment outcomes using GAFs

The Modified Global Assessment of Functioning is one of the standalone tools that was used to measure treatment outcomes during data collection. When applying GAF, the interviewer (usually a clinician) judges the symptoms and functioning of the patients and gives a score
between 0 and 100. The GAF1 scores mean the results obtained at the first assessment of the patient after two months of follow-up and GAF2 scores are the results at the second assessment after four months using the same tool namely the Modified Global Assessment of Functioning. The results obtained at first and second assessments using this instrument are presented below.

### 4.1.6.1.1 Changes in levels of functioning using GAF1 and GAF2 Scores

Table 4.9 shows the frequency changes in GAF scores.

<table>
<thead>
<tr>
<th>Code</th>
<th>General Note</th>
<th>N1 (%)</th>
<th>N2 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>Immediate danger from serious neglect or self-injurious behavior</td>
<td>2(0.5%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>11-20</td>
<td>Suffering from neglect or in danger of hurting self or others</td>
<td>1(0.3%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>21-30</td>
<td>Inability to function in almost all areas</td>
<td>10(2.6%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>31-40</td>
<td>Major impairment in several areas of functioning</td>
<td>28(7.3%)</td>
<td>3(0.8%)</td>
</tr>
<tr>
<td>41-50</td>
<td>Some serious symptoms or serious impairment in functioning</td>
<td>90(23.6%)</td>
<td>13(3.4%)</td>
</tr>
<tr>
<td>51-60</td>
<td>Moderate symptoms or moderate impairment in functioning</td>
<td>99(25.9%)</td>
<td>43(11.3%)</td>
</tr>
<tr>
<td>61-70</td>
<td>Some persistent mild symptoms or persistent mild impairment in functioning</td>
<td>96(25.1%)</td>
<td>106(27.7%)</td>
</tr>
<tr>
<td>71-80</td>
<td>Some transient mild symptoms or temporarily mild impairment in functioning</td>
<td>44(11.5%)</td>
<td>141(36.9%)</td>
</tr>
<tr>
<td>81-90</td>
<td>Absent or minimal symptoms and no impairment in functioning</td>
<td>12(3.1%)</td>
<td>76(19.9%)</td>
</tr>
<tr>
<td>91-100</td>
<td>Superior functioning in a wide range of activities</td>
<td>0(0%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>382(100%)</td>
<td>382(100%)</td>
</tr>
</tbody>
</table>

**Table 4.9: Changes in levels of functioning using GAF1 and GAF2 scores**

The number of respondents who got a score of less than or equal to 50% was 131(34.3%) respondents in the first assessment while in the second assessment, they were 16(4.2%) respondents. The mean GAF score for the first assessment was 57% while for the second assessment it was 72.2%. The median score for the first assessment was 59% which means that 191(50%) of all respondents scored less than 59%. This is equivalent to saying that 50% of respondents had at least moderate symptoms or moderate impairment in functioning as per GAF scale. The median for the second assessment was 72%. This is equivalent to saying that 191(50%) scored less than 72% which was greater than 59% obtained using GAF1 scores.
(n=382). In other words, at second assessment, it was found that 50% of all respondents had at least some persistent mild symptoms or persistent mild impairment in functioning.

![Figure 4.3: Medians at first and second assessments](image)

**4.1.6.1.2 Symptoms reduction by GAFs in relation to adherence to treatment**

In this study, the symptoms reduction was chosen to be an indicator of treatment outcomes. It was found that majority 346(90.6%) respondents had their symptoms reduced as they continued undergoing treatment. In other words 346(90.6%) respondents had an improvement during the period of treatment. In order to determine if this improvement was related to adhering to medication, the chi-square test was performed. The results indicated that there was a significant relationship between adherence to treatment and treatment outcomes using the scores of the first and second assessments ($\chi^2 = 9.863$, d f=4, p=0.043). However, the strength of the association was weak (Cramer’s V=0.114, p=0.043).
4.1.6.2 Relationship between adherence and treatment outcomes using BASIS-32

Figure 4.4 depicts the extent of difficulty in functioning among respondents who undertook the assessment using BASIS-32 (n=382).

Using BASIS-32, it was found that majority 209 (54.7%) respondents had little difficulty in functioning after some time on treatment. Besides, the mean score on treatment outcomes using BASIS-32 was found to be 0.88 which can be rounded to 1 and interpreted as “little difficulty” according to the instrument scoring rules. The relationship between adherence to treatment and treatment outcomes was established using Spearman’s rho coefficient. A significant weak negative correlation was found between adherence to treatment and treatment outcomes (Spearman’s rho= -0.156, p=0.002). The negative value for Spearman’s rho was found because of the instruments used. For adherence, the higher scores meant good
adherence to treatment while for BASIS-32 the lower scores meant less symptoms and less difficulty in functioning and thus better treatment outcomes.

4.1.6.3 Relationship between adherence to treatment, relapse and re-hospitalization

The respondents were asked if they ever had a relapse in the past or were re-hospitalized and medical records were crosschecked to confirm this. It was found that 154(40.3%) respondents had at least one relapse and 66(17.3%) respondents were re-hospitalized in the past.

The relationships between adherence to treatment and relapse, adherence to treatment and re-hospitalization, relapse and re-hospitalization were explored using the chi-square tests. It was found that a statistically significant relationship existed between the adherence to treatment and relapse ($\chi^2 = 6.316$, $d.f = 2$, $p=0.043$, Cramer’s $V=0.129$). The treatment adherence and re-hospitalization were related ($\chi^2 = 7.493$, $d.f = 2$, $p=0.024$, Cramer’s $V=0.140$). Besides, the study found that among 154(40.3%) who relapsed, 63(40.9%) were re-hospitalized. A strong significant relationship existed between relapse and re-hospitalization ($\chi^2 = 100.816$, $d.f = 1$, Cramer’s $V=0.514$). The study also showed that a significant relationship existed between comorbidity and treatment outcomes ($\chi^2 = 51.575$, $d.f = 1$, $p<0.001$ and Cramer’s $V=0.367$).

4.2 Discussion of results

4.2.1 Prevalence of comorbidity of depression and other mental disorders

In this study, 31.4% of patients were found to have some type of comorbidity of depression with other mental or neurological disorders and 4.5% patients had depression only. In total 35.9% of patients met the diagnostic criteria for depression (only or comorbid with other
disorders). This point prevalence is higher than the prevalence of depression of 15.5% found in community samples in Rwanda and 20% found a study done in Uganda (Bolton et al., 2002). This prevalence was also higher than the lifetime prevalence of depression which was 8-12% for men and 20-26% for women (Ndetei, 2006). Nevertheless, this was expected since in clinical samples the prevalence of comorbidity may be higher than in the community or general population samples.

The occurrence of depression among the patients diagnosed with other mental or neurological disorders can be explained by different reasons. Some of these reasons include a feeling of humiliation in some patients, a feeling that the patient is no longer in control of his or her destiny, the loss of some opportunities that the patient had before getting ill (Iqbal, 2004) among other bio-psycho-social factors that may lead to hopelessness, isolation even suicidal thoughts which are characteristics of patients with depression.

It was not possible to find in literature a previous study carried out in Rwanda or elsewhere that explored the comorbidity of depression and other disorders in a comprehensive manner like it was done in this study. However, some studies investigated the comorbidity of depression and one or two other disorders. Thus, the comparisons of prevalence of comorbidity will be done for depression and one other disorder rather than with overall prevalence of comorbidity found in this study.

In this study, it was found that out of 115 patients with schizophrenia and other psychotic disorders as primary assigned diagnosis there were 32 (27.8%) patients who met the diagnostic criteria for depression. The rate of 27.8% in this study is slightly higher than the
modal rate of depression in schizophrenia reported by Siris (2000) but it was within the range of rates of occurrence of depression in schizophrenia documented in literature to be between 7% to 75% (Siris, 2000). Similarly, out of 76 patients with epilepsy, 27 patients representing 35.5% met the diagnostic criteria for depression and hence had comorbidity of epilepsy and depression. This is slightly higher than the life prevalence of 33% that was found by Amir et al. (2006) for the comorbidity of depression and epilepsy. In the same line of thought, out of 43 patients with headache disorders (migraine, tension-type headaches, etc...) it was found that 23(54.5%) patients had met the diagnostic criteria for depression. This rate of comorbidity of depression and headache disorder is slightly less than the findings of the study in Italy by Beghi et al. (2007). As for PTSD, the study found that out of 22 patients with PTSD as primary assigned diagnosis, there were 15 patients who also had comorbid depression leading to a rate of 68.2% which is slightly less than the prevalence (75%) of comorbidity of depression and PTSD reported in the study done in Korea by Ikin et al. (2010). In summary, the main prevalence rates of comorbidity of depression and other disorders found in this study are slightly different from the rates found in other studies.

4.2.2 Extent of perceived social support and stress

This study found that the mean perceived social support score from relatives (33.5%) was greater than the mean perceived social support score from other people outside the families of the patients (22.4%). According to the Duke Social Support and Stress Scale, the higher the score, the more supportive the relationships are. Thus, since 33.5% is greater than 22.4% then it implies that the relations with relatives were more supportive than relations outside the families of the patients. In general, this is quite normal that relatives are perceived to be more supportive to the patients given the bonds and trust that naturally exist between members of
the same family who in most cases are caretakers of ill relatives. However, the mean social support score from the relatives of the patients was low (less than 50%) meaning that many patients lack or perceive inadequate social support from members of nuclear and extended families. Yet, McGraw (1980) stated that the family has a function that cannot be replaced by any other institution and Njenga et al. (2005) recalled the importance of families in supporting the rehabilitation and reintegration of patients.

The mean social support (family and non-family) score (31.4%) was very low. This could be understood by the fact that in genocide and other atrocities that took place in Rwanda, quite a number of relatives and friends for some patients were killed. These deplorable events together with their consequences destroyed families and social networks of people in general in a number of regrettable ways as also noted by Butera et al. (1999). The support system of the patients was not only weakened by death of relatives or friends but also by the fact that majority of patients were unemployed, which means that the majority of respondents did not benefit from supportive co-workers. Besides, a number of patients were not attending any school to get social support from teachers or classmates.

The study found that the mean social support score (31.4%) was greater than the mean social stress score (11.5%). Unfortunately, it was also found that the relations of the patients with relatives were also more stressful than were relations of the patients with other people outside their respective families. Although the extent of stress for the sample was very low, it may have significant effect on the health of particular patients who experience it. Njenga et al. (2005) recommended that people should reduce stress on ill family members to facilitate recovery, rehabilitation and reintegration.
4.3.3 Level of functioning among patients

The study found that the level of functioning among patients attending psychiatric hospital was not low meaning that the majority of patients had mild or moderate impairments or symptoms (GAF score greater than 50%). This result was possibly obtained partially due to the fact that the patients who were in psychotic crisis or had some mental deficits were not included in this study. In addition to this, a significant number of respondents who attended the psychiatric hospitals in Rwanda sought treatment for neurological disorders like headache disorders which may not interfere much with global functioning as some major psychiatric disorders do.

This finding on level of functioning among patients should contribute to the reduction of stigma that some patients attending psychiatric hospitals suffer terribly in their daily life (Ndetei et al, 2006). Most often they are feared as they are all considered to be dangerous to self or to others and to be violent (GAF score less than 50%). In other circumstances, they are all wrongly considered as totally impaired beings that cannot study, work, have a family or recover even partially from their illness. These myths were contradicted by the findings of this study which found that quite a number of patients had good scores on GAF scale (scores greater than 50%). Though the patients may have impairments in psychological, social or occupational functioning, some of these impairments are mild or moderate. Besides, the symptoms can be reduced or fully controlled with treatments and total recovery is possible in many instances (Ndetei, 2006).
4.2.4 Factors influencing adherence to treatment

The composite adherence score percent was found to be 65.8% indicating that the patients adhered partially (not optimally) to their treatment. Only 32.5% of respondents achieved optimal adherence. In the literature review, it was not possible to identify any single study done in Rwanda’s mental institutions that had estimated the rates of adherence for comparison. Nevertheless, the WHO (2003) indicated that only 50% of patients with chronic illnesses adhere to long-time therapy in developed countries and Leo et al. (2005) noted that the adherence rates to psychotropics averaged around 50%. Thus, the adherence rate among patients attending psychiatric hospitals in Rwanda (32.5%) was lower than that in developed countries (50%). In addition to this, the rate of missed outpatient clinical and non-pharmacological treatment appointments found in this study was 66.2% which was higher than the range from 9% to 60% reported in previous studies elsewhere (Cruz et al., 2001).

Often, the patients alone are unfairly blamed for not adhering to treatment (WHO, 2003). At bivariate level, this study, like many previous others, found that the factors influencing adherence to treatment are not only related to the patient but some of them are related to the treatment regimen, to the patient-provider relationship, to the clinical setting and to the social environment (Leo et al., 2005).

The comorbidity of depression and other disorders was a factor that hindered adherence to treatment. This finding is consistent with previous studies (Leo et al., 2005). For some patients, being busy, forgetfulness, travelling were significant factors that hindered their adherence to treatment. With regard to treatment regimen, the adverse effects associated with medication influenced adherence to treatment by causing de-motivation followed in most
cases by premature discontinuation of treatment regimen among patients. Although the vast majority of patients found their medication regimen to be affordable, those who found it otherwise were less adherent to treatment. The poor fit between treatment requirements and lifestyles or daily routine hindered the adherence to treatment. The factors that were related to the clinical setting and patient-provider relationship were the quality of communication, good attitudes of health workers and the availability of appointment staff. These factors are key components of the therapeutic alliance and continuity of care. It is in this relationship that normally the health service provider knows, understands and motivates the patient and provides more information to correct false beliefs about the illness and treatment. Inadequate social support, having problems in social environment, having relatives who were stressful to patients, having problems with (barriers to) access to health services (lack of transportation costs or inability to pay for community-based health insurance in time) and stigmatization were factors that negatively influenced adherence to treatment at bivariate level of analysis. The above findings on factors influencing adherence to treatment are consistent with the findings of other several other studies (Fawad et al., 2008; Levensky and O’Donohue, 2006; Leo et al., 2005, WHO, 2003).

4.2.5 Relationship between adherence to treatment and treatment outcomes

The statistically significant relationship between adherence to treatment and treatment outcomes was found using each of the two chosen standalone instruments namely the Modified Global Assessment of Functioning and BASIS-32. Most patients who adhered to their treatment had their symptoms reduced and had a better global functioning (psychological, social and occupational functioning) which were indicative of improvements. However, the relationship was weak.
A relationship was also found between comorbidity and treatment outcomes. The respondents with comorbidity had lower mean scores in global functioning as compared to those without comorbidity. Besides, the study found a negative relationship between adherence to treatment and relapse. The patients who relapsed were mainly those who did not adhere to treatment as required. A strong relationship existed between relapse and re-hospitalization. Most patients who relapsed were afterwards re-hospitalized which may have led to the overuse of services and increased associated costs. The above findings are all in conformity with many other previous studies that established such relationships but were done outside Rwanda or other research materials and methods were used (Zikos et al., 2010; WHO, 2010; Bruce et al., 2008; Goldon, 2008; Maree and Heather, 2003).
CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The point prevalence of comorbidity of depression and other mental or neurological disorders was 31.4% where 18.1% had comorbidity of depression and other mental disorders (without neurological disorder), 12.3% had comorbidity of depression and other neurological disorders (without other mental disorders) and 1% had comorbidity of depression, other mental and neurological disorders.

The mean perceived social support (31.4%) was low implying that some patients lacked the social support they needed. The inadequate social support raises concern on how the community members facilitate the adherence to treatment, recovery, reintegration and rehabilitation of patients in the community. The mean perceived social stress (11.5%) was low but could have some effects on specific patients who experienced social stress.

The overall level of functioning among study participants was $57 \pm 13.8$ which falls in the interval [51-60]. This means that on average the patients had moderate symptoms or moderate impairments in functioning which leads to the conclusion that the patients do not have a low level of functioning with serious impairments in functioning. The majority of patients attending the psychiatric hospitals in Rwanda have moderate or mild impairments in psychological, social or occupational functioning.
The overall level of adherence to treatment was 65.8% which indicated that the patients attending psychiatric hospitals in Rwanda did not adhere optimally to treatment. Only 32.5% of patients achieved optimal adherence, a rate that is lower compared to developed countries. The vast majority of patients missed scheduled clinical appointments and other non-pharmacological treatments and post-treatment follow-ups. It emerged that the main significant factors influencing (hindering or promoting) adherence to treatment among patients attending psychiatric hospitals in Rwanda were side effects associated with medication, the affordability of treatment regimen, poor fit between treatment requirements and patient’s lifestyles or daily routine, communication, attitudes of service providers, availability of appointment staff, comorbidity of depression and other disorders, being busy, forgetfulness, travelling, social support, having problems in social environment, having relatives who were stressful, having problems with (barriers to) access to healthcare services and stigmatization.

The adherence to treatment was significantly related to relapse and re-hospitalization. The study concluded that there was a weak significant relationship between adherence to treatment and treatment outcomes among patients.

5.2 Recommendations

5.2.1 Recommendations to the Ministry of Health and health program managers at the neuropsychiatric hospitals

1. Since the prevalence of comorbidity was not negligible among patients, the Ministry of Health, the managers of the neuropsychiatric hospitals should organize ongoing trainings for mental health services providers especially the generalist physicians who work for the
hospital on the diagnosis and management of different types of comorbidity of depression and other mental or neurological disorders.

2. The community and families of the patients should be sensitized for more social support to the patients with mental and neurological disorders.

3. In order to increase the number of patients who adhere optimally to their treatments, the hospitals management should avail the psychotropic medications with less side effects.

4. Since adherence was related to treatment outcomes, the health workers and other stakeholders in mental healthcare in Rwanda should design and implement interventions that can increase the number of patients who adhere optimally to treatment in order to have better treatment outcomes. Such interventions could include teaching patients how to use reminders to take medication and attend clinical appointments, how to strengthen the patient-provider relationship, interventions targeting patients who may be busy, may travel or may have economic barriers preventing the access to health services.

5.2.2 Recommendations for further research

It is recommended to researchers to carry out a long-term longitudinal study spanning for two years or more on adherence to treatment and treatment outcomes among patients attending psychiatric hospitals in Rwanda. A study to investigate other types of comorbidity of mental disorders among patients attending psychiatric hospitals in Rwanda would lead to service improvement.
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APPENDICES

Appendix I: Research Instruments

Section 1: Socio-economic and demographic characteristics of the patient

The following questionnaire is filled in by the interviewer.

1. Patient number ________________________________
   Study site ___________________ Date of interview ____________

2. The sex of the patient. Male____ Female ________

3. What is your Age? ________ years

4. What is your highest level of formal education?
   - O Illiterate
   - O Primary
   - O Secondary
   - O Tertiary
   - O Other, Specify______________________________

5. How many years of formal education did you do? ________ Years

6. Which language (s) do you speak?
   - O Kinyarwanda
   - O English
   - O French
   - O Others, Specify______________________________

7. What is your current marital status? (Check only one that is most applicable)
   - O Single
109

O Never married

O Currently married

O Separated

O Divorced

O Widowed

O Cohabitating

O Other, Specify ________________________________________________

8. What is your current occupation? (Select the single best option)

O Paid employment

O Self-employment

O Non-paid worker, such as volunteer/ charity

O Student

O Keeping house/ House-maker

O Retired

O Unemployed for health reasons

O Unemployed for other reasons, Specify the reasons ____________________

O Other, Specify_________________________________________________

9. What is your religion? (Check one)
0 Roman Catholic
0 Protestant
0 Muslim
0 Buddhist
0 Hindu
0 None
0 Other, Specify_________________________________________________

10. Do you have a health insurance?
0 Yes
0 No

11. Which type of health insurance do you have? ________________________________

12. Where do you reside? Cell__________________ Sector _______________________
   District ____________________ Province ________________________________
   Rural_______________ Urban____________________

13. What is your contact address?
   P. O. Box ________________________ Telephone number ______________________
   Email of the patient ________________________________

14. What Other contact address? _____________________________________________
   Telephone number of other contact person ________________________________
   Email ___________________________ Residence _______________________

15. What is your estimated total monthly household income? __________Rwandan Francs

16. What is your main source of income?
0 Full-time employment
0 Part-time employment
0 Temporary benefit like sickness unemployment
0 Pension like aged, disability, Specify_______________________________
0 Student allowance
0 Dependant on others
0 Retirement fund
0 No income
0 Other, specify ________________________________

17. How long have you been receiving care for your health condition?
   _______ Years ________ months

18. How many persons under the age of 18 who depend on you? ________ persons

19. How many persons live in your household? _______________________ persons

20. With whom do you live?
   0 Alone
   0 Spouse/partner
   0 Alone with child(ren)
   0 Spouse/partner and child(ren)
   0 Parents
Section 2: Screening for Depression and Other Mental Disorders

2.1 MINI International Neuropsychiatric Interview (Sheehan and Lecrubier, 2006).
The instrument that is used to screen the patients for depression and other mental disorders is MINI International Neuropsychiatric interview (Sheehan and Lecrubier, 2006).

General Instructions
According to Sheehan and Lecrubier (2006), the M.I.N.I. was designed as a brief structured interview for the major Axis I psychiatric disorders in DSM-IV and ICD-10. Validation and reliability studies have been done comparing the M.I.N.I. to the SCID-P for DSM-III-R and the CIDI (a structured interview developed by the World Health Organization for lay interviewers for ICD-10). The results of these studies show that the M.I.N.I. has acceptably high validation and reliability scores, but can be administered in a much shorter period of time (mean 18.7 ± 11.6 minutes, median 15 minutes) than the above referenced instruments. It can be used by clinicians, after a brief training session. Lay interviewers require more extensive training.

Interview:
In order to keep the interview as brief as possible, inform the patient that you will conduct a clinical interview that is more structured than usual, with very precise questions about psychological problems which require a yes or no answer.

General format:
The M.I.N.I. is divided into modules identified by letters, each corresponding to a diagnostic category.

• At the beginning of each diagnostic module (except for psychotic disorders module), screening question(s) corresponding to the main criteria of the disorder are presented in a gray box.
• At the end of each module, diagnostic box(es) permits the clinician to indicate whether diagnostic criteria are met.

Conventions:

Sentences written in « normal font » should be read exactly as written to the patient in order to standardize the assessment of diagnostic criteria.

Sentences written in « CAPITALS » should not be read to the patient. They are instructions for the interviewer to assist in the scoring of the diagnostic algorithms.

Sentences written in « bold » indicate the time frame being investigated. The interviewer should read them as often as necessary. Only symptoms occurring during the time frame indicated should be considered in scoring the responses.

Answers with an arrow above them (→ ) indicate that one of the criteria necessary for the diagnosis (es) is not met. In this case, the interviewer should go to the end of the module, circle « NO » in all the diagnostic boxes and move to the next module.

When terms are separated by a slash (/) the interviewer should read only those symptoms known to be present in the patient (for example, question H6).

Phrases in (parentheses) are clinical examples of the symptom. These may be read to the patient to clarify the question.

Rating Instructions:

All questions must be rated. The rating is done at the right of each question by circling either Yes or No. Clinical judgment by the rater should be used in coding the responses. The rater should ask for examples when necessary, to ensure accurate coding. The patient should be encouraged to ask for clarification on any question that is not absolutely clear. The clinician should be sure that each dimension of the question is taken into account by the patient (for
example, time frame, frequency, severity, and/or alternatives). Symptoms better accounted for by an organic cause or by the use of alcohol or drugs should not be coded positive in the M.I.N.I. The M.I.N.I. Plus has questions that investigate these issues.

A. MAJOR DEPRESSIVE EPISODE

→ MEANS: GO TO THE DIAGNOSTIC BOXES, CIRCLE NO IN ALL DIAGNOSTIC BOXES, AND MOVE TO THE NEXT MODULE

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A1. Have you been consistently depressed or down, most of the day, nearly every day, for the past two weeks?</td>
<td>NO</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>A2. In the past two weeks, have you been much less interested in most things or much less able to enjoy the things you used to enjoy most of the time?</td>
<td>NO</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td><strong>A1 or A2 coded YES?</strong></td>
<td>YES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3. Over the past two weeks, when you felt depressed or uninterested:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Was your appetite decreased or increased nearly every day? Did your weight decrease or increase without trying intentionally (i.e., by ±5% of body weight or ±8 lbs. or ±3.5 Kgs., for a 160 lb. /70 kg. person in a month)?</td>
<td>NO</td>
<td>YES *</td>
<td></td>
</tr>
<tr>
<td>b. Did you have trouble sleeping nearly every night (difficulty falling asleep, waking up in the middle of the night, early morning wakening or sleeping excessively)?</td>
<td>NO</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>c. Did you talk or move more slowly than normal or were you fidgety, restless or having trouble sitting still almost every day?</td>
<td>NO</td>
<td>YES *</td>
<td></td>
</tr>
<tr>
<td>d. Did you feel tired or without energy almost every day?</td>
<td>NO</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>e. Did you feel worthless or guilty almost every day?</td>
<td>NO</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>f. Did you have difficulty concentrating or making decisions almost every day?</td>
<td>NO</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>g. Did you repeatedly consider hurting yourself, feel suicidal, or wish that you were dead?</td>
<td>NO</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td><strong>ARE 5 OR MORE ANSWERS (A1-A3) CODED YES</strong></td>
<td>NO</td>
<td>YES *</td>
<td></td>
</tr>
</tbody>
</table>

IF PATIENT HAS CURRENT MAJOR DEPRESSIVE EPISODE CONTINUE TO A4, OTHERWISE MOVE TO MODULE B:

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. During your lifetime, did you have other episodes of two weeks or more problems we just talked about?</td>
<td>NO</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>b. In between 2 episodes of depression, did you ever have an interval of at least 2 months, without any depression and any loss of interest?</td>
<td>NO</td>
<td>YES</td>
<td></td>
</tr>
</tbody>
</table>

MAJOR DEPRESSIVE EPISODE, CURRENT
* If a patient has Major Depressive Episode, Current, use this information in coding the corresponding questions on next pages (A 6 d and A 6 e).

**MAJOR DEPRESSIVE EPISODE WITH MELANCHOLIC FEATURES (Optional)**

IF THE PATIENT CODES POSITIVE FOR A CURRENT MAJOR DEPRESSIVE EPISODE (A3 = YES), EXPLORE THE FOLLOWING:

<table>
<thead>
<tr>
<th>A5. a. During the most severe period of the current depressive episode, did you lose almost completely your ability to enjoy nearly everything?</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>b. During the most severe period of the current depressive episode, did you lose your ability to respond to things that previously gave you pleasure, or cheered you up?</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td><strong>IF NO:</strong> When something good happens does it fail to make you feel better, even temporarily?</td>
<td>NO</td>
<td>YES</td>
</tr>
</tbody>
</table>

| IS EITHER A5a OR A5b CODED YES? | YES |

<table>
<thead>
<tr>
<th>A 6. Over the past two week period, when you felt depressed and uninterested:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Did you feel depressed in a way that is different from the kind of feeling you experience when someone close to you dies?</td>
</tr>
<tr>
<td>b. Did you feel regularly worse in the morning, almost every day?</td>
</tr>
<tr>
<td>c. Did you wake up at least 2 hours before the usual time of awakening and have difficulty getting back to sleep, almost every day?</td>
</tr>
<tr>
<td>d. IS A3c CODED YES (PSYCHOMOTOR RETARDATION OR AGITATION)?</td>
</tr>
<tr>
<td>e. IS A3a CODED YES FOR ANOREXIA OR WEIGHT LOSS?</td>
</tr>
<tr>
<td>f. Did you feel excessive guilt or guilt out of proportion to the reality of the situation?</td>
</tr>
</tbody>
</table>

| ARE 3 OR MORE A6 ANSWERS CODED YES? | NO | YES |

**B. DYSTHYMIA**

**MEANS:** GO TO THE DIAGNOSTIC BOXES, CIRCLE NO IN ALL DIAGNOSTIC BOXES, AND MOVE TO THE NEXT MODULE

IF PATIENT’S SYMPTOMS CURRENTLY MEET CRITERIA FOR MAJOR DEPRESSIVE EPISODE, DO NOT EXPLORE THIS MODULE.

<table>
<thead>
<tr>
<th>B1. Have you felt sad, low or depressed most of the time for the last two years?</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>B2. Was this period interrupted by your feeling OK for two months or more?</td>
<td>NO</td>
<td>YES</td>
</tr>
</tbody>
</table>
B3. During this period of feeling depressed most of the time:

<table>
<thead>
<tr>
<th>Question</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Did your appetite change significantly?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Did you have trouble sleeping or sleep excessively?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Did you feel tired or without energy?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Did you lose your self-confidence?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Did you have trouble concentrating or making decisions?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. Did you feel hopeless?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If 2 OR MORE B3 ANSWERS CODED YES?

| YES |

B4. Did the symptoms of depression cause you significant distress or impair your ability to function at work, socially, or in some other important way?

| NO | YES |

C. SUICIDALITY

In the past month did you:

<table>
<thead>
<tr>
<th>Question</th>
<th>NO</th>
<th>YES</th>
<th>Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1. Suffer any accident? IF NO TO C1, SKIP TO C2; IF YES, ASK C1a;</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>C1a. Plan or intend to hurt yourself in that accident either passively or actively? IF NO TO C1a, SKIP TO C2; IF YES, ASK C1b;</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>C1b. Did you intend to die as a result of this accident?</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>C2. Think that you would be better off dead or wish you were dead?</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>C3. Want to harm yourself or to hurt or to injure yourself?</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>C4. Think about suicide?</td>
<td></td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>

IF YES, ASK ABOUT THE INTENSITY AND FREQUENCY OF THE SUICIDAL IDEATION:

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occasionally __</td>
<td>Mild</td>
</tr>
<tr>
<td>Often ___</td>
<td>Moderate</td>
</tr>
<tr>
<td>Very often ___</td>
<td>Severe</td>
</tr>
</tbody>
</table>

Can you control these impulses and state that you will not act on them while in this program? Only score 8 points if response is NO

| NO | YES | 8 |

C5. Have a suicide plan?                                                  | NO | YES | 8 |

C6. Take any active steps to prepare to injure yourself or to prepare for a suicide attempt in which you expected or intended to die? | NO | YES | 9 |

C7. Deliberately injure yourself without intending to kill yourself?      | NO | YES | 4 |

C8. Attempt suicide? Hoped to be rescued/survive Expected/intended to die | NO | YES | 10 |

In your lifetime:

<table>
<thead>
<tr>
<th>Question</th>
<th>NO</th>
<th>YES</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>C9. Did you ever make a suicide attempt?</td>
<td></td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

IS AT LEAST 1 OF THE ABOVE (EXCEPT C1) CODED YES?

| NO | YES |

IF YES, ADD THE TOTAL NUMBER OF POINTS FOR THE SUICIDE RISK CURRENT
ANSWERS (C1-C9) CHECKED ‘YES’ AND SPECIFY THE LEVEL OF SUICIDE RISK AS INDICATED IN THE DIAGNOSTIC BOX:

MAKE ANY ADDITIONAL COMMENTS ABOUT YOUR ASSESSMENT OF THIS PATIENT’S CURRENT AND NEAR FUTURE SUICIDE RISK IN THE SPACE BELOW:

D. HYPOMANIC AND MANIC EPISODES

→ MEANS: GO TO THE DIAGNOSTIC BOXES, CIRCLE NO IN ALL DIAGNOSTIC BOXES, AND MOVE TO THE NEXT MODULE

<table>
<thead>
<tr>
<th>D1. a. Have you ever had a period of time when you were feeling 'up' or 'high' or 'hyper' or so full of energy or full of yourself that you got into trouble, or that other people thought you were not your usual self? (Do not consider times when you were intoxicated on drugs or alcohol.)</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>IF PATIENT IS PUZZLED OR UNCLEAR ABOUT WHAT YOU MEAN BY 'UP' OR 'HIGH' OR 'HYPER', CLARIFY AS FOLLOWS: By 'up' or 'high' or 'hyper' I mean: having elated mood; increased energy; needing less sleep; having rapid thoughts; being full of ideas; having an increase in productivity, motivation, creativity, or impulsive behavior.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IF NO, CODE NO TO D1b: IF YES ASK:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Are you currently feeling 'up' or 'high' or 'hyper' or full of energy?</td>
<td>NO</td>
<td>YES</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D2. a. Have you ever been persistently irritable, for several days, so that you had arguments or verbal or physical fights, or shouted at people outside your family? Have you or others noticed that you have been more irritable or over reacted, compared to other people, even in situations that you felt were justified?</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>IF NO, CODE NO TO D2b: IF YES ASK:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Are you currently feeling persistently irritable?</td>
<td>NO</td>
<td>YES</td>
</tr>
</tbody>
</table>

IS D1a OR D2a CODED YES?

NO | YES

D3. IF D1b OR D2b = YES: EXPLORE THE CURRENT AND THE MOST SYMPTOMATIC PAST EPISODE, OTHERWISE IF D1b AND D2b = NO: EXPLORE ONLY THE MOST SYMPTOMATIC PAST EPISODE

During the times when you felt high, full of energy, or irritable did you:

<p>| a. Feel that you could do things others couldn't do, or that you were an especially important person? | NO | YES | NO | YES |</p>
<table>
<thead>
<tr>
<th>THE EXAMPLES ARE CONSISTENT WITH A DELUSIONAL IDEA.  ____ No</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>b. Need less sleep (for example, feel rested after only a few hours sleep)?</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>c. Talk too much without stopping, or so fast that people had difficulty understanding?</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>d. Have racing thoughts?</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>e. Become easily distracted so that any little interruption could distract you?</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>f. Become so active or physically restless that others were worried about you?</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>g. Want so much to engage in pleasurable activities that you ignored the risks or consequences (for example, spending sprees, reckless driving, or sexual indiscretions)?</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

**D3 (SUMMARY): ARE 3 OR MORE D3 ANSWERS CODED YES (OR 4 OR MORE IF D1a IS NO (IN RATING PAST EPISODE) AND D1b IS NO (IN RATING CURRENT EPISODE)?
RULE: ELATION/EXPANSIVENESS REQUIRES ONLY THREE D3 SYMPTOMS WHILE IRRITABLE MOOD ALONE REQUIRES 4 OF THE D3 SYMPTOMS.**

<table>
<thead>
<tr>
<th>VERIFY IF THE SYMPTOMS OCCURRED DURING THE SAME TIME PERIOD.</th>
<th>NO</th>
<th>YES</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>D4 Did these symptoms last at least a week and cause significant problems at home, at work, socially, or at school, or were you hospitalized for these problems?</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

**THE EPISODE EXPLORED WAS A:**

<table>
<thead>
<tr>
<th>IS D4 CODED NO?</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECIFY IF THE EPISODE IS CURRENT OR PAST.</td>
<td>HYPOMANIC EPISODE CURRENT ___ PAST ___</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IS D4 CODED YES?</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECIFY IF THE EPISODE IS CURRENT OR PAST.</td>
<td>MANIC EPISODE CURRENT ___ PAST ___</td>
<td></td>
</tr>
</tbody>
</table>

**E. PANIC DISORDER**

**MEANS: CIRCLE NO IN E5, E6 AND E7 AND SKIP TO F1**

<table>
<thead>
<tr>
<th>E1. a. Have you, on more than one occasion, had spells or attacks when you suddenly felt anxious, frightened, uncomfortable or uneasy, even in situations where most people would not feel that way?</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>b. Did the spells surge to a peak within 10 minutes of starting?</td>
<td>YES</td>
</tr>
<tr>
<td>NO</td>
<td>YES</td>
</tr>
</tbody>
</table>
E2. At any time in the past, did any of those spells or attacks come on unexpectedly or occur in an unpredictable or unprovoked manner? YES

E3. Have you ever had one such attack followed by a month or more of persistent concern about having another attack, or worries about the consequences of the attack or did you make a significant change in your behavior because of the attacks e.g., shopping only with a companion, not wanting to leave your house, visiting the emergency room repeatedly, or seeing your doctor more frequently because of the symptoms? NO YES

**E4. During the worst spell that you can remember:**

| a. Did you have skipping, racing or pounding of your heart? | NO YES |
| b. Did you have sweating or clammy hands? | NO YES |
| c. Were you trembling or shaking? | NO YES |
| d. Did you have shortness of breath or difficulty breathing? | NO YES |
| e. Did you have a choking sensation or a lump in your throat? | NO YES |
| f. Did you have chest pain, pressure or discomfort? | NO YES |
| g. Did you have nausea, stomach problems or sudden diarrhea? | NO YES |
| h. Did you feel dizzy, unsteady, lightheaded or faint? | NO YES |
| i. Did things around you feel strange, unreal, detached or unfamiliar, or did you feel outside of or detached from part or all of your body? | NO YES |
| J. Did you fear that you were losing control or going crazy? | NO YES |
| k. Did you fear that you were dying? | NO YES |
| l. Did you have tingling or numbness in parts of your body? | NO YES |
| m. Did you have hot flushes or chills? | NO YES |

E5. ARE BOTH E3, AND 4 OR MORE E4 ANSWERS, CODED YES? IF YES TO E5, SKIP TO E7.

| E6. IF E5 = NO, ARE ANY E4 ANSWERS CODED YES? THEN SKIP TO F1. | NO YES |

| E7. In the past month, did you have such attacks repeatedly (2 or more) followed by persistent concern about having another attack? | NO YES |

**F. AGORAPHOBIA**

| F1. Do you feel anxious or uneasy in places or situations where you might have a panic attack or the panic-like symptoms we just spoke about, or where help might not be available or escape might be difficult: like being in a crowd, standing in a line (queue), when you are alone away from home or alone at home, or when crossing a bridge, traveling in a bus, train or car? | NO YES |

| IF F1 = NO, CIRCLE NO IN F2. | |

| F2. Do you fear these situations so much that you avoid them, or suffer | NO YES |
through them, or need a companion to face them?

<table>
<thead>
<tr>
<th>AGORAPHOBIA CURRENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
</tr>
</tbody>
</table>

**IS F2 (CURRENT AGORAPHOBIA) CODED NO**

**IS E7 (CURRENT PANIC DISORDER) CODED YES?**

<table>
<thead>
<tr>
<th>AGORAPHOBIA CURRENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
</tr>
</tbody>
</table>

**IS F2 (CURRENT AGORAPHOBIA) CODED YES**

**IS E7 (CURRENT PANIC DISORDER) CODED YES?**

<table>
<thead>
<tr>
<th>AGORAPHOBIA CURRENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
</tr>
</tbody>
</table>

**IS F2 (CURRENT AGORAPHOBIA) CODED YES**

**IS E5 (PANIC DISORDER LIFETIME) CODED NO?**

<table>
<thead>
<tr>
<th>AGORAPHOBIA CURRENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
</tr>
</tbody>
</table>

**G. SOCIAL PHOBIA (SOCIAL ANXIETY DISORDER)**

G1. In the past month, were you fearful or embarrassed being watched, being the focus of attention, or fearful of being humiliated? This includes things like speaking in public, eating in public or with others, writing while someone watches, or being in social situations

| YES |

Is this social fear excessive or unreasonable?

| YES |

Do you fear these social situations so much that you avoid them or suffer through them?

| YES |

G4. Do these social fears disrupt your normal work or social functioning or cause you significant distress?

| NO     YES |

**SUBTYPES**

Do you fear and avoid 4 or more social situations?

If YES Generalized social phobia (social anxiety disorder)

If NO Non-generalized social phobia (social anxiety disorder)

NOTE TO INTERVIEWER: PLEASE ASSESS WHETHER THE SUBJECT’S FEARS ARE RESTRICTED TO NON-GENERALIZED (“ONLY 1 OR SEVERAL”) SOCIAL SITUATIONS OR EXTEND TO GENERALIZED (“MOST”) SOCIAL SITUATIONS. “MOST” SOCIAL SITUATIONS IS USUALLY OPERATIONALIZED TO MEAN 4 OR MORE SOCIAL SITUATIONS, ALTHOUGH THE DSM-IV DOES NOT EXPLICITLY STATE THIS.

EXAMPLES OF SUCH SOCIAL SITUATIONSTYPICALLY INCLUDE INITIATING OR MAINTAINING A CONVERSATION, PARTICIPATING IN SMALL GROUPS, DATING, SPEAKING TO AUTHORITY FIGURES, ATTENDING PARTIES, PUBLIC SPEAKING, EATING IN FRONT OF OTHERS, URINATING IN A PUBLIC WASHROOM, ETC.
### H. OBSESSIVE-COMPULSIVE DISORDER

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1. In the past month, have you been bothered by recurrent thoughts, impulses, or images that were unwanted, distasteful, inappropriate, intrusive, or distressing? (For example, the idea that you were dirty, contaminated or had germs, or fear of contaminating others, or fear of harming someone even though you didn't want to, or fearing you would act on some impulse, or fear or superstitions that you would be responsible for things going wrong, or obsessions with sexual thoughts, images or impulses, or hoarding, collecting, or religious obsessions.)</td>
<td>NO ↓</td>
<td>YES</td>
</tr>
<tr>
<td>H2. Did they keep coming back into your mind even when you tried to ignore or get rid of them?</td>
<td>NO ↓</td>
<td>YES</td>
</tr>
<tr>
<td>H3. Do you think that these obsessions are the product of your own mind and that they are not imposed from the outside?</td>
<td>NO</td>
<td>YES OBSESSIONS</td>
</tr>
<tr>
<td>H4. In the past month, did you do something repeatedly without being able to resist doing it, like washing or cleaning excessively, counting or checking things over and over, or repeating, collecting, arranging things, or other superstitious rituals?</td>
<td>NO</td>
<td>YES COMPULSIONS</td>
</tr>
<tr>
<td><strong>H3 OR H4 CODED YES?</strong></td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td><strong>Did you recognize that either these obsessive thoughts or these compulsive behaviors were excessive or unreasonable?</strong></td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>H6. Did these obsessive thoughts and/or compulsive behaviors significantly interfere with your normal routine, your work or school, your usual social activities, or relationships, or did they take more than one hour a day?</td>
<td>NO</td>
<td>YES O.C.D. CURRENT</td>
</tr>
</tbody>
</table>

### I. POSTTRAUMATIC STRESS DISORDER

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1. Have you ever experienced or witnessed or had to deal with an extremely traumatic event that included actual or threatened death or serious injury to you or someone else?</td>
<td>YES</td>
</tr>
</tbody>
</table>

EXAMPLES OF TRAUMATIC EVENTS INCLUDE: SERIOUS ACCIDENTS, SEXUAL OR PHYSICAL ASSAULT, A TERRORIST ATTACK, BEING HELD HOSTAGE, KIDNAPPING, FIRE, DISCOVERING A BODY, SUDDEN DEATH OF SOMEONE CLOSE TO YOU, WAR, OR NATURAL DISASTER.
### 2. Did you respond with intense fear, helplessness or horror?
- **No**
- **Yes**

### 3. During the past month, have you re-experienced the event in a distressing way (such as, dreams, intense recollections, flashbacks or physical reactions)?
- **Yes**

### 4. In the past month:
- Have you avoided thinking about or talking about the event?
  - **No**
  - **Yes**
- Have you avoided activities, places or people that remind you of the event?
  - **No**
  - **Yes**
- Have you had trouble recalling some important part of what happened?
  - **No**
  - **Yes**
- Have you become much less interested in hobbies or social activities?
  - **No**
  - **Yes**
- Have you felt detached or estranged from others?
  - **No**
  - **Yes**
- Have you noticed that your feelings are numbed?
  - **No**
  - **Yes**
- Have you felt that your life will be shortened or that you will die sooner than other people?
  - **No**
  - **Yes**

**Are 3 or more 4 answers coded YES?**
- **No**
- **Yes**

### 5. In the past month:
- Have you had difficulty sleeping?
  - **No**
  - **Yes**
- Were you especially irritable or did you have outbursts of anger?
  - **No**
  - **Yes**
- Have you had difficulty concentrating?
  - **No**
  - **Yes**
- Were you nervous or constantly on your guard?
  - **No**
  - **Yes**
- Were you easily startled?
  - **No**
  - **Yes**

**Are 2 or more 5 answers coded YES?**
- **No**
- **Yes**

### 6. During the past month, have these problems significantly interfered with your work or social activities, or caused significant distress?
- **No**
- **Yes**

---

### J. ALCOHOL ABUSE AND DEPENDENCE

→ MEANS: GO TO DIAGNOSTIC BOXES, CIRCLE NO IN BOTH AND MOVE TO THE NEXT MODULE

### J1. In the past 12 months, have you had 3 or more alcoholic drinks within a 3 hour period on 3 or more occasions?
- **No**
- **Yes**

### J2. In the past 12 months:
- Did you need to drink more in order to get the same effect that you got when you first started drinking?
  - **No**
  - **Yes**
- When you cut down on drinking did your hands shake, did you sweat or feel agitated? Did you drink to avoid these symptoms or to avoid being hungover, for example, “the shakes”, sweating or agitation?
  - **No**
  - **Yes**
  
  **IfYES TO EITHER, CODE YES.**
- During the times when you drank alcohol, did you end up drinking more than you planned when you started?
  - **No**
  - **Yes**
- Have you tried to reduce or stop drinking alcohol but failed?
  - **No**
  - **Yes**
- On the days that you drank, did you spend substantial time in obtaining
  - **No**
  - **Yes**
alcohol, drinking, or in recovering from the effects of alcohol?  
f. Did you spend less time working, enjoying hobbies, or being with others because of your drinking?  
g. Have you continued to drink even though you knew that the drinking caused you health or mental problems?  

**ARE 3 OR MORE J2 ANSWERS CODED YES?**  
* IF YES, SKIP J3 QUESTIONS, CIRCLE N/A IN THE ABUSE BOX AND MOVE TO THE NEXT DISORDER. DEPENDENCE PREEMPTS ABUSE.

<table>
<thead>
<tr>
<th>J3. In the past 12 months:</th>
<th></th>
</tr>
</thead>
</table>
| a. Have you been intoxicated, high, or hungover more than once when you had other responsibilities at school, at work, or at home? Did this cause any problems?  
(CODE YES ONLY IF THIS CAUSED PROBLEMS.) | NO  YES |
| b. Were you intoxicated more than once in any situation where you were physically at risk, for example, driving a car, riding a motorbike, using machinery, boating, etc.? | NO  YES |
| c. Did you have legal problems more than once because of your drinking, for example, an arrest or disorderly conduct? | NO  YES |
| d. Did you continue to drink even though your drinking caused problems with your family or other people? | NO  YES |

**ARE 1 OR MORE J3 ANSWERS CODED YES?**  

<table>
<thead>
<tr>
<th>K. NON-ALCOHOL PSYCHOACTIVE SUBSTANCE USE DISORDERS</th>
<th></th>
</tr>
</thead>
</table>
| **Now I am going to show you / read to you a list of street drugs or medicines.**  
**K10 a. In the past 12 months,** did you take any of these drugs more than once, to get high, to feel better, or to change your mood?  
CIRCLE EACH DRUG TAKEN:  
**Stimulants:** amphetamines, "speed", crystal meth, “crank”, "rush", Dexedrine, Ritalin, diet pills.  
**Cocaine:** snorting, IV, freebase, crack, "speedball".  
**Narcotics:** heroin, morphine, Dilaudid, opium, Demerol, methadone, codeine, Percodan, Darvon, OxyContin.  
**Hallucinogens:** LSD ("acid"), mescaline, peyote, PCP ("angel dust", "peace pill"), psilocybin, STP, "mushrooms", "ecstasy", MDA, MDMA, or ketamine ("special K").  
**Inhalants:** "glue", ethyl chloride, “rush”, nitrous oxide ("laughing gas"), amyl or butyl nitrate ("poppers"). | YES |
**Marijuana:** hashish ("hash"), THC, "pot", "grass", "weed", "reefer".

**Tranquilizers:** Quaalude, Seconal ("reds"), Valium, Xanax, Librium, Ativan, Dalmane, Halcion, barbiturates, Miltown, GHB, Roofinol, "Roofies".

**Miscellaneous:** steroids, nonprescription sleep or diet pills. Any others?

**SPECIFY MOST USED DRUG(s):**

<table>
<thead>
<tr>
<th>CHECK ONE BOX</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ E DRUG / DRUG CLASS HAS BEEN USED</td>
</tr>
<tr>
<td>☐ ONLY THE MOST USED DRUG CLASS IS INVESTIGATED.</td>
</tr>
<tr>
<td>☐ EACH DRUG CLASS USED IS EXAMINED SEPARATELY (PHOTOCOPY K2 AND K3)</td>
</tr>
</tbody>
</table>

b. **SPECIFY WHICH DRUG/DRUG CLASS WILL BE EXPLORED IN THE INTERVIEW BELOW IF THERE IS CONCURRENT OR SEQUENTIAL POLYSUBSTANCE USE:**

---

**K2. Considering your use of (NAME THE DRUG / DRUG CLASS SELECTED), in the past 12 months:**

<table>
<thead>
<tr>
<th></th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Have you found that you needed to use more (NAME OF DRUG / DRUG CLASS SELECTED) to get the same effect that you did when you first started taking it?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. When you reduced or stopped using (NAME OF DRUG / DRUG CLASS SELECTED), did you have withdrawal symptoms (aches, shaking, fever, weakness, diarrhea, nausea, sweating, heart pounding, difficulty sleeping, or feeling agitated, anxious, irritable, or depressed)? Did you use any drug(s) to keep yourself from getting sick (withdrawal symptoms) or so that you would feel better? IF YES TO EITHER, CODE YES.</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>c. Have you often found that when you used (NAME OF DRUG / DRUG CLASS SELECTED), you ended up taking more than you thought you would?</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>d. Have you tried to reduce or stop taking (NAME OF DRUG / DRUG CLASS SELECTED) but failed?</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>e. On the days that you used (NAME OF DRUG / DRUG CLASS SELECTED), did you spend substantial time (&gt;2 HOURS), obtaining, using or in recovering from the drug, or thinking about the drug?</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>f. Did you spend less time working, enjoying hobbies, or being with family or friends because of your drug use?</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>g. Have you continued to use (NAME OF DRUG / DRUG CLASS SELECTED), even though it caused you health or mental problems?</td>
<td>NO</td>
<td>YES</td>
</tr>
</tbody>
</table>

**ARE 3 OR MORE K2 ANSWERS CODED YES?**

**SPECIFY DRUG(S):**

* IF YES, SKIP K3 QUESTIONS, CIRCLE N/A IN THE ABUSE BOX FOR THIS SUBSTANCE AND MOVE TO THE NEXT DISORDER. DEPENDENCE PREEMPTS ABUSE.

---

Considering your use of (NAME THE DRUG CLASS SELECTED), in the past 12 months:
K3. a. Have you been intoxicated, high, or hungover from (NAME OF DRUG / DRUG CLASS SELECTED) more than once, when you had other responsibilities at school, at work, or at home? Did this cause any problem?  
(CODE YES ONLY IF THIS CAUSED PROBLEMS.)

<table>
<thead>
<tr>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
</table>

b. Have you been high or intoxicated from (NAME OF DRUG / DRUG CLASS SELECTED) more than once in any situation where you were physically at risk (for example, driving a car, riding a motorbike, using machinery, boating, etc.)?

<table>
<thead>
<tr>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
</table>

c. Did you have legal problems more than once because of your drug use, for example, an arrest or disorderly conduct?

<table>
<thead>
<tr>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
</table>

d. Did you continue to use (NAME OF DRUG / DRUG CLASS SELECTED), even though it caused problems with your family or other people?

<table>
<thead>
<tr>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
</table>

ARE 1 OR MORE K3 ANSWERS CODED YES?

SPECIFY DRUG(S): ____________________________________________

<table>
<thead>
<tr>
<th>NO N/A YES</th>
</tr>
</thead>
</table>

L. PSYCHOTIC DISORDERS AND MOOD DISORDER WITH PSYCHOTIC FEATURES

ASK FOR AN EXAMPLE OF EACH QUESTION ANSWERED POSITIVELY. CODE YES ONLY IF THE EXAMPLES CLEARLY SHOW A DISTORTION OF THOUGHT OR OF PERCEPTION OR IF THEY ARE NOT CULTURALLY APPROPRIATE. BEFORE CODING, INVESTIGATE WHETHER DELUSIONS QUALIFY AS "BIZARRE".

DELUSIONS ARE "BIZARRE" IF: CLEARLY IMPLAUSIBLE, ABSURD, NOT UNDERSTANDABLE, AND CANNOT DERIVE FROM ORDINARY LIFE EXPERIENCE.

HALLUCINATIONS ARE SCORED "BIZARRE" IF: A VOICE COMMENTS ON THE PERSON'S THOUGHTS OR BEHAVIOR, OR WHEN TWO OR MORE VOICES ARE CONVERSING WITH EACH OTHER.

Now I am going to ask you about unusual experiences that some people have.

<table>
<thead>
<tr>
<th>BIZARRE</th>
</tr>
</thead>
</table>

L1. a Have you ever believed that people were spying on you, or that someone was plotting against you, or trying to hurt you?  
NOTE: ASK FOR EXAMPLES TO RULE OUT ACTUAL STALKING.

<table>
<thead>
<tr>
<th>NO</th>
<th>YES</th>
<th>YES</th>
</tr>
</thead>
</table>

b. IF YES OR YES BIZARRE: do you currently believe these things?

<table>
<thead>
<tr>
<th>NO</th>
<th>YES</th>
<th>YES</th>
</tr>
</thead>
</table>

L2 a. Have you ever believed that someone was reading your mind or could hear your thoughts, or that you could actually read someone’s mind or hear what another person was thinking?

<table>
<thead>
<tr>
<th>NO</th>
<th>YES</th>
<th>YES</th>
</tr>
</thead>
</table>

b. IF YES OR YES BIZARRE: do you currently believe these things?

<table>
<thead>
<tr>
<th>NO</th>
<th>YES</th>
<th>YES</th>
</tr>
</thead>
</table>

L3. a. Have you ever believed that someone or some force outside of yourself put thoughts in your mind that were not your
<table>
<thead>
<tr>
<th>Question</th>
<th>Response Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you ever felt that you were possessed?</td>
<td></td>
</tr>
<tr>
<td><strong>CLINICIAN: ASK FOR EXAMPLES AND DISCOUNT ANY THAT ARE NOT PSYCHOTIC.</strong></td>
<td></td>
</tr>
<tr>
<td>b. <strong>IF YES OR YES BIZARRE:</strong> do you currently believe these things?</td>
<td>NO YES YES L6</td>
</tr>
<tr>
<td>L4. a. Have you ever believed that you were being sent special messages through the TV, radio, or newspaper, or that a person you did not personally know was particularly interested in you?</td>
<td>NO YES YES</td>
</tr>
<tr>
<td>b. <strong>IF YES OR YES BIZARRE:</strong> do you currently believe these things?</td>
<td></td>
</tr>
<tr>
<td>L5. a. Have your relatives or friends ever considered any of your beliefs strange or unusual?</td>
<td>NO YES YES</td>
</tr>
<tr>
<td><strong>INTERVIEWER:</strong> ASK FOR EXAMPLES. ONLY CODE YES IF THE EXAMPLES ARE CLEARLY DELUSIONAL IDEAS NOT EXPLORED IN QUESTIONS L1 TO L4, FOR EXAMPLE, SOMATIC OR RELIGIOUS DELUSIONS OR DELUSIONS OF GRANDIOSITY, JEALOUSY, GUILT, RUIN OR DESTITUTION, ETC.</td>
<td></td>
</tr>
<tr>
<td>b. <strong>IF YES OR YES BIZARRE:</strong> do they currently consider your beliefs strange?</td>
<td>NO YES YES</td>
</tr>
<tr>
<td>L6. a. Have you ever heard things other people couldn't hear, such as voices?</td>
<td>NO YES</td>
</tr>
<tr>
<td><strong>HALLUCINATIONS ARE SCORED &quot;BIZARRE&quot; ONLY IF PATIENT ANSWERS YES TO THE FOLLOWING:</strong></td>
<td></td>
</tr>
<tr>
<td>b. <strong>IF YES OR YES BIZARRE TO L6a:</strong> have you heard these things in the past month?</td>
<td>NO YES YES L8b</td>
</tr>
<tr>
<td><strong>HALLUCINATIONS ARE SCORED &quot;BIZARRE&quot; ONLY IF PATIENT ANSWERS YES TO THE FOLLOWING:</strong></td>
<td></td>
</tr>
<tr>
<td>Did you hear a voice commenting on your thoughts or behavior or did you hear two or more voices talking to each other?</td>
<td>NO YES</td>
</tr>
<tr>
<td>L7. a Have you ever had visions when you were awake or have you ever seen things other people couldn't see?</td>
<td>NO YES</td>
</tr>
<tr>
<td><strong>CLINICIAN: CHECK TO SEE IF THESE ARE CULTURALLY INAPPROPRIATE.</strong></td>
<td></td>
</tr>
<tr>
<td>b. <strong>IF YES:</strong> have you seen these things in the past month?</td>
<td>NO YES</td>
</tr>
<tr>
<td><strong>CLINICIAN'S JUDGMENT</strong></td>
<td></td>
</tr>
<tr>
<td>L8. b IS THE PATIENT CURRENTLY EXHIBITING INCOHERENCE, DISORGANIZED SPEECH, OR MARKED LOOSENING OF ASSOCIATIONS?</td>
<td>NO YES</td>
</tr>
<tr>
<td>L9. b IS THE PATIENT CURRENTLY EXHIBITING DISORGANIZED OR CATATONIC 'BEHAVIOR?</td>
<td>NO YES</td>
</tr>
<tr>
<td>L10. b ARE NEGATIVE SYMPTOMS OF SCHIZOPHRENIA, E.G. SIGNIFICANT AFFECTIVE FLATTENING, POVERTY OF SPEECH (ALOGIA) OR AN INABILITY TO INITIATE OR PERSIST IN GOAL-DIRECTED ACTIVITIES (AVOLITION),</td>
<td>NO YES</td>
</tr>
</tbody>
</table>
PROMINENT DURING THE INTERVIEW?

<table>
<thead>
<tr>
<th>L11. a. ARE 1 OR MORE « a » QUESTIONS FROM L1a TO L7a CODED</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES OR YES BIZARRE AND IS EITHER: MAJOR DEPRESSIVE EPISODE, (CURRENT OR RECURRENT) OR MANIC OR HYPOMANIC EPISODE, (CURRENT OR PAST) CODED YES?</td>
<td></td>
<td>L13</td>
</tr>
<tr>
<td>IF NO TO L11 a, CIRCLE NO IN BOTH ‘MOOD DISORDER WITH PSYCHOTIC FEATURES’ DIAGNOSTIC BOXES AND MOVE TO L13.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b. You told me earlier that you had period(s) when you felt (depressed/high/persistently irritable).

Were the beliefs and experiences you just described (SYMPTOMS CODED YES FROM L1a TO L7a) restricted exclusively to times when you were feeling depressed/high/irritable?

IF THE PATIENT EVER HAD A PERIOD OF AT LEAST 2 WEEKS OF HAVING THESE BELIEFS OR EXPERIENCES (PSYCHOTIC SYMPTOMS) WHEN THEY WERE NOT DEPRESSED/HIGH/IRRITABLE, CODE NO TO THIS DISORDER.

IF THE ANSWER IS NO TO THIS DISORDER, ALSO CIRCLE NO TO L12 AND MOVE TO L13.

<table>
<thead>
<tr>
<th>L12. a. ARE 1 OR MORE « b » QUESTIONS FROM L1b TO L7b CODED YES OR YES BIZARRE AND IS EITHER: MAJOR DEPRESSIVE EPISODE, (CURRENT) OR MANIC OR HYPOMANIC EPISODE, (CURRENT) CODED YES?</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>IF THE ANSWER IS YES TO THIS DISORDER (LIFETIME OR CURRENT), CIRCLE NO TO L13 AND L14 AND MOVE TO THE NEXT MODULE.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>L13. ARE 1 OR MORE « b » QUESTIONS FROM L1b TO L6b, CODED YES BIZARRE? OR ARE 2 OR MORE « b » QUESTIONS FROM L1b TO L10b, CODED YES (RATHER THAN YES BIZARRE)? AND DID AT LEAST TWO OF THE PSYCHOTIC SYMPTOMS OCCUR DURING THE SAME 1 MONTH PERIOD?</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>L14. IS L13 CODED YES OR ARE 1 OR MORE « a » QUESTIONS FROM L1a TO L6a, CODED YES BIZARRE? OR ARE 2 OR MORE « a » QUESTIONS FROM L1a TO L7a, CODED YES (RATHER THAN YES BIZARRE) AND DID AT LEAST TWO OF THE PSYCHOTIC SYMPTOMS OCCUR</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MOOD DISORDER WITH PSYCHOTIC FEATURES LIFETIME

PSYCHOTIC DISORDER CURRENT
DURING THE SAME 1 MONTH PERIOD?

**M. ANOREXIA NERVOSA**

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. How tall are you?</td>
<td>_____ cm</td>
</tr>
<tr>
<td>b. What was your lowest weight in the past 3 months?</td>
<td>_____ Kgs</td>
</tr>
<tr>
<td>* IS PATIENT’S WEIGHT EQUAL TO OR BELOW THE THRESHOLD CORRESPONDING TO HIS / HER HEIGHT? (SEE TABLE BELOW) *</td>
<td>YES</td>
</tr>
<tr>
<td><strong>In the past 3 months:</strong></td>
<td></td>
</tr>
<tr>
<td>M2. In spite of this low weight, have you tried not to gain weight?</td>
<td>YES</td>
</tr>
<tr>
<td>M3. Have you intensely feared gaining weight or becoming fat, even though you were underweight?</td>
<td>YES</td>
</tr>
<tr>
<td>M4. a. Have you considered yourself too big / fat or that part of your body was too big / fat?</td>
<td>NO YES</td>
</tr>
<tr>
<td>b. Has your body weight or shape greatly influenced how you felt about yourself?</td>
<td>NO YES</td>
</tr>
<tr>
<td>c. Have you thought that your current low body weight was normal or excessive?</td>
<td>NO YES</td>
</tr>
<tr>
<td>M5. ARE 1 OR MORE ITEMS FROM M4 CODED YES?</td>
<td>YES</td>
</tr>
<tr>
<td>M6. FOR WOMEN ONLY: During the last 3 months, did you miss all your menstrual periods when they were expected to occur (when you were not pregnant)?</td>
<td>YES</td>
</tr>
<tr>
<td>FOR WOMEN: ARE M5 AND M6 CODED YES?</td>
<td></td>
</tr>
<tr>
<td>FOR MEN: IS M5 CODED YES?</td>
<td></td>
</tr>
</tbody>
</table>

**HEIGHT / WEIGHT TABLE CORRESPONDING TO A BMI THRESHOLD OF 17.5Kg/ m²**

<table>
<thead>
<tr>
<th>Cm</th>
<th>145</th>
<th>147</th>
<th>150</th>
<th>152</th>
<th>155</th>
<th>158</th>
<th>160</th>
<th>163</th>
<th>165</th>
<th>168</th>
<th>170</th>
<th>173</th>
<th>175</th>
<th>178</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kgs</td>
<td>37</td>
<td>38</td>
<td>39</td>
<td>41</td>
<td>42</td>
<td>43</td>
<td>45</td>
<td>46</td>
<td>48</td>
<td>49</td>
<td>51</td>
<td>52</td>
<td>54</td>
<td>55</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cm</th>
<th>180</th>
<th>183</th>
<th>185</th>
<th>188</th>
<th>191</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kgs</td>
<td>57</td>
<td>59</td>
<td>60</td>
<td>62</td>
<td>64</td>
</tr>
</tbody>
</table>

The weight thresholds above are calculated using a body mass index (BMI) equal to or below 17.5 Kg/m² for the patient’s height. This is the threshold guideline below which a person is deemed underweight by the DSM-IV and the ICD-10 Diagnostic criteria for Research for Anorexia Nervosa.

**N. BULIMIA NERVOSA**

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>N1. In the past three months, did you have eating binges or times when you ate a very large amount of food within a 2-hour period?</td>
<td>NO YES</td>
</tr>
<tr>
<td>N2. In the last 3 months, did you have eating binges as often as twice a week?</td>
<td>YES</td>
</tr>
</tbody>
</table>
During these binges, did you feel that your eating was out of control?  
NO

YES

N4. Did you do anything to compensate for, or to prevent a weight gain from these binges, like vomiting, fasting, exercising or taking laxatives, enemas, diuretics (fluid pills), or other medications?  
NO

YES

Does your body weight or shape greatly influence how you feel about yourself?  
NO

YES

N5. Does your body weight or shape greatly influence how you feel about yourself?  
NO

YES

NO

↓
Skip to N8

YES

N6. DO THE PATIENT'S SYMPTOMS MEET CRITERIA FOR ANOREXIA NERVOSA?  
NO

↓
Skip to N8

YES

N7. Do these binges occur only when you are under (____ kgs.)? INTERVIEWER: WRITE IN THE ABOVE PARENTHESIS THE THRESHOLD WEIGHT FOR THIS PATIENT’S HEIGHT FROM THE HEIGHT / WEIGHT TABLE IN THE ANOREXIA NERVOSA MODULE.  
NO

YES

NO

YES

BULIMIA NERVOSA CURRENT

YES

NO

YES

ANOREXIA NERVOSA Binge Eating/Purging Type CURRENT

O. GENERALIZED ANXIETY DISORDERS

a. Have you worried excessively or been anxious about several things over the past 6 months?  
YES

b. Are these worries present most days?  
NO

YES

IS THE PATIENT'S ANXIETY RESTRICTED EXCLUSIVELY TO, OR BETTER EXPLAINED BY, ANY DISORDER PRIOR TO THIS POINT?  
NO

YES

O2. Do you find it difficult to control the worries or do they interfere with your ability to focus on what you are doing?  
YES

O3. FOR THE FOLLOWING, CODE NO IF THE SYMPTOMS ARE CONFINED TO FEATURES OF ANY DISORDER EXPLORRED PRIOR TO THIS POINT.

When you were anxious over the past 6 months, did you, most of the time:  

a. Feel restless, keyed up or on edge?  
NO

YES

b. Feel tense?  
NO

YES

c. Feel tired, weak or exhausted easily?  
NO

YES

d. Have difficulty concentrating or find your mind going blank?  
NO

YES

e. Feel irritable?  
NO

YES

f. Have difficulty sleeping (difficulty falling asleep, waking up in the middle of the night, early morning wakening or sleeping excessively)?  
NO

YES
P. ANTISOCIAL PERSONALITY DISORDER (Optional)

P1. Before you were 15 years old, did you:

<table>
<thead>
<tr>
<th></th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. repeatedly skip school or run away from home overnight?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. repeatedly lie, cheat, &quot;con&quot; others, or steal?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. start fights or bully, threaten, or intimidate others?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. deliberately destroy things or start fires?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. deliberately hurt animals or people?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. force someone to have sex with you?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ARE 2 OR MORE P1 ANSWERS CODED YES? | YES |

DO NOT CODE YES TO THE BEHAVIORS BELOW IF THEY ARE EXCLUSIVELY POLITICALLY OR RELIGIOUSLY MOTIVATED

P2. Since you were 15 years old, have you:

<table>
<thead>
<tr>
<th></th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. repeatedly behaved in a way that others would consider irresponsible, like failing to pay for things you owed, deliberately being impulsive or deliberately not working to support yourself?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. done things that are illegal even if you didn't get caught (for example, destroying property, shoplifting, stealing, selling drugs, or committing a felony)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. been in physical fights repeatedly (including physical fights with your spouse or children)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. often lied or &quot;conned&quot; other people to get money or pleasure, or lied just for fun?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. exposed others to danger without caring?</td>
<td></td>
<td>YES</td>
</tr>
<tr>
<td>f. felt no guilt after hurting, mistreating, lying to, or stealing from others, or after damaging property?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ARE 3 OR MORE P2 QUESTIONS CODED YES? | YES |

2. 2 Form to collect data on disorders and comorbidities from medical records.

The interviewer will fill in this form appropriately.

1. Number of the patient _____________________________________________________

2. Diagnosis

a. Major depressive disorder

b. Other mental disorder(s)
3. Comorbidity  Yes _____ No _____
   If Yes, Specify   __________________________________________________________

4. Other relevant information on comorbidity of depression and other mental disorders
   _______________________________________________________________________
   _______________________________________________________________________

5. Other general medical conditions/physical diseases
   _______________________________________________________________________
   _______________________________________________________________________

6. Psychosocial and environmental problems
   a. Problems with primary support  Yes ___ No ____
      If Yes, Specify ________________________________
   _______________________________________________________________________
   b. Problems related to social environment Yes ___ No ____
      If Yes, Specify ________________________________
   _______________________________________________________________________
   c. Educational Problems Yes____ No ___
      If Yes, Specify ________________________________
   _______________________________________________________________________
   d. Occupational problems Yes ___ No ____
      If Yes, Specify ________________________________
   _______________________________________________________________________
   e. Housing problems Yes ____ No _____
      If Yes, Specify ________________________________
   _______________________________________________________________________
   f. Economic problems Yes ___ No___
      If Yes, Specify ________________________________
   _______________________________________________________________________
   g. Problems with access to health care services Yes ___ No____
      If Yes, Specify ________________________________
   _______________________________________________________________________
   h. Problems related to interaction with the legal system/crime Yes __ No___
      If Yes, Specify ________________________________
   _______________________________________________________________________
i. Other psychosocial and environmental problems Yes____ No____  
   If Yes, Specify __________________________
   _______________________________________________________________________

7. Any disability Yes ___ No___  
   If Yes, Specify __________________________
   _______________________________________________________________________

Section 3: Measuring Treatment adherence  
Assessment Number ______
Patient number________________________ Date ______________

3. 1 Self-report recall using Modified Morisky Scale (Morisky, 1986)

This instrument is used to measure the level of motivation and knowledge on adherence to treatment.

<table>
<thead>
<tr>
<th>Question</th>
<th>Motivation</th>
<th>Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do you ever forget to take your medicine?</td>
<td>Yes (0)</td>
<td>No (1)</td>
</tr>
<tr>
<td>2. Are you careless at times about taking your medicine?</td>
<td>Yes (0)</td>
<td>No (1)</td>
</tr>
<tr>
<td>3. When you feel better do you sometimes stop taking your medicine?</td>
<td>Yes(0)</td>
<td>No(1)</td>
</tr>
<tr>
<td>4. Sometimes if you feel worse when you take your medicine, do you stop taking it?</td>
<td>Yes(0)</td>
<td>No(1)</td>
</tr>
<tr>
<td>5. Do you know long-term benefit of taking your medicine as told to you by your doctor or pharmacist?</td>
<td>Yes(1)</td>
<td>No(0)</td>
</tr>
<tr>
<td>6. Sometimes do you forget to refill your prescription medicine on time?</td>
<td>Yes(0)</td>
<td>No(1)</td>
</tr>
</tbody>
</table>

7. If it happens that you do not adhere to your medication as prescribed by your doctor, what could be the reasons?
   _______________________________________________________________________
   _______________________________________________________________________

3. 2 Pill count (Patient to come back with the remaining drugs or with drug card or phone)

1. Dear (Name of the patient) can I see your drugs please?

<table>
<thead>
<tr>
<th>Names or types of the drugs</th>
<th>Pills per day</th>
<th>Total pills taken home in the last visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug 2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. Apart from the medication given to you in this hospital pharmacy, are there any other medications that you are taking? Yes ________ No_______

3. If yes, where do you get this medication? ______________________________________

4. Do you get medication from traditional healers? Yes ____ No ____

5. The interviewer fills in the following form appropriately

<table>
<thead>
<tr>
<th>Drug</th>
<th>Drug</th>
<th>Drug</th>
<th>Drug</th>
<th>Drug</th>
<th>Total</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>All</td>
<td></td>
</tr>
</tbody>
</table>

Previous date of issue
Total pills taken home
Number of pills returned (See pills or card)
Date
Days since last issue
Regimen per day
Total number of pills supposed to have taken
The patient should have returned
Number of pills missed
Adherence score percent

3. 3 Pharmacy refill records to measure the medication possession ratio

<table>
<thead>
<tr>
<th>Drug</th>
<th>Date of prescription</th>
<th>The expected date of the next refill</th>
<th>Expected refill -Prescription</th>
<th>Next actual refill</th>
<th>Actual refill -prescription</th>
<th>MPR</th>
</tr>
</thead>
<tbody>
<tr>
<td>E.g.</td>
<td>30/09</td>
<td>30/10</td>
<td>30</td>
<td>30/10</td>
<td>30</td>
<td>1.0</td>
</tr>
<tr>
<td>E.g.</td>
<td>30/09</td>
<td>30/10</td>
<td>30</td>
<td>29/11</td>
<td>60</td>
<td>0.5</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average MPR for the patient</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.4 Psychotherapy and other non-pharmacological treatment sessions

1. The interviewer will fill in this form

<table>
<thead>
<tr>
<th>No</th>
<th>Date of appointment</th>
<th>Type of treatments</th>
<th>Attendance on time</th>
<th>Final remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Number of sessions scheduled
Number of sessions completed
Overall percentage score

2. Please tell me the reasons why you failed to attend your clinical appointments

___________________________________________________________________________
___________________________________________________________________________

3.5 Injections

<table>
<thead>
<tr>
<th>Type of injection</th>
<th>Appointment for injection</th>
<th>Date of injection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.6 Composite adherence score

<table>
<thead>
<tr>
<th>Method</th>
<th>Score</th>
<th>Score percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Self-report</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Pill count</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Medication Possession Ratio</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Psychotherapy and other non-pharmacological treatments</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Composite adherence score percent

Section 4: Levels of functioning

Modified Global Assessment of Functioning-Revised (Caldecott-Hazard and Hall, 2004)

Number of the patient: ________________________________________________________

Use the Criteria below to determine the individual’s current functional status, and then enter rating on this form. Do not include impairment in functioning due to physical or environmental limitations.

Assigned M-GAF-R Rating 1: _______ Date ___________________ Site ________________

Assigned M-GAF-R Rating 2: _______ Date ___________________ Site ________________
### M-GAF (R) Rating Criteria

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
<th>Group H criteria</th>
<th>Group G criteria</th>
<th>Group F criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td>Absent or Minimal Symptoms and no Impairment in Functioning</td>
<td>- Minimal or absent symptoms (e.g., mild anxiety before an examination)</td>
<td>- Mild symptoms are present, but they are transient and expectable reactions to psychosocial stressors (e.g., difficulty concentrating after family argument).</td>
<td>- Mild symptoms are present that are NOT just expectable reactions to psychosocial stressors (e.g., mild or lessened depression and/or mild insomnia)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Good functioning in all areas and satisfied with life</td>
<td>- Slight impairment in social, work, or school functioning (e.g., temporarily falling behind in school or work).</td>
<td>- Some persistent difficulty in social, work, or school functioning (e.g., occasional truancy, theft within the family, or repeated falling behind in school or work)</td>
</tr>
<tr>
<td>88-90</td>
<td>No psychological symptoms and no problems of living or functioning</td>
<td>- Interested and involved in a wide range of activities</td>
<td>- Slight impairment in social, work, or school functioning (e.g., temporarily falling behind in school or work).</td>
<td></td>
</tr>
<tr>
<td>84-87</td>
<td>Minimal symptoms and no everyday problems</td>
<td>- Socially effective</td>
<td>- Slight impairment in social, work, or school functioning (e.g., temporarily falling behind in school or work).</td>
<td></td>
</tr>
<tr>
<td>81-83</td>
<td>Minimal symptoms and some everyday problems</td>
<td>- Interested and involved in a wide range of activities</td>
<td>- Slight impairment in social, work, or school functioning (e.g., temporarily falling behind in school or work).</td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>Some Transient Mild Symptoms or temporary Mild Impairment in Functioning</td>
<td>- Socially effective</td>
<td>- Slight impairment in social, work, or school functioning (e.g., temporarily falling behind in school or work).</td>
<td></td>
</tr>
<tr>
<td>78-80</td>
<td>Either mild symptom(s) OR mild impairment in social, work or school functioning</td>
<td>- Interested and involved in a wide range of activities</td>
<td>- Slight impairment in social, work, or school functioning (e.g., temporarily falling behind in school or work).</td>
<td></td>
</tr>
<tr>
<td>74-77</td>
<td>Mild impairment in more than one area of social, work or school functioning</td>
<td>- Socially effective</td>
<td>- Slight impairment in social, work, or school functioning (e.g., temporarily falling behind in school or work).</td>
<td></td>
</tr>
<tr>
<td>71-73</td>
<td>Both mild symptoms AND slight impairment in social, work &amp; school functioning</td>
<td>- Interested and involved in a wide range of activities</td>
<td>- Slight impairment in social, work, or school functioning (e.g., temporarily falling behind in school or work).</td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>Some Persistent Mild Symptoms or persistent Mild Impairment in Functioning</td>
<td>- Socially effective</td>
<td>- Slight impairment in social, work, or school functioning (e.g., temporarily falling behind in school or work).</td>
<td></td>
</tr>
<tr>
<td>68-70</td>
<td>Either mild persistent symptoms OR mild difficulty in social, work, or school functioning</td>
<td>- Interested and involved in a wide range of activities</td>
<td>- Slight impairment in social, work, or school functioning (e.g., temporarily falling behind in school or work).</td>
<td></td>
</tr>
<tr>
<td>64-67</td>
<td>Mild persistent difficulty in more than one area of social, work or school functioning</td>
<td>- Socially effective</td>
<td>- Slight impairment in social, work, or school functioning (e.g., temporarily falling behind in school or work).</td>
<td></td>
</tr>
<tr>
<td>61-63</td>
<td>Both mild persistent symptoms AND some difficulty in social, work, and school functioning</td>
<td>- Interested and involved in a wide range of activities</td>
<td>- Slight impairment in social, work, or school functioning (e.g., temporarily falling behind in school or work).</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>Moderate Symptoms or Moderate Impairment in Functioning</td>
<td>- Socially effective</td>
<td>- Slight impairment in social, work, or school functioning (e.g., temporarily falling behind in school or work).</td>
<td></td>
</tr>
<tr>
<td>58-60</td>
<td>Either moderate depressed mood, symptoms OR moderate difficulty in social, work, or school functioning</td>
<td>- Interested and involved in a wide range of activities</td>
<td>- Slight impairment in social, work, or school functioning (e.g., temporarily falling behind in school or work).</td>
<td></td>
</tr>
<tr>
<td>54-57</td>
<td>Moderate difficulty in more than 1 area of social, work or school functioning</td>
<td>- Socially effective</td>
<td>- Slight impairment in social, work, or school functioning (e.g., temporarily falling behind in school or work).</td>
<td></td>
</tr>
<tr>
<td>51-53</td>
<td>Both moderate symptoms AND moderate difficulty in social, work, and school functioning</td>
<td>- Interested and involved in a wide range of activities</td>
<td>- Slight impairment in social, work, or school functioning (e.g., temporarily falling behind in school or work).</td>
<td></td>
</tr>
</tbody>
</table>
### Some Serious Symptoms or Serious Impairment in Functioning

**Group D criteria:**
- Serious impairment with work, school or housework if a housewife or househusband (e.g., unable to keep job or stay in school, or failing school, or unable to care for family and house)
- Frequent problems with the law (e.g., frequent shoplifting, arrests) or occasional combative behavior
- Serious impairment in relationships with friends (e.g., very few or no friends, or no current friends)
- Serious impairment in judgment (including inability to make decisions, confusion, disorientation)
- Serious impairment in thinking (including constant preoccupation w/thoughts, distorted body image, paranoia)
- Serious impairment in mood (including constant depressed mood plus helplessness and hopelessness, or agitation, or manic mood)
- Serious impairment due to anxiety (panic attacks, overwhelming anxiety)
- Other symptoms: some hallucinations, delusions, or severe obsessional rituals
- Passive suicidal ideation

| 50 | 1 of the criteria in Group D |
| 48-50 | 2 of the criteria in Group D |
| 44-47 | 3 of the criteria in Group D |
| 41-43 | 4 of the criteria in Group D |
| 40 | 5 of the criteria in Group D |
| 38-40 | 6 of the criteria in Group D |
| 30 | Inability to Function in Almost All Areas |

### Major Impairment in Several Areas of Functioning

**Group D criteria:**
- Serious impairment with work, school or housework if a housewife or househusband (e.g., unable to keep job or stay in school, or failing school, or unable to care for family and house)
- Frequent problems with the law (e.g., frequent shoplifting, arrests) or occasional combative behavior
- Serious impairment in relationships with friends (e.g., very few or no friends, or no current friends)
- Serious impairment in judgment (including inability to make decisions, confusion, disorientation)
- Serious impairment in thinking (including constant preoccupation w/thoughts, distorted body image, paranoia)
- Serious impairment in mood (including constant depressed mood plus helplessness and hopelessness, or agitation, or manic mood)
- Serious impairment due to anxiety (panic attacks, overwhelming anxiety)
- Other symptoms: some hallucinations, delusions, or severe obsessional rituals
- Passive suicidal ideation

| 38-40 | 4 of the criteria in Group D |
| 34-37 | 5 of the criteria in Group D |
| 31-33 | 6 of the criteria in Group D |
| 30 | Inability to Function in Almost All Areas |

**Group D criteria:**
- Serious impairment with work, school or housework if a housewife or househusband (e.g., unable to keep job or stay in school, or failing school, or
unable to care for family and house
- Frequent problems with the law (e.g., frequent shoplifting, arrests) or occasional combative behavior
- Serious impairment in relationships with friends (e.g., very few or no friends, or no current friends)
- Serious impairment in judgment (including inability to make decisions, confusion, disorientation)
- Serious impairment in thinking (including constant preoccupation w/thoughts, distorted body image, paranoia)
- Serious impairment in mood (including constant depressed mood plus helplessness and hopelessness, or agitation, or manic mood)
- Serious impairment due to anxiety (panic attacks, overwhelming anxiety)
- Other symptoms: some hallucinations, delusions, or severe obsessional rituals
- Passive suicidal ideation or mildly self-injurious behaviors (e.g., scratching wrists) that do not require medical attention

**Group C criteria:**
- EITHER Suicidal Preoccupation or frank suicidal ideation with preparation
- OR behavior considerably influenced by delusions or hallucinations
- OR serious impairment in communication (sometimes incoherent, acts grossly inappropriately, OR profound stuporous depression)

| 28-30 | 7 of the criteria in Group D |
| 24-27 | 8 of the criteria in Group D |
| 20-23 | 9 of the criteria in Group D |
| 21   | 1 of the criteria in Group C |
| **20** | Suffering from Neglect or in Danger of Hurting Self or Others |

**Group B criteria:**
- Suicide attempts without clear expectation of death
- Some severe violence or self-mutilating behaviors
- Severe manic excitement, or severe agitation and impulsivity
- Occasionally fails to maintain minimum personal hygiene (e.g., diarrhea due to laxatives, or smearing feces)
- Urgent/emergency admission to the present psychiatric hospital
- In physical danger due to medical problems (e.g., severe anorexia or bulimia and some spontaneous vomiting or extensive laxative/diuretic/diet pill use, but without serious heart or kidney problems or severe dehydration and disorientation)

| 18-20 | 1-2 of the criteria in Group B |
| 14-17 | 3-4 of the criteria in Group B |
| 11-13 | 5-6 of the criteria in Group B |
| **10** | Immediate Danger from Serious Neglect or Self-Injurious Behavior |

**Group A criteria:**
- Serious suicidal act with clear expectation of death (e.g., stabbing, shooting, hanging, or serious overdose with no one present
- Frequent severe violence or self-mutilation
- Extreme manic excitement, or extreme agitation and impulsivity (e.g., wild screaming, ripping the stuffing out of a bed mattress)
- Persistent inability to maintain minimal personal hygiene
- Urgent/emergency admission to present psychiatric hospital
- In acute, severe danger due to medical problems (e.g., severe anorexia or bulimia with heart or kidney problems)

<table>
<thead>
<tr>
<th>Criteria Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-10</td>
<td>1-2 of the criteria in Group A</td>
</tr>
<tr>
<td>4-7</td>
<td>3-4 of the criteria in Group A</td>
</tr>
<tr>
<td>1-3</td>
<td>5-6 of the criteria in Group A</td>
</tr>
<tr>
<td>0</td>
<td>7 of the criteria in Group A</td>
</tr>
</tbody>
</table>

Section 5: Social support and stress scale (Duke University, 1986-2005)

Assessment Number _____

Date of the interview ___________________ Patient number _______________________

5.1 People who give you personal support

A supportive person is one who is helpful, who will listen to you, or who will back you up when you are in trouble. How much each person or group of persons below is supportive for you at this time in your life. Please chose check one appropriate answer.

<table>
<thead>
<tr>
<th>How supportive are these people now:</th>
<th>None</th>
<th>Some</th>
<th>A lot</th>
<th>There is no such person</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Your wife, husband, or significant other person…</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Your children or grandchildren…</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Your parents or grandparents ………………</td>
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<td></td>
</tr>
<tr>
<td>4. Your brothers or sisters …………………</td>
<td></td>
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</tr>
<tr>
<td>5. Your other blood relatives …………</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>6. Your relatives by marriage (for example: in-laws, ex-wife, ex-husband)……</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Your neighbours……</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>8. Your co-workers ………</td>
<td></td>
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</tr>
<tr>
<td>9. Your church members ……</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>10. Your other friends …………</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Do you have one particular person whom you trust and to whom you can go with personal difficulties? Yes___________ No ____________

12. If yes, which of the above types of person is he or she? (For example: child, parent, neighbour) ____________________________

13. Can you describe the types of support that you receive from other people or groups? __________________________________________________________________________
14. How does this support influence your adherence to treatment? ______________________
____________________________________________________________________________
____________________________________________________________________________

5. 2 People who cause personal stress
A person who stresses you is one who causes problems for you or makes your life more difficult. How much each person or group of persons below is a stress for you at this time in your life. Please check one appropriate answer.

<table>
<thead>
<tr>
<th>How stressed to you feel by these people now:</th>
<th>None</th>
<th>Some</th>
<th>A lot</th>
<th>There is no such person</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Your wife, husband, or significant other person…</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Your children or grandchildren..........</td>
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<td></td>
</tr>
<tr>
<td>3. Your parents or grandparents ..............</td>
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<tr>
<td>4. Your brothers or sisters ..................</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>5. Your other blood relatives ............</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Your relatives by marriage (for example: in-laws, ex-wife, ex-husband)........</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Your neighbours…..</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Your co-workers ……..</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>9. Your church members …….</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Your other friends ………….</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Is there one particular person who is causing you the most personal stress now? Yes___________ No _____________

12. If yes, which of the above types of person is he or she? (For example: child, parent, neighbour) __________________________________________________________________

13. Can you describe how this stress is caused to you by these other person(s) or groups? __________________________________________________________________

14. How does this stress influence your adherence to treatment? ______________________
____________________________________________________________________________
____________________________________________________________________________

5.3 Other factors that may influence adherence to treatment

1. Do you manage your own medication? Yes _______________ No _______________

2. If not, who manages them for you? _________________________________________

3. What are your medication dosages? _________________________________________

4. When do you take these medication dosages? ___________________________________
5. How do you remember to take your medication? ______________________________

6. How many dosages of your medication have you missed during the last two weeks? __________________________________________

7. Do you have any serious adverse effects from your medications? Yes ____ No ____

8. If yes, what are these adverse effects? ________________________________
   ___________________________________________________________________

9. Do these adverse side effects de-motivate you from taking your medication? Yes____ No____

10. Do you stop your medication because of these adverse effects? Yes ____ No ____

11. Do you find your regimen too complex? Yes _____ No_____

12. As far as you are concerned, is your treatment regimen affordable? Yes ___ No ___

13. As far as you are concerned, is your treatment regimen available? Yes ___ No ___

14. Does your treatment interfere with your daily activities? Yes ___ No ___

15. Does your treatment interfere with your lifestyles? Yes ___ No ___

16. Do you experience any symptoms of health problem that interfere with your treatment adherence? Yes ____ No ______
   If Yes, which ones? ___________________________________________________

17. Are you comfortable taking medications in front of others (family, friends or co-workers)?
   Yes ___ No ____

18. What is most difficult about taking your medications?
   ___________________________________________________________________
   ___________________________________________________________________

19. Were you given some behavioral recommendations or homework? Yes ___ No ___

20. If yes, which behavioral recommendations were you given?
   O Physical activities
   O Dietary recommendations
   O Relaxation exercises
O Stress management
O Rehabilitation program
O Socialization
O Blood sugar check
O Blood pressure check
O No drinking
O No smoking
O Reduce drinking
O Reduce smoking
O No sexual activity
O Hygiene
O Choice of friends
O Time management
O Other, Specify ________________________________

21. Do you adhere to all your behavioral recommendations? Yes ___ No ____

22. Which ones do you fully adhere to? ____________________________________________
____________________________________________________________________

23. Which behavioral recommendations do you fail to fully adhere to?
____________________________________________________________________
____________________________________________________________________

24. Do you believe that your medication is effective? Yes ___ No ____

25. Do you have difficulties to fit your dosages into daily routines? Yes ___ No ____
26. Do you forget to take your medications? Yes ___ No ___
27. Are you too busy with other things (childcare, food, work) to miss your medication? Yes ___ No ___
28. Do you oversleep and miss your dose? Yes ___ No ___
29. Are you sometimes away from home which causes you to miss my dose? Yes ___ No ___
30. Do you understand the importance of adherence? Yes ___ No ___
31. Do you stop your medications so as to drink alcohol or take another substance? Yes ___ No ___
32. Do you take your medication not as prescribed by taking too many pills? Yes ___ No ___
33. Do you take your medication not as prescribed by taking too few pills? Yes ___ No ___
34. Do you take your medication at incorrect times? Yes ___ No ___
35. Do you terminate your treatment prematurely? Yes ___ No ___
36. Do you fail to initiate recommended treatment? Yes ___ No ___
37. Did you stop your medication in order to go to see traditional healers? Yes ___ No ___
38. Did you stop your medication because of a stressful life event? Yes ___ No ___
39. Are the hours of hospital operation convenient for you? Yes ___ No ___
40. Do you wait for long for the services at the hospital? Yes ___ No ___
41. How many hours does it take you to reach the hospital/facility by bus? _______ hours
42. How much money do you pay for transport to reach the facility? _________ Rwandan Francs
43. Is the appointment staff available? Yes ___ No ___
44. How satisfied are you with your service providers at the hospital?
   O Very satisfied
   O Satisfied
   O Unsatisfied
0 Very unsatisfied

45. Are you satisfied with the quality of communication between your service providers and you? Yes ___ No ___

46. Are you satisfied with the attitudes of your services providers? Yes ___ No ___

47. Do you get sufficient social or family support? Yes ___ No ___

48. Do you suffer stigmatization from other people or groups of people? Yes ___ No ___

Section 6: Treatment outcomes using Behavior and Symptoms Identification scale
For treatment outcomes, Behavior and Symptoms Identification Scale (Eisen, 2009) has been selected to be used in this study.
Instruction to staff/interviewer: Please fill in the following information
Patient Number _____________________________
Dates of interviews 1 _____________2_______________3____________

Instruction to Interviewer: Below is a list of problems and areas of life functioning in which some people experience difficulties. Using the scale below, fill in the box with the answer that best describes how much difficulty the patient has been having in each area during the past week.
0= No Difficulty
1= A Little difficulty
2= Moderate Difficulty
3= Quite a Bit of Difficulty
4= Extreme Difficulty

Please, answer each item. Do not leave any blank. If there is an area that you consider to be inapplicable, indicate that it is 0= No Difficulty

In the past week, how much difficulty have you been having in the area of:

<table>
<thead>
<tr>
<th>Items</th>
<th>Date 1</th>
<th>Date 2</th>
<th>Date 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Managing day-to-day life (for example, getting places on time, handling money, making everyday decisions)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Household responsibilities (for example, shopping, cooking, laundry, cleaning, other chores)</td>
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<td></td>
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</tr>
<tr>
<td>3. Work (for example, completing tasks, performance level, finding/keeping a job)</td>
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<tr>
<td>4. School (for example academic performance, completing assignments, attendance)</td>
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<tr>
<td>5. Leisure time or recreational activities</td>
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<tr>
<td>6.</td>
<td>Adjusting to major life stresses (for example separation, divorce, moving, a new job, new school, a death)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Relationships with family members</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Getting along with people outside of the family</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Isolation or feeling of loneliness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Being able to feel close to others</td>
<td></td>
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</tr>
<tr>
<td>11.</td>
<td>Being realistic about yourself or others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Recognizing and expressing emotions appropriately</td>
<td></td>
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</tr>
<tr>
<td>13.</td>
<td>Developing independence, autonomy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Goals or direction in life</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Lack of self-confidence, feeling bad about yourself</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>Apathy, lack of interest in things</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>Depression, hopelessness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>Suicidal feelings or behavior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>Physical symptoms (for example, headaches, aches and pains, sleep disturbance, stomach aches, dizziness)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>Fear, anxiety, or panic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>Confusion, concentration, memory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>Disturbing or unreal thoughts or beliefs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>Hearing voices, seeing things</td>
<td></td>
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</tr>
<tr>
<td>24.</td>
<td>Manic, bizarre behavior</td>
<td></td>
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<tr>
<td>25.</td>
<td>Mood swings, unstable moods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>Uncontrollable, compulsive behavior (for example, eating disorder, hand-washing, hurting yourself)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27.</td>
<td>Sexual activity or preoccupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>Drinking alcoholic beverages</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>Taking illegal drugs, misusing drugs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td>Controlling temper, outbursts of anger and violence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31.</td>
<td>Impulsive, illegal, or reckless behavior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32.</td>
<td>Feeling satisfaction with your life</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Assessment Number _____**

33. At any time in past 60 days, did you work at a paying job? Yes ___ No ___

34. At any time in the past 60 days, did you work at a volunteer job? Yes ___ No ___

35. At any time in the past 30 days, were you a student at a high school, job training program, college or university degree program? Yes ___ No ___

36. To what extent are you satisfied with the quality of treatment you are receiving at this hospital?

- O Extremely satisfied
- O Very satisfied
37. What was the source of your referral to this hospital/treatment? ________________

38. Which other services have been referred to? _________________________________

39. How do you rate the extent of your perceived recovery?

   0 Extremely satisfied
   0 Very satisfied
   0 Just satisfied
   0 Not very satisfied
   0 Very unsatisfied

40. Have you ever experienced relapse? Yes ___ No ____

41. How many relapses did you experience since you first got sick/ill? ____________

42. When was your most recent relapse? ________________________________

43. Have you ever been re-hospitalized because of the same illness? Yes ___ No ____
Appendix II: The map of Rwanda
Appendix III: Approvals by Ethics Committees

KENYATTA UNIVERSITY
ETHICS REVIEW COMMITTEE

Fax: 8711242/8711375
Email: kuerc.chairman@kun.ac.ke
kuerc.secretary@kun.ac.ke
Website: www.kun.ac.ke

P. O. Box 43844,
Nairobi, 00100
Tel: 8710901/12

Our Ref: KU/R/COMM/51/27
Date: February 6th 2012

Michel Mubabazi
School of Public Health,
Kenyatta University
P.O. Box 43844, Nairobi.

Dear Mr. Mubabazi,

APPLICATION NUMBER PKU016/193 OF 2011 - ‘Adherence and treatment outcomes among patients with comorbidity of depression and other common mental disorders attending psychiatric hospitals in Rwanda’

1. IDENTIFICATION OF PROTOCOL

The application before the committee is with a research topic ‘Adherence and treatment outcomes among patients with comorbidity of depression and other common mental disorders attending psychiatric hospitals in Rwanda’ dated 19th Dec. 2011.

2. APPLICANT

Michel Mubabazi
School of Public Health,
Kenyatta University
P.O. Box 43844, Nairobi.

3. SITE

Ndera Neuropsychiatric Hospital, Kigali, Butare Psychiatric Hospital, Southern Province and Icyizere Psychotherapeutic Center in Kigali, Rwanda.

4. DECISION REACHED

The committee has considered the research protocol in accordance with the Kenyatta University Research Policy (section 7.2.1.3) and the Kenyatta University Ethics Review Committee Guidelines, and is of the view that against the following elements of review,

   i. Scientific design and conduct of study,
   ii. Recruitment of research participant,
iii. Care and protection of research participants,
iv. Protection of research participant's confidentiality,
v. Informed consent process,
vi. Community considerations.

AND APPROVED that the research may proceed for a period of ONE year from 6th February, 2012.

5. **ADVICE/CONDITIONS**

   i. Progress reports are submitted to the KU-ERC every six months and a full report is submitted at the end of the study.
   
   ii. Serious and unexpected adverse events related to the conduct of the study are reported to this board immediately they occur.
   
   iii. Notify the Kenyatta University Ethics Committee of any amendments to the protocol.
   
   iv. Submit a soft copy of the protocol to KU-ERC.

When replying, kindly quote the application number above.

If you accept the decision reached and advice and conditions given please sign in the space provided below and return to KU-ERC a copy of the letter

[Signature]

PROF. NICHOLAS K. GIKONYO
CHAIRMAN ETHICS REVIEW COMMITTEE

1...MUTABAZI MICHEL .................. accept the advice given and will fulfill the conditions therein.

Signature.................................. Dated this day of ................., 2012.

cc. Vice-Chancellor
    Director: Institute for Research Science and Technology
National University of Rwanda
Université Nationale du Rwanda

Faculty of Medicine
Faculté de Médecine

Research Ethics Committee
Comité d’Éthique de la Recherche

Mr. Michel MUTABAZI
National University of Rwanda
mutabaazimich@yahoo.fr
April 24, 2012

Review Approval Notice N° 05/ FoMREC /2012

Your research Project “Adherence and Treatment Outcomes among Patients with Co morbidity of Depression and Other Common Mental Disorders attending Psychiatric Hospitals in Rwanda”.

This is to inform you that the Faculty of Medicine Ethics Committee has reviewed your above revised research proposal by expedited review procedure and approved it.

Please note that approval of the protocol and consent form invalid for 12 months.

1. Changes, amendments, and addenda to the protocol or consent form must be submitted to the committee for review and approval, prior to activation of the changes.
2. Only approved consent forms are to be used in the enrollment of participants
3. All consent forms signed by subjects should be retained on file. The FoMEC may conduct audits of all study records, and consent documentation may be part of such audits.

On behalf of the Committee, I wish you fruitful research and look forward to receiving a summary of the research findings upon completion of the study.

Date of Approval: April 24th, 2012
Expiration date: April 23, 2013

Yours sincerely

Dr Emmanuel NKERAMIHINGO
Chair, Faculty of Medicine Research Ethics Committee

C.C.
- Dean, Faculty of Medicine
- Vice-Dean in Charge of Research/Faculty of Medicine