

**PSYCHOSOCIAL FACTORS ASSOCIATED WITH POOR ADHERENCE TO
ANTI TUBERCULOSIS MEDICATION AND FOLLOW-UP AMONG TB
PATIENTS AT RIRUTA HEALTH CENTRE.**

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DECLARATION

I declare that this research dissertation is my original work and has not been presented for a degree in any other university or for any other award.

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APPROVAL

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DEDICATION

First and foremost, I want to thank God for bringing me this far. I especially dedicate this work to my children; Salome Akoth, Anita Achieng, Ken Nyagudi and Sepp Anunda. I would like to thank my family for their moral support especially my late mother Claris Athieno who always encouraged me. May God bless you.

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LIST OF ABBREVIATIONS

HIV	Human Immunodeficiency Virus
AIDS	Acquired Immune Deficiency Syndrome
MDR-TB	Multi-Drug Resistant Tuberculosis
DOT	Directly Observed Treatment
KNH/UON ERC	Kenyatta National Hospital/ University of Nairobi Ethics Research Committee
MOH	Ministry of Health
MMAS	Morisky Medication Adherence Rating Scale
TB	Tuberculosis
WHO	World Health Organization

ABSTRACT

Background: It is estimated that a third of the world population is infected with Tubercle bacilli making tuberculosis a major cause of increased morbidity and mortality. Kenya is ranked 13th among the 22 countries with high burden of TB in the world and the 5th in Africa (WHO, 2013). The therapeutic regimes recommended by WHO are highly effective. Unfortunately, poor adherence to these medications is a major challenge to successful treatment of patients diagnosed with TB which requires a high compliance rate. A need for multi-dimensional combined adherence interventions integrated in health care systems locally and internationally is therefore critical for these patients. Though factors such as socio-economic characteristics and demographic characteristics have been previously associated with poor adherence or non-compliance to TB therapy regimes, psychosocial factors have been rarely investigated among TB patients despite the fact that mental ill health has far reaching consequences for the health outcome of these Patients.

Study Objective: The purpose of this study was to investigate the psychosocial factors associated with poor adherence to TB therapy among patients on treatment and follow up.

Study Site: The study was conducted at the Riruta Health Centre.

Methodology: The study used a cross-sectional descriptive research design. The Kessler10-Psychological distress scale, a socio demographic questionnaire and Medication adherence rating scale was used in collecting the data. The sample size of respondents that was engaged in the study was 153 patients on Anti-Tb Medication aged 18yrs and above.

Data Management & Analysis: Data collected from the respondents was coded, entered and analyzed using the Statistical Package for Social Sciences (SPSS) version 23. The frequencies and correlations were presented in tables.

Results: Prevalence rate of poor adherence at Riruta Health Centre is high at 36.6%. There was no association between socio-demographic profile of the participants and poor adherence to the treatment regimen with P values above 0.05. Alcohol was significantly associated with non-adherence at a P value of 0.005. There was no relationship between emotional/ socio- demographic factors and poor adherence among TB patients on treatment and follow-up with P values above 0.05.

Conclusion: There was a high rate of poor adherence to treatment among patients attending Tuberculosis clinic at Riruta Health Centre. There was no association between socio-demographic profile of the participants and poor adherence to the treatment regimen. Although quite a considerable number of participants were found to be having psychological distress, there was no association between having the disorder and adherence. Another conclusion drawn from the study was that alcohol consumption was the only psycho-social factors that was associated with poor adherence. Generally increased consumption of alcohol predicted poor adherence to TB treatment adherence. Finally, there was no relationship between emotional/ socio- demographic factors and poor adherence among TB patients on treatment and follow-up.

Recommendation: The study recommends the following; Special attention on adherence counseling, Psycho-education of patient and care giver, Alcohol screening and Information about development of TB treatment resistant strains.

TABLE OF CONTENT

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
LIST OF ABBREVIATIONS	v
ABSTRACT	vi
LIST OF TABLES	xi
LIST OF FIGURES	xii
CHAPTER ONE: INTRODUCTION	1
1.1 Background information	1
1.2 Problem statement.....	4
1.3 Rationale/ significance of the study	6
1.4 Overall Objective	7
1.4.1 Specific objectives	7
1.5 Research questions.....	7
CHAPTER TWO: LITERATURE REVIEW	8
2.1 Introduction.....	8
2.2 Prevalence of Poor Adherence to Treatment among TB Patients.....	8
2.3 Psychosocial Factors Contributing To Poor Adherence Among TB Patients	11
2.4 Socio-Demographic Factors Associated With Poor Adherence	13
2.4.1. Socio-Economic Burden of TB.....	14
2.4.2 Patient Education level and Non- adherence to TB treatment	14
2.4.3 Accessibility to TB therapy centre's	15
2.5 Conceptual Framework.....	16
2.6 Theoretical Framework.....	17

CHAPTER THREE: METHODOLOGY	19
3.0 Study Design.....	19
3.1 Study Site	19
3.2 Study Population.....	19
3.3 Inclusion and Exclusion Criteria.....	19
3.3.1 Inclusion Criteria	19
3.3.2 Exclusion Criteria	20
3.4 Sample Size Determination.....	20
3.5 Sampling Method.....	21
3.6 Recruitment and Consenting Procedures	21
3.7 Data Collection Instruments	22
3.7.1 <i>The Morisky Medication Adherence Rating Scale(MMAS)</i>	22
3.7.2 <i>Kessler 10 – K10. Psychological Distress Scale</i>	22
3.7.3 <i>Socio Demographic Questionnaire</i>	23
3.8 Pretest.....	23
3.9 Data Collection Procedure	24
3.10 Flow chart	25
3.11 Data Management and Analysis	25
3.12 Ethical Consideration.....	26
3.13 Study Limitations	27
CHAPTER FOUR: FINDINGS.....	28
4.0 Introduction.....	28
4.1 Response Rate.....	28
4.2 Respondents’ Socio Demographic Profiles	28
4.3 Psychosocial Problems.....	30
4.3.1 Tobacco and Alcohol Use	30

4.3.2 Association & Correlation between Alcohol Use and Tobacco Use	30
4.3.3 Psychological Distress	31
4.4 Respondents' Morisky Scores.....	32
4.5 Prevalence of Medication Non-Adherence.....	33
4.6 Socio-demographic and Psychological Factors Contributing to Poor Adherence Among TB Patients on Anti-Tuberculosis Treatment	34
4.7 Association and Correlation between Psychosocial Factors and Poor Adherence among TB Patients on Treatment and Follow-Up	35
CHAPTER FIVE: DISCUSSION, CONCLUSION & RECOMMENDATION.....	37
5.1 Discussion.....	37
5.2 Summary.....	41
5.3 Conclusion	41
5.5 Suggestion for Further Studies.....	43
REFERENCES.....	44
APPENDICES.....	48
Appendix 1: Consent Explanation	48
Appendix II: Ridhaa ya Kushiriki Kwa Utafiti.....	51
Appendix III: Assessment Tools.....	54

LIST OF TABLES

Table 4. 1 Respondents Socio-Demographic Profiles	29
Table 4. 2 Respondents' Use of Cigarettes & Alcohol	30
Table 4. 3: Association & Correlation between Alcohol Use and Tobacco use.....	30
Table 4. 4: Scores of psychological distress on Kessler's scale	31
Table 4. 5: Respondents' Morisky Scores.....	32
Table 4. 6 :Linear regression- Predictors for poor adherence as per the Morisky Assessment Tool	34
Table 4. 7: Linear regression Predictors Socio-Demographic Factors That Contribute To Poor Adherence.....	35
Table 4. 8: Association between Medication adherence and Alcohol Use.....	36

LIST OF FIGURES

Figure 1: Conceptual Frame work	16
Figure 2: Flow Chart for Data Collection Process.....	25
Figure 4.1: Prevalence of Psychological Distress.....	32
Figure 4.2: Prevalence of Medication Non-Adherence	33

CHAPTER ONE: INTRODUCTION

1.1 Background

Despite it being treatable; Tuberculosis (TB) has remained a significant health problem in the world owing to the fact that millions of new infections are reported every year (WHO, 2014). According to the 2014 Global Tuberculosis report, Globally Tuberculosis is ranked as the second leading cause of death from an infectious disease, after the human immunodeficiency virus (HIV) (WHO, 2014). Recent reports estimate that 9.0 million new Tuberculosis cases were recorded in 2013 and 1.5 million deaths, 1.1 million among HIV-negative people and 0.4 million among HIV-positive people. These report totals are greatly high as compared to the 2013 global TB report. The prevalence of TB is 558 per 100000 people, twice as high as the 2016 WHO estimates of 233 per 100000 (WHO, 2016).

With regards to prevalence of Tuberculosis infections and related deaths; the estimates of Tuberculosis cases by 2013 was 3.3 million and 510 000 deaths The number of Kenyans with TB has doubled since 2015; 82,000 people were diagnosed with TB meaning 40 percent of the cases remain undetected and untreated., 170,000 children died of TB infection among the estimated one million children who became ill excluding the HIV infected children. Generally, with reference to gender, it is reported that cases of TB infections and related deaths is twice as high among men as that of women (WHO, 2016).

To avert more cases of TB infections and of deaths, it is recommended that patients diagnosed with the disease should adhere and comply strictly with the medication regime through adoption of Directly Observed Treatment Plan (DOT). According to the report of

tuberculosis in Pragmatic management of drug resistant tuberculosis; Treatment and care of patients should be agreed between the DOT provider and the patient. The DOT provider should ensure that the drugs to be given to patient are correct, observe the patient swallow all the drugs, record on the patient treatment card/log book each time the patient swallows drugs, take note of side effects or clinical worsening and refer to the facility as needed, provide psychosocial support to encourage the patient to complete treatment. Standard Operating Procedures for Programmatic Management of Drug Resistant Tuberculosis Kenya (2012) stressed that defaulter tracing system should be carried out until the patient has been found and put back into treatment. However, the adoption of directly observed treatment (DOT) and therefore its impact has been limited by actual non-compliance to DOT for example some patients do not even turn up for treatment at the health facility. According to National Tuberculosis Leprosy and Lung Disease Unit, severe poverty and homelessness, drug and alcohol abuse, nutritional barriers, drug adverse effects, denial of disease state, longer treatment period and poor feedback on importance of completion of treatment and distances to healthcare delivery points have been listed as psychosocial factors that may negatively impact adherence (MOH- Kenya, 2015).

The prevalence of TB among the homeless is usually high because they lack access to health care services (Narvana, 2015). This is sometimes also due to reluctance to consult health services. Undetected cases are usually high among this group and hence delay in diagnosis. The homeless usually have poor health understanding due to low literacy levels which usually leads to poor disease comprehension. They also suffer from the inability to understand where to get medical help, and sometimes language barrier.

Generally doing follow ups for this group is very different because they are transient (Narvana, 2015).

As for substance abuse; tobacco has been associated with poor TB treatment outcome. Actually, by the year 2009, estimates show that 20 percent of the total TB cases globally could be attributed to tobacco exposure (WHO, 2009). Today, this number is expected to have risen. For example, in countries like India that bears the largest global burden of TB infections, reported over 30% of TB deaths that were related to smoking in 2015. Therefore, tobacco cessation is usually a prerequisite to TB treatment or management. Alcohol use has dire consequences for individuals that are on TB therapy. A combination of alcohol and TB medication can lead to hepatotoxicity and weakening of the immune system which can lead to re-infection, poor adherence and development of drug resistance TB (WHO, 2009).

Psychological factors such as fear, shock, denial, anger, guilt, stigma, shame are evident among TB patients particularly immediately after revelation of diagnosis. The perception that TB is incurable is perpetuated in communities which lead to social stigma and isolation among these patients due to fear of infecting loved ones (Doherty, et al., 2013). These could easily lead to psychiatric disorders.

Notably, the strategic plan on enhancing compliance to treatment of TB in Kenya has overlooked one psychosocial aspect of the illness particularly presence of comorbid psychological/ psychiatric illness in TB. Studies dating back from 2004 to date (2017) have indicated depression as a common comorbidity in TB cases (Vega, et al., 2004; Acha-Albujar, et al., 2007; Pachi, et al., 2013). These studies put emphasize on

psychopathology as a major hindrance to treatment adherence amongst these patients. They also indicated that Pulmonary TB patients who may be suffering from psychiatric disorder particularly depression have higher chances of early death, suffering from antibiotic drug resistance, and hence propelling community transmission. This is highly contagious because these individuals will rarely seek treatment immediately and if on treatment, they rarely adhere or comply to the TB therapy. The researchers concluded that management of comorbid conditions in TB cases could improve adherence and medication compliance (Pachi, et al., 2013).

Another study carried out in South Africa to determine the linkage between psychological distress and adverse clinical events showed that 60% of patients who participated in the study had symptoms of depression; another found 33% of patients had symptoms of severe psychological distress/ anxiety, making patients less likely to seek care. However, it has been noted that psychological distress has been poorly investigated in relation to medication adherence in TB patients compared to depression (WHO, 2014). Contextually, the same situation exists; whereby studies done on the impact of psychosocial factors on TB therapy in Kenya are scarce; compared to studies determining association between TB and socio-demographic factors; this study seeks to address this gap.

1.2 Problem Statement

According to the 2017 report on the prevalence of TB in Kenya released by the National Tuberculosis, Leprosy and Lung Disease Program, the number of people that are infected by the bacteria has risen. It is now estimated that 558 out 100,000 people are infected by

TB in the country (Ombuor, 2017). The report also indicates that over 40 percent of new TB infections remain undetected hence untreated. Therefore, an assumption of this prevalence rate being higher is appropriate. Clearly tuberculosis is a public health problem with devastating consequences to the infected and the affected owing to its communicable characteristics. It is however important to note that TB is treatable with strict adherence to TB medication or therapy.

However, non-adherence to anti tuberculosis treatment is a major obstacle that tuberculosis control programs worldwide face. Studies previously mentioned have shown that patients diagnosed with TB usually do not complete their six months treatment regimens and rarely go for sputum re-examination at health facilities after diagnosis. This is despite the fact that they are taught to understand that their condition is treatable and the importance of medication adherence. This has increased the mortality rates from pulmonary tuberculosis and development of drug resistant TB strain in some patients which is complicated and leads to death.

Several factors have been associated with patient treatment non-compliance such as poverty, education level, age and gender. These factors are classified under socio-demographic and socio-economic factors have remained the primary focus for most studies done in Kenya. For instance, in the 2017 National Tuberculosis, Leprosy and Lung Disease Program report mentioned previously, age, gender, poverty and lack of proper healthcare services have been discussed in relation to the prevalence rate hence management plans going forward. This report doesn't mention any results in relation to psychosocial factors (besides socio-economic) associated with the burden of disease in

Kenya or poor treatment adherence or access such as substance abuse and presence of psychiatric comorbidity. Therefore, this study seeks to determine the psychosocial factors that are associated with poor adherence or non-compliance to TB therapy in Kenya.

1.3 Rationale/ Significance of the Study

The Kenyan situation with regards to TB prevalence is a concern. Besides having patients been reported as having missed diagnosis, there is a high chance that many patients could be slowly developing drug resistance to TB due to non-compliance to treatment regimen. This study seeks to first of all establish prevalence of compliant patients at the Health facility in Riruta which will help gauge the severity of the problem. Being a communicable disease, it will inform strategies at that level because of possibilities of development of new infections due to resistant strains of TB bacteria.

By determining psychosocial factors associated with non-compliance of TB medication at the health facility, it adds to available literature on the same in Kenya since the results could be inferred to a larger population. This could possibly help develop multidisciplinary treatment plans for example TB therapy combined with psychotherapy, that could benefit patients suffering from comorbidity i.e. psychiatric conditions or psychological issues with TB. This is because it could possibly give insight to health professionals about these factors and their impact on TB treatment. Studies done on the impact of psychosocial factors on TB therapy in Kenya are scarce; this study seeks to address this gap. The study also forms the basis for further research in this area.

1.4 Overall Objective

To investigate the psychosocial factors associated with poor adherence to anti tuberculosis treatment among patients on treatment and follow up at Riruta Health Centre.

1.4.1 Specific Objectives

- i. To determine the rate of adherence to treatment among patients attending Tuberculosis clinic at Riruta Health Centre.
- ii. To assess socio- demographic and emotional factors contributing to poor adherence among TB patients on anti-tuberculosis treatment.
- iii. To determine the relationship between socio- demographic and emotional factors and poor adherence among TB patients on treatment and follow-up

1.5 Research Questions

- i. What is the rate of adherence to treatment among patients attending Tuberculosis clinic at Riruta Health Centre?
- ii. What are the socio- demographic and emotional factors contributing to poor adherence among TB patients on anti-tuberculosis treatment?
- iii. Is there a relationship between socio- demographic and emotional factors and poor adherence among TB patients on treatment and follow-up?

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter entails the review of literature from studies carried out on TB and treatment adherence. The literature is discussed as per the study objectives.

2.2 Prevalence of Poor Adherence to Treatment among TB Patients

Globally Tuberculosis is ranked as the second leading cause of death from an infectious disease, after HIV/AIDS. The WHO TB report (2016), indicates that the number of TB (new and relapse or those developing medication resistant TB strains) are rising in a number of the high burden countries which include Indonesia, India, Angola, Kenya, Ethiopia, Mozambique, Myanmar, Nigeria, Pakistan, the Philippines, Russian Federation, South Africa, Thailand, Uganda, UR Tanzania, Viet Nam, Zimbabwe, Afghanistan, Bangladesh, Brazil, Cambodia, China and DR Congo. These numbers are projected to be even higher because of rising cases of individuals infected by the antibacterial resistant TB which is mostly caused by poor adherence or non-compliance to TB therapy.

Medication adherence is defined by the World Health Organization as to which the person's behavior corresponds with the agreed recommendations from a health care provider. Adherence behavior of TB infected individual is important. Adherence to TB treatment programme should be strictly adhered to contain the disease and prevent transmission to others and complication. Adherence is critical in chronic diseases particularly those that are potentially fatal and communicable (WHO, 2003). A number of studies have established that this patient factor has become a major hindrance to successful TB treatment for most patients.

In a study that was carried out in Shenzhen- China, at Bao'an hospital for Chronic Disease Prevention and Cure, it was reported that the proportion of patients who had missed one dose of medication within two weeks was 11.71%, and those who missed at least two doses of medication within two weeks was 21.03% with a total of 33.74% out of the total of 794 patients not adhering to TB treatment (Ying, et al., 2015).. Besides prevalence of non- adherence to TB treatment, the study also sought to determine the risk factors that were associated with this pattern. The study concluded that this trend was mostly driven by lack of sufficient knowledge about TB and its treatment among other factors (Ying, et al., 2015).

In Saudi Arabia, researchers also reported non-compliance to anti TB medication as a major huddle against the spread of the infectious disease (Liaqat, et al., 2015). The main purpose of the study was to find out whether a revised retrieval system on non-compliance during continuous phase of TB treatment from January 2005- December 2010. The study concluded that this system reduced the level of non- adherence.

In a study carried in Ethiopia in North Gondar zone from February 20 – March 30, 2013 to determine the prevalence of poor adherence to TB treatment. The overall non-adherence for that one month alone particularly four days before the survey, was 10% and 13.6% respectively. The study determined that non-adherence was high and attributed this partly to forgetfulness (Adane, et al., 2013). In Ghana, it has been reported that despite efforts to control the spread of TB, the country reports approximately 46000 new cases (WHO, 2016). This has been attributed mainly to poor adherence to TB treatment. In a cross-sectional descriptive study that was carried out in the Suhum Kraboa

Coaltar District in Ghana to determine factors associated with non/ poor adherence to TB treatment, it was established that over 30 percent of the patients who had been registered between 2010 to 2011 after TB positive diagnosis, had not adhered to their treatment (Danso, et al., 2015). The data for the study was collected from 40 treatment supporters and 110 previously treated persons registered in 2010 and 2011.

To contextualize this study; as noted earlier Kenya is regarded as a high TB burden country. In 2015, the WHO estimated that the prevalence rate of HIV infections was 233 per 100000 (WHO, 2016). Currently, National Tuberculosis, Leprosy and Lung Disease Program, estimates that 558 per 100000 people are reported to be suffering from TB (Ombuor, 2017). The number is twice as high as the WHO estimates. The report also indicates that there are individuals who could be suffering and not yet detected. This report however does not mention the prevalence of non- adherent patients on TB treatment.

Actually, the WHO report (2016) indicated that Kenya was among the countries that had rising cases of MDR-TB (multi-drug resistant TB). The prevalence of strain of TB mycobacterium has increased over the last few years owing to poor adherence of TB therapy by patients who then cause the spread of the bacteria (Kidenya, Webster, & Behan, 2013). MDR-TB is generally more difficult to treat and therefore causes more fatalities. In a study that was undertaken in Baringo County to determine the prevalence of TB treatment defaulters, it was established that 46% defaulted at intensive treatment phases and 54% at the continuous treatment phases (Obwoye, et al., 2016). Other studies previously done by the National Tuberculosis, Leprosy and Lung Disease Program have

indicated that the highest defaulting rates are in Pokot and Samburu counties. This report was published in 2015. Published studies on poor adherence to TB treatment in Kenya are few and this study seeks to add to the available literature.

2.3 Psychosocial Factors Contributing To Poor Adherence Among TB Patients

Poor adherence to anti-TB medication has long been associated with socio-economic status among other socio-demographic factor consequently there is paucity of data or studies that have been published that focuses on the relationship between psychosocial and psychiatric comorbidities and patient non-adherence to TB medication particularly in Kenya (Pachi,et al., 2013). In the studies mentioned in this literature review so far psychosocial factors were not included as key factors that affect adherence in the findings. Nevertheless, some studies have shown that there is an association between these two variables (Pachi,et al., 2013). These researchers did a systemic over view of the literature which was on epidemiological data and the past medical reviews from a historical perspective, later followed by theoretical consideration upon a close relationship that was among psychiatric disorders and tuberculosis. The secondary data collection which was done by reviewing over 135 articles, 4 on epidemiology and 3 on past medical literature led to a conclusion that indeed there was a correlation between presence of a psychiatric disorder and the increased probability that the patient will not adhere to TB treatment. The researchers established that presence of depression, specific psychological reactions for example anxiety which was related to disease perceptions among the patients created a likelihood that the patient would not adhere to the medication (Pachi,et al., 2013).

Other studies have also shown that TB patients are also more likely to suffer from psychiatric disorders more than individuals who are not suffering from the disease. It is rightly presumed that to be afflicted with pulmonary tuberculosis is a unique and painful experience in the biopsychosocial history of an individual, and the emergent stress contributes to psychiatric morbidity. Depression, posttraumatic stress disorder (PTSD), and acute stress disorder are the most common stress-related conditions of TB patients (Pachi,et al., 2013). Reactions to the stressful situation brought about by the illness negatively affecting an individual's ability to work, in conjunction with social isolation, stigma, lowered self-esteem and fear of spreading the illness to others (Dodor et al., 2008). High prevalence of psychosocial distress has been documented amongst TB patients, in one study done in South Africa where 60% of patients had symptoms of depression and 33% had anxiety (Theron, et al., 2015). A study done in India on psychosocial trauma of diagnosis indicated that the current tuberculosis control strategy in India largely ignored psychosocial needs of the patients (Venkatraju & Prasad, 2012).

Drug and Alcohol Use in TB Treatment Compliance

Drug and alcohol is also a major psychosocial factor. In a study that was conducted to determine factors that led to poor adherence in TB patients, it was established that alcohol dependence and nicotine addiction were also associated with poor adherence (Muture, et al., 2011). It is a fact that Tobacco and alcohol use in the treatment of TB is actually very harmful to the liver. The Anti TB drugs cause toxins to the liver, therefore combination of alcohol and anti TB drugs lead to a greater risk of hepatic reactions thus

poor health which affects adherence to treatment. Patients on anti TB treatment should be advised to at least reduce the level of alcohol consumed if rather it cannot be avoided. TB being primarily a disease that affects the respiratory organs, tobacco smoking has been found to be extremely injurious to lungs and other body organs for these patients and should be strongly discouraged in patients receiving TB treatment (Ministry of Public Health and Sanitation, 2012).

As indicated earlier, such focus on TB research is lacking in Kenya hence the paucity of data. Therefore, further research should be considered in order to tackle the psychosocial factors that lead to non-adherence to treatment. This study attempts to fill this gap by assessing if there is a relationship between these two variables.

2.4 Socio-Demographic Factors Associated With Poor Adherence

Many studies that have been conducted on TB treatment adherence have always shown an association between the participant's age, sex, marital status and occupation to their level of adherence to the medication (Adane, et al.,2013; Liaqat, et al.,2015). However, a study carried out in Ghana on the same found no correlation between these particular socio-demographic factors (Danso, et al., 2015). Actually, this particular study showed that 63% of the participants complied with their medication regardless of their socio-demographic characteristics. This was also reflected among the 37% who did not adhere to their medication. This study will assess these factors with primary focus on socio-economic burden of TB, education level of patients and accessibility to treatment facilities.

2.4.1. Socio-Economic Burden of TB

According to the National Strategic Plan for Tuberculosis, Leprosy and lung health, 2015-2018 report, there is a strong association of TB with poverty. Patients and households affected by TB are likely to be caught in a medical poverty trap a situation where treatment expenditures increase as income levels decrease (WHO, 2014). It is estimated that over half of the TB patients are malnourished to some degree at the onset of treatment. In one study done in Kenya, it was determined that most patients have to borrow money or sell assets to meet the expenses they face due to illness. Indirect costs in the form of loss of income, account for about 85% of the economic burden (Tadesse, et al.,2013). According to a geographical review that was done regarding the spread of TB, it was found that TB is common in slums. The review also indicated that the MDR- TB is also more common in this population. This was associated with factors such as poor sanitation, poor housing with low lighting and air movement and the high population density that is conducive for the spread of the bacteria. It is estimated that an individual infected with MDR-TB can easily infect 15 people (Oppong,et al., 2014).

2.4.2 Patient Education Level and Non- adherence to TB treatment

Studies done to assess the relationship between the patient's education level and knowledge on treatment show that knowledge and attitude about tuberculosis and treatment which could be associated with patients' culture, religion and beliefs could lead to misinformation. This lack of knowledge is therefore associated with delay in seeking healthcare and lack of treatment literacy leads to poor treatment outcomes (Smart, 2010). Several studies in Kenya and Tanzania showed that knowledge of TB is generally low (Wandwalo,et al., 2006). Clearly these studies were not recently done.

2.4.3 Accessibility to TB therapy Centre's

A study done in Ethiopia on long distance travelling and financial burdens as a factor that discourage tuberculosis DOTS treatment initiation and compliance in the majority of patients reported difficulty accessing facilities, TB diagnosis and treatment were the most important factors influencing early TB treatment initiation and adherence but due to long distance to the health facilities most patients did not comply to tuberculosis treatment. In the area where the study was conducted there were two health centres providing DOTS to a population of over 145,458 (Tadesse, et al., 2013). This study looks into this factor and its relation to poor adherence in Riruta health centre.

2.5 Conceptual Framework

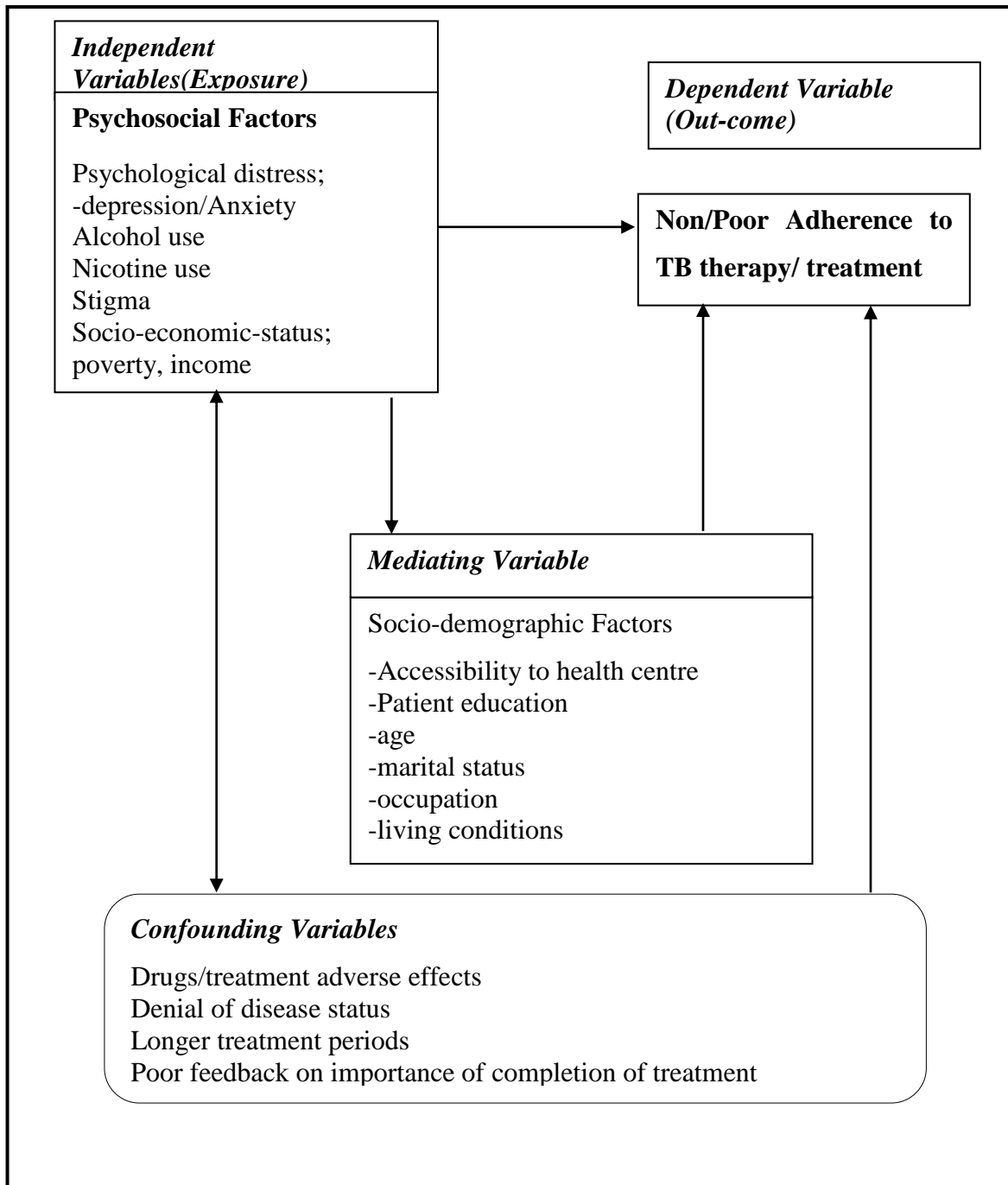


Figure 1: Conceptual Frame work
Author: Keziah Anunda -2017

The study seeks to evaluate the psychosocial factors associated with non/poor adherence to anti tuberculosis medication and follow-up among patients at Riruta health centre. Therefore, the independent variables in the study are the psychosocial factors while the dependent variable is non - adherence to TB treatment among these patients. The socio-demographic factors will be mediating factors in this study as they will help explain the relationship between these variables. The confounding variables mentioned are the factors that cannot be controlled in the study but impact both the independent and dependent variable and vice versa.

2.6 Theoretical Framework

Locus of Control Theory

This theory attempts to explain the impact of psychosocial factors on patients' adherence to TB medication. The locus of control theory postulates that individuals differ in the way they perceive the control they have over events in their lives (Rotter, 1966). According to Rotter, individuals have two major types of locus of control which are the internal and external locus of control. Those with an internal focus believe that whatever they do determines what happens to them. They consider themselves responsible for their successes and their failures. On the other hand, people with external locus actually believe that they are not in control of whatever happens to them no matter what they do. Everything can be attributed to circumstances or fate. Basically, when the same concept is applied to the field of health, it is then understandable to assume that people's actions towards their own well-being are based entirely on the degree of control they think they have to determine their outcomes. People with an internal locus of control believe their

actions can affect the course of a disease and the therapeutic results while those with external locus believe their actions are inconsequential.

The psychological aspect of a disease can greatly affect the course of treatment and healing for a patient. This is because for a patient suffering from a psychological problem or psychiatric disorder, their internal locus is usually affected and therefore they are usually not in control of their actions pertaining to getting better. This is why it is recommended that treatment of psychiatric comorbidity and addressing of psychosocial problems have to be done before treatment commences in ideal situations or as treatment is in its initial phases. Psycho-social factors affect patients' patience and motivation to get well. It makes them more reliant on their external locus where they believe their actions are not going to help them and this leads to non-adherence. Patients with internal locus probably having normal stress levels with no psychiatric disorders or psychosocial problems will ensure that they take their medication because they understand their actions have consequences pertaining to their well-being hence high levels of adherence.

CHAPTER THREE: METHODOLOGY

3.0 Study Design

The study used a cross-sectional design to assess psychosocial factors leading to poor treatment adherence among patients on anti-tuberculosis treatment.

3.1 Study Site

The study was undertaken at Riruta Health Centre outpatient department. Riruta Health Centre is in Kawangware, Dagoretti constituency. It is a government facility that offers health care services to more than 420,000 patients annually. They provide curative outpatient services, HIV counseling and testing, maternal and child health services, family planning, Antiretroviral Therapy and immunization, outpatient TB clinic and follow up and the health services are integrated and supported by international health partners for example Maryland University USA, USAID. Approximately 300 patients are seen daily at the health facility. With regards to TB care; the facility offers treatment to over 200 patients a month. These patients are usually on follow up however new cases are also normally recorded.

3.2 Study Population

The target population were patients on follow up at TB Clinic at Riruta Health Centre. These patients could be assessed for adherence to TB therapy.

3.3 Inclusion and Exclusion Criteria

3.3.1 Inclusion Criteria

The inclusion criteria was:

- TB Patients that have been previously diagnosed with TB at the clinic

- TB Patients that were on TB treatment and on follow up at the health centre
- TB Patients who were aged 18 and above.

3.3.2 Exclusion Criteria

The exclusion criteria were:

- TB Patients that have just been diagnosed with TB-New cases
- TB Patients who refused to give consents
- Study participants below the age of 18 years

3.4 Sample Size Determination

The researcher employed Fisher's *et al* (1998) method for population less than 10,000 to compute the sample size. The population of patient on Anti-Tb medications is estimated to be 180 (this number excludes 20 patients who could be recorded as new infection cases). As stated earlier, the health facility attends to 200 TB patients (both new patients and those on follow up) monthly (OPDTB register, 2016).

$$n = Z^2 PQ \div d^2$$

Z = Standard deviation of the required confidence level (1.96) at 95% confidence level.

P = proportion of target population estimated at (0.9), Q = 1 - p i.e. q = 1 - 0.9

d = degree of accuracy (0.05 level)

$$1.96^2(0.1*0.9) / 0.05^2 = 138.29$$

138 respondents

For a population less than 10,000 the following formula by Fisher et al. (1998) will be computed;

$$nf = n/1 + (n/N);$$

$$\text{Therefore, } nf = 138/1 + 138/180 = 138/1 + 0.766 = 138.766 =$$

139 respondents

The calculated sample size was increased by 10% because the expected attrition rate was 10 percent. The response rate was predicted to decrease because of participants who would choose to pull out of research at the beginning or midway while filling the questionnaires.

$$10\% \text{ for Non-response} = 139 \times 10/100 = 13.9 \text{ i.e. } \mathbf{14 \text{ respondents}}$$

Therefore: 139 + 14 = 153 respondents

153 participants on TB therapy will be required to participate in the study.

3.5 Sampling Method

Sampling method used for selecting a representative group from the population under study was systematic random sampling. The target population who took part in the study or the participants who met the set inclusion criteria were recruited for the study until the desired sample size of the study was reached. Every member in the study population had an equal chance of being selected.

3.6 Recruitment and Consenting Procedures

Riruta health facility receives approximately 200 patients who are either on TB treatment or are recorded as new infections needing treatment. The study only targeted those who are currently on follow up since they had already been started on the treatment regimen. The researcher was to do data collection for only 2 months during the anti-TB clinic days

at the facility. Once the respondents were selected using systematic sampling i.e. every third patient to come to the clinic on follow up for TB treatment, they would be approached and asked to participate in the study. It's important to note that the inclusion criteria was adhered to during this recruitment process. The respondents were informed that their participation which was voluntary and they could refuse to participate without any repercussions. If they agreed to participate explanation of the consent form was done. Consent was then obtained through signing of a consent form, from participants who agreed to consent.

3.7 Data Collection Instruments

Three instruments were used in the study; the Morisky Medication adherence rating scale (MMAS8), Kesler10 and the researcher designed social demographic questionnaire.

3.7.1 The Morisky Medication Adherence Rating Scale (MMAS)

It was used to measure the level of medication compliance or non-compliance among patients on treatment regimens. The medical adherence rating scale is a 8 item self-reported questionnaire. Using the MMAS tool, the researcher and the patient can determine willingness and ability to take medication every day. Scores ranges from 0-8 with a higher scale indicating low adherence. The MMAS was measured in a study that sought to determine compliance to medication in hypertensive patients and questionnaire reliability was 0.83 making it a very reliable tool to measure patient compliance.

3.7.2 Kessler 10 – K10. Psychological Distress Scale

The Kessler Psychological distress scale is designed to measure anxiety and depression through a 10-item questionnaire. Each question addresses an emotional state and each has

a five-scoring scale that is used to rate the response. The instrument can be self-administered or interviewer-administered and consumer privacy should be insured when using this instrument. K10 is scored using a five-level response scale based on the frequency of symptoms reported for each question (1 is the minimum score for each one for each item (none of the time) and all of the time is scored as 5. Clearly the range of scores is between 10 and 50.

The K-10 validity and reliability was measured by Kessler in the 2000 Collaborative Health and Well-Being Survey. Its internal consistency hence validity ranged from 0.42 to 0.74 which indicated that it is a moderately reliable instrument.

3.7.3 Socio Demographic Questionnaire

Socio demographic questionnaire designed by the researcher was used to gather information on age, religion, marital status, education, occupation, economic status, number of children, and costs of medical treatment of the participants, income.

3.8 Pretest

A pre-survey was done to help in identifying limitations that may arise during data collection. A pre-test of the study tools was done to ensure that the tools capture what study is assessing. A Pre-test was done by the researcher issuing the questionnaires randomly to 10 participants; who filled in the questionnaires. These questionnaires were then be assessed by the researcher to see if there are any questions that the respondents had issues with or had trouble answering and they were adjusted accordingly.

3.9 Data Collection Procedure

First, permission to conduct the research was obtained from the KNH/ERC committee. The researcher then sought permission from the county government to conduct the research at the clinic. Once the approval is obtained, data was collected during regular clinic hours Monday to Friday from 8am-4pm. approximately 10-20 patients (both new and old) attend the TB clinic daily. On each clinic day, every third TB patients was approached to be requested to participate as per the studies systematic sampling technique. The inclusion criteria was also applied. If a patient did not meet the inclusion criteria or refuses to give consent to participate in the study, then next third TB patient was approached. Before attaining participants consent, the participants were explained to the purpose of the study and most importantly that their participation was voluntary. The risks and benefits were also explained. Once the consent form was signed, the participants were issued three questionnaires. The first one was the socio-demographic questionnaire then the Morisky questionnaire and finally the Kessler 10. The respondents were taken through the instructions for all these self-reporting questionnaires and given time to answer the questions. Questionnaires were researcher administered. Completed questionnaires were collected and researcher thanked the participants. All the completed questionnaires were kept in a secure bag and transported to the researcher's home. The questionnaires were kept under key and lock awaiting data analysis.

3.10 Flow Chart

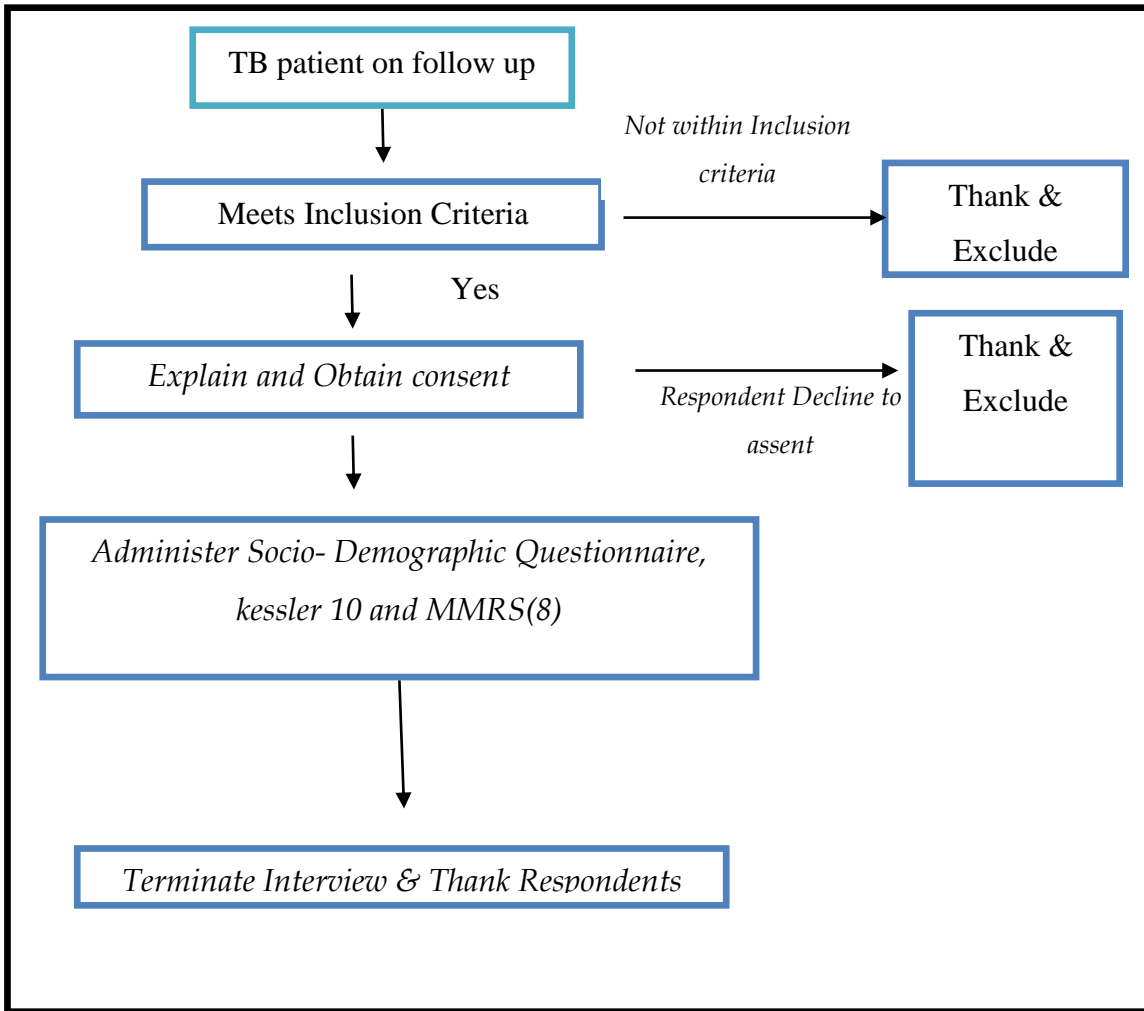


Figure 2: Flow Chart for Data Collection Process
Author_ (Anunda, Keziah)-2017

3.11 Data Management and Analysis

Data was coded, entered and managed to a pre-designed Microsoft Access Database. Data entry was done continuously throughout the course of data collection. Statistical Package for Social Sciences SPSS version 23 was used for data analysis. Data was presented using tables, graphs and pie-charts and tables. Pearson's chi-square was used to establish association between categorical variables while Cramer's V was used to

measure the strength of the association. Simple regression was done to predict variables that would impact adherence while the Phi-coefficient was used to determine correlation between 2 dichotomous variables.

3.12 Ethical Consideration

The study involved human subjects of a vulnerable group hence ethical approval was obtained from Kenyatta National Hospital/University of Nairobi Ethics and Research committee and permission from the Nairobi county health department. The proposal was developed by academic assistance of the university of Nairobi department of psychiatry supervisors, and then presented to Kenyatta National Hospital University of Nairobi Ethics and Research Committee for approval. The research endeavored to ensure that ethics, confidentiality and volunteerism were adhered to in the study, in accordance to the Kenyatta National Hospital and University of Nairobi Ethics and Research Committee requirements.

All the participants were briefed on the nature of the study and the necessary instructions, study objectives, risks and participant rights. Each participant were presented with informed consent forms which contained the title of the study, the institution, identity of the researcher and supervisors as well as the purpose and procedure of the study.

Participants were assured that participation was entirely on voluntary basis and also made aware that they can withdraw from the study if they felt uncomfortable to continue and no penalties or victimization would result. The respondents remained anonymous and no name were required. The population participating in the study were accorded care and

non- disclosure or confidentiality was maintained during data collection by not obtaining the participants identification details. The researcher acknowledged that there would be a risk of distressing the participants during the interview and gathering of data so psychotherapy was offered as need arises. The participants were also informed that there were no physical risks anticipated from the study. Finally, the respondents were informed that the results of the study were to be shared with the health centre administration and consequently would be made available for the public.

3.13 Study Limitations

The study was limited to TB patients at Riruta Health Centre thus inferring results to other health facilities within the county was difficult. Other limitations that are anticipated were for instance insufficient funds to conduct the study however through proper time management the researcher minimized on costs during data collection. Respondent's attitudes towards the study and misconceptions also posed as another limitations. However, through proper explanation of the study purpose and the possible benefits that it could bring particularly to them and other patients, the researcher dispelled some of these concerns.

CHAPTER FOUR: FINDINGS

4.0 Introduction

This chapter entails the analysis of the data collected. The results are presented according to the study objectives which were:

- i. To determine the prevalence of poor adherence to treatment among patients attending Tuberculosis clinic at Riruta Health Centre.
- ii. To assess emotional and socio- demographic contributing to poor adherence among TB patients on anti-tuberculosis treatment.
- iii. To determine the relationship between emotional/ socio- demographic factors and poor adherence among TB patients on treatment and follow-up.

4.1 Response Rate

The sample size of population for the study was 153 respondents. The researcher managed to engage all 153 respondents in the study; therefore, the response rate was 100%.

4.2 Respondents' Socio Demographic Profiles

Table 4.1 presents socio-demographic characteristics of the respondents who are on TB treatment. The male respondents were more than female respondents at 61.4% (n=94) and 38.6% (n=59) of the sample population respectively. Majority, 71.9% (n=110) were married while 24.2% (n=37) were single and 2.6% (n=4) were separated and 1.3% (n=2) were widowed. The mean age of the respondents was 33.61yrs (SD. ± 9.267), the mode was 28 and the median 32yrs. As for their level of education; 40.5% (n=62) were in or had been to college, 34.6% (n=53) had attained secondary school, 13.1 % (n=20) had

attained primary school education, 8.5% (n=13) had attained university education, while a few 3.3% (n=5) did not indicate level of education attained. Most of the respondents were affiliated to either of Protestant 49.0% (n=75) or Catholic 39.2% (n=60) religion. The study also established that most of the respondents were either formally employed 41.8% (n=64) or self-employed 43.8% (n=67).

Table 4.1: Respondents Socio-Demographic Profiles

Variable	Outcome 153/100%	
	Frequency (n)	Percentage (%)
Gender	Male	94 61.4%
	Female	59 38.4%
Marital Status	Single	37 24.2%
	Married	110 71.9%
	Separated	4 2.6%
	widowed	2 1.3%
Age categories (years)	18-27 Years	33 21.6%
	28-37 years	67 43.8%
	38-47 years	38 24.8%
	48+ years	15 9.8%
Religion of affiliation	Protestant	75 49.0%
	Catholic	60 39.2%
	Muslim	2 1.3%
	Others	16 10.5%
Level of education attained	Primary	20 13.1%
	Secondary	53 34.6%
	College	62 40.5%
	University	13 8.5%
	Others	5 3.3%
Occupation Status	Employed	64 41.8%
	Self Employed	67 43.8%
	Unemployed	12 7.8%
	Retired	2 1.3%
	Others	8 5.2%
Residential Area	Urban	8 5.2%
	Semi-Urban	131 85.6%
	Rural	13 8.5%
	others	1 0.7%

4.3 Psychosocial Problems

4.3.1 Tobacco and Alcohol Use

Table 4.2 tabulates Tobacco use among respondents. Majority of the respondents neither smoked cigarettes 92.2% (n=141) nor used alcohol 85.6% (n=131). However, a few 7.8% (n=12) and 14.4% (n=22) smoked or used alcohol respectively.

Table 4.2: Respondents' Use of Cigarettes & Alcohol

Variable		Frequency/percent (n/%)
Smoking	Yes	12 (7.8%)
	No	141(92.2%)
Drinks Alcohol	Yes	22 (14.4%)
	No	131 (85.6%)

4.3.2 Association & Correlation between Alcohol Use and Tobacco Use

Alcohol use and tobacco use were significantly associated at a P value of 0.005. Correlation was assessed for the two variables which were both dichotomous and nominal using a Phi Coefficient. The relationship between the two variables was notably weak but positive with the Phi= 0.227. This meant that alcohol use increased the chances that one will also use tobacco. It is however important to note that it was a weak relationship.

Table 4.3: Association & Correlation between Alcohol Use and Tobacco Use

Variable (Alcohol Use)	Variable (Tobacco Use)				P Value 0.005	Phi- Coefficient 0.227
	YES		NO			
	Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)		
Yes	5	3.3%	7	4.6%		
No	17	11.1%	124	81.0%		

4.3.3 Psychological Distress

4.3.3.1 Levels of Psychological Distress

Table 4.4 below presents levels and prevalence of psychological distress among respondents using the Kessler scale. More than half, 58.2% (89) of the respondents were generally well with scores less than 20 on the Kessler scale. About a fifth, 18.3% (28) were found to have mild psychological distress with scores between 20 and 24. A few 3.9% (6) were found to have moderate psychological distress, while 19.6% (30) scored above 30 on the Kessler scale indicating severe psychological distress.

Table 4.4: Scores of Psychological Distress on Kessler's scale

Respondents scores	Frequency (N=153)	Percentage (%=100)
Less than 20	89	58.2%
20-24	28	18.3%
25-29	6	3.9%
30 and above	30	19.6%

4.3.3.2 Prevalence of Psychological Distress

The prevalence of psychological distress was determined by considering mild to severe psychological distress, this is presented in Figure 4.1. The findings show that the prevalence of psychological distress was 41.83%.

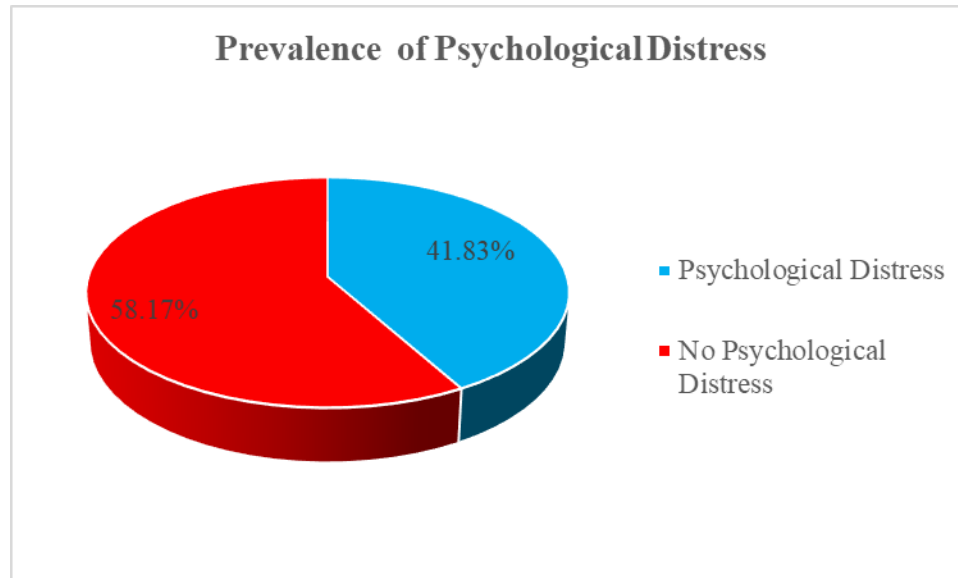


Figure 4.1: Prevalence of Psychological Distress

4.4 Respondents' Morisky Scores

To determine the level of adherence to medication amongst the respondents the Morisky assessment tool was administered. The results are presented in table 4.6. A few respondents 12.4% (19) of the respondents had low adherence, 24.2% (37) had medium adherence while 63.4% (97) had high adherence.

Table 4. 5: Respondents' Morisky Scores

Respondents scores	Frequency (N=153)	Percentage (%=100)
>2 -low adherence	19	12.4
1 or 2- Medium Adherence	37	24.2
0-High Adherence	97	63.4

4.5 Prevalence of Medication Non-Adherence

It is important to note that during Tuberculosis treatment missing medication for 1 day is poor adherence. Therefore, the prevalence of poor-adherence has been determined by considering both medium and low adherence. As presented in Figure 4.2, it was established that the prevalence of poor-adherence was 36.6% (n=56).

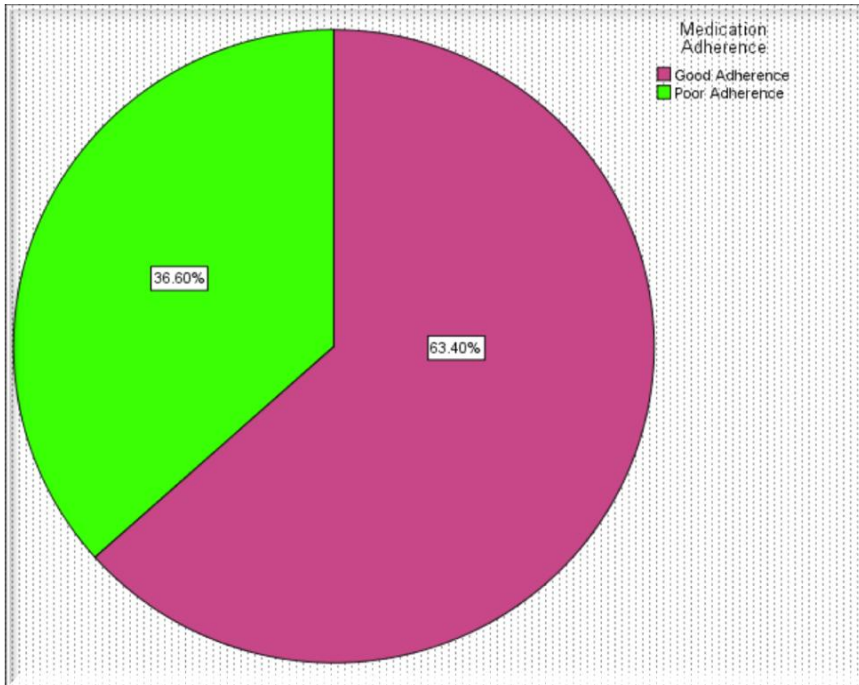


Figure 4.2: Prevalence of Medication Non-Adherence

Some of the main reasons given for non-adherence was general forgetfulness. Twenty two percent (22.2% (n=34)) of the respondents indicated that they had difficulty remembering to take their medication. Fifteen-point five percent (15.5% (n=24)) of them indicated that they simply forgot to take their medication while 13.7% (n=22) indicated that they felt hassled to stick to their treatment regimen. Seven-point two percent (7.2% (n=11)) of the respondents stopped taking their medication after having side effects or

feeling worse while on medication. Only 2.6% (n=4) stopped taking their medication after feeling better (see Table 4.6).

Table 4.6: Linear Regression- Predictors (patient factors) for Poor Adherence as per the Morisky Assessment Tool

Table 4. 6:

Linear regression- Predictors for poor adherence as per the Morisky Assessment Tool

Predictors	Standardized Coefficients β	t	Sig.
(Constant)		-5.351	<0.001
Do you sometimes forget to take your medicine	.270	4.109	<0.001
People sometimes miss taking their medicines for reasons other than forgetting. Thinking over the past 2 weeks, were there any days when you did not take your medicine?	.185	3.780	<0.001
When you travel or leave home, do you sometimes forget to bring along your medicine?	.207	4.359	<0.001
Taking medicine every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan?	.333	7.025	<0.001
How often do you have difficulty in remembering to take all your medicine?	.257	3.360	.001
Have you ever cut back or stopped taking your medicine without telling your doctor because you felt worse when you took it?	.115	2.187	.030
When you feel like your symptoms are under control, do you sometimes stop taking your medicine?	.075	1.631	.105

4.6 Socio- Demographic and Psychological Factors Contributing to Poor Adherence Among TB Patients on Anti-Tuberculosis Treatment

None of the socio- demographic variables were found to significantly predict medication adherence. However, alcohol use was found to significantly impact medication adherence.

Table 4.7: Linear regression Predictors Socio-Demographic Factors That Contribute to Poor Adherence

Predictors	Standardized Coefficients β	T	Sig.
(Constant)		1.113	.269
Smoker	.109	1.022	.310
Alcohol Use	-.315	-2.950	.004
Facility Near	.178	1.701	.093
Treatment Affordable	-.009	-.080	.937
Psychological distress	.029	.272	.786
Age	-.167	-1.379	.172
Sex	-.153	-1.418	.160
Marital Status	.157	1.364	.176
Education	.001	.007	.994
Religion	-.073	-.724	.471
Occupation	.106	.952	.344
Employment Status	-.036	-.330	.742
Household Population	.019	.129	.898
ChildrenUnder18	.094	.836	.406
Income Earners	.053	.401	.690

4.7 Association and Correlation between Psychosocial Factors and Poor Adherence among TB Patients on Treatment and Follow-Up

Besides alcohol use, all the other factors were not significantly associated with treatment adherence. Therefore, correlation was assessed for the two variables which were both dichotomous and nominal. The phi-coefficient was therefore calculated to determine the direction of the relationship between these variables.

As illustrated on the table below the Value of phi-coefficient was -0.269 indicating that there was negative relationship between the two variables in that not using alcohol increased the chances of having good adherence to medication. It is however important to note that it was a weak relationship.

Table 4.8: Association between Medication Adherence and Alcohol Use

Variable (Alcohol Use)	Variable (Medication Adherence)				P Value	Phi- Coefficient
	Good Adherence		Poor Adherence			
	Frequency (N)	0.005 4.6%	0.227 15	Percentage (%) 9.8%		
Yes	7	4.6%	15	9.8%	<0.001	-0.269
No	90	58.8%	41	26.8%		

CHAPTER FIVE: DISCUSSION, CONCLUSION & RECOMMENDATION

5.1 Discussion

The study revealed that the male respondents were more than female respondents and that majority were married. The average age of the participants was determined to be between 22yrs to 43yrs and that a considerable number of them had higher levels of education were mostly formally employed.

More or less similar results have been reported in other studies. For instance, a study that had been done in Northeastern Tanzania to determine the maternal HIV status and pregnancy outcomes, reported that the women between the age of 26 and 35 years were the most affected participants at 43.8% of the study population. It was also indicated that 41.4% of the mothers were married or cohabiting with a partner. The findings in Tanzania also indicated that 36.8% of the women had only primary school education and that overall most of them worked outside the home to earn a living (Habib, et al., 2008).

This study established that overall 36.6% of the respondents who were attending Riruta health centre for TB treatment were not adhering to their medication as required. The Morisky medication adherence assessment test was used to determine the prevalence and 12.4% of the participants were found to have low adherence to TB medication and 24.2% of the respondents were reportedly moderately adherent. A number of studies that have been undertaken to determine the prevalence of TB treatment non-adherence have generally reported a difficulty in adhering to the required treatment regimen which in turn is associated with development of TB resistant strains and poor outcomes. For instance, a study carried out in Njoro Sub-county hospital in Kenya reported similar results. The

study found that 32% of the TB patients had not followed their treatment regimen and had in fact interrupted their treatment by essentially missing follow up visit to the facility (Oyugi, et al., 2017). Still on Kenya studies; higher prevalence rates were reported in a study that was undertaken in Baringo County-Kenya. It was reported that 46% of the patients with TB in the county were non-adherent at their intensive treatment phases while 54% of the patients were non-adherent once they were at the continuation phases of their treatment (Obwoye, Sang, & Wakube, 2016).

It is important to note that this current study reports quite a high prevalence rate compared to other studies done, particularly in Africa. In a study that was undertaken in Sudan in TB treatment clinics, it was estimated that 14% of the TB patients were non-adherent to their medication (Ahmed & Prins, 2016). The study sought to determine the prevalence of patient non-adherence to TB treatment in Sudan (Khartoum State). It particularly looked at socio-demographic factors that were associated with the non-adherence in the TB treatment facilities of the state. In a similar study that was done in North West Ethiopia, it was reported that the overall prevalence of non-adherence over a period of one month and the last four days prior to the survey were 10% and 13.6% respectively (Adane, Alene, Koye, & Zeleke, 2013).

The current study also sought to determine whether there were some socio-demographic and emotional factors that were associated with non-adherence at the Riruta Facility. As per the study findings, it was established that no socio-demographic or socio-economic factor was associated with these findings. In a retrospective study that was done in Nigeria where patients with TB who been registered between March and May 1997 and

followed up on the Directly Observed Therapy in Ile -Ife Nigeria were investigated to determine the factors that influenced their compliance to their TB medication also found that no socio-demographic factors influenced non-adherence (Erhabor, Aghanwa, Yusuph, & Omidiosa, 2000). The only psychosocial factor that was found to be significant was nearness to the facility which was not an issue in this current study as most of the participants resided near the Riruta Health Centre. Another study done in South Ethiopia similarly did not find any socio-demographic significantly associated with poor adherence to TB treatment. Nearness to the facility and patient factors were the only factors that were found to be significant (Woimo, Yimer, & Bati, 2017). Contrary to this current study and studies mentioned, have reported different results; for example, in the Sudanese study that was previously mentioned, it was established that socio-demographic factors did have an impact on the poor adherence of TB treatment. The researchers found that the residential locality which was mostly rural area, patients moving or changing address, absence of family support and occupation particularly having a blue-collar job interfered with the patient's ability to stick to their treatment regimen (Ahmed & Prins, 2016).

One of this study's objective was to determine if there were any emotional factors that influenced poor adherence and the findings showed that no emotional factors were significantly associated with poor adherence although it was found that 41.83% of the respondents were suffering from mild to severe psychological distress. Instead some patient factors were found to predict non-adherence. Some of these factors associated with this high prevalence was generally forgetfulness and finding that the treatment regimen a hassle to follow and suffering from side effects while on medication. Other

studies have reported that indeed these patient factors do influence adherence among the TB patients. In the study that was done in Baringo, it was established that 52% of the patients simply forgot to take their medication or were careless (Obwoye, Sang, & Wakube, 2016). Similarly, a study undertaken in South west Ethiopia also indicated that forgetfulness was a major factor associated with poor adherence. This was mostly noted for patients who were in their continuation phases of chemotherapy (Adane, Alene, Koye, & Zeleke, 2013).

The only psychosocial factor that was found to be associated with poor adherence to TB treatment at Riruta health centre was alcohol use. It is important to note that although alcohol use was associated with tobacco smoking, tobacco smoking on the other hand was not associated with non-adherence to medication in this current study. In Baringo, 58% of non-adherent TB patients attributed their behavior to their alcohol use while 45% of them attributed it to their smoking habits (Obwoye, Sang, & Wakube, 2016). In a study that was done to determine the factors that were associated with poor adherence to TB treatment in the state of Parana in Brazil, it was found that being a young alcoholic increased the chances of becoming a defaulter in the treatment regimen (Furlan, Pimenta, & Marcon, 2012). The study also found that low education, previous treatment non-adherence and unemployment also contributed to non-adherence. The same findings were found in a study that was carried out in South Africa (Ndwandwe, Lutge, & Knight, 2015). Besides alcohol, the study also established that other substance use, smoking, being HIV positive were all predictors of TB treatment non-adherence.

5.2 Summary

It is clear that the prevalence rate of poor adherence at Riruta Health Centre is very high at slightly above 36%. This is despite the fact that these patients are on Directly Observed Treatment (DOT) program which tries to ensure that patients do adhere to their 6 months TB treatment plan. These findings therefore raise the question as to whether the DOT program is really working at the Riruta Health Centre. Since forgetting and overall difficulty in following through with the regimen was cited by the respondents as major factors affecting their adherence, it is important that facilities look into programs that can help foster medication compliance habits. This prevalence rate could also be assumed to be resulting from lack of proper psycho-education or generally proper information dissemination to the patient and the caregiver by the health care workers. This current study did not explore this aspect of disease knowledge among the respondents nor their caregivers. Alcohol was significantly associated with non-adherence and as expected in most chronic illness management, alcohol is always associated with poor adherence to medication and hence predicts negative consequences in the overall outcome of treatment. It was therefore expected that it would predict non-adherence in TB treatment.

5.3 Conclusion

There was a high rate of poor adherence to treatment among patients attending Tuberculosis clinic at Riruta Health Centre. There was no association between socio-demographic profile of the participants and poor adherence to the treatment regimen. Although quite a considerable number of participants were found to be having psychological distress, there was no association between having the disorder and adherence. Another conclusion drawn from the study was also alcohol consumption was

the only psycho-social factors that was associated with poor adherence. Generally increased consumption of alcohol predicted poor adherence to TB treatment adherence. Finally, there was no relationship between emotional/ socio- demographic factors and poor adherence among TB patients on treatment and follow-up.

5.4 Recommendations

The study recommends that:

- i. Special attention on adherence counseling should be given to symptomatic TB patients, and those in the continuation phase of the tuberculosis therapy
- ii. Patients and their caregivers should be well educated about the importance of strict adherence to TB treatments. this could be carried out soon after diagnosis as part of psycho-education done by the health care worker at the facility or as part of continued education to the patients who come for follow up
- iii. Alcohol screening to be incorporated in the following routine checkup among the TB patients.
- iv. Information about development of TB resistant drugs and its overall consequences should properly be given to the patients so that they understand the risk of poor adherence.

5.5 Suggestion for Further Studies

This current study did not explore the level of knowledge about TB treatment among the patients or their caregivers, this is important in further establishing reasons why poor adherence rates are high. It is therefore important that a follow up study covers areas related to disease knowledge for patients and their caregivers. In this current study, no emotional factors were found to be significantly associated with non- adherence, it is important that another study further looks at this aspect of the study. For instance, introduction of different tools to determine the psychological state of mind of the patients could give more insight into this issue.

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APPENDICES

APPENDIX 1: CONSENT EXPLANATION

NAME OF PROJECT: PSYCHOSOCIAL FACTORS ASSOCIATED WITH POOR ADHERENCE TO ANTI TUBERCULOSIS MEDICATION AND FOLLOW-UP AMONG PATIENTS AT RIRUTA HEALTH CENTRE.

Part I: Information Sheet

Introduction

My name is Keziah Anunda, Tel. No. 0722699976, Masters of Science in Clinical Psychology Student at University of Nairobi. My research is to find out psychosocial factors associated with poor adherence to anti-TB medication and follow up among patients at Riruta Health Centre in Dagoretti, Nairobi County.

You are being invited to take part in a research study because this research study is a way of finding out information that might help other people with similar conditions and illness.

This form explains why we are doing the study and how the treatment is being offered to you is different from regular care. It tells you what will happen during the study. It also tells you about any inconvenience, discomfort or risk. With this study, it also gives you a complete description of the treatment offered. This information will help you decide whether you wish to be part of the study.

Objective of the study

To investigate the psychosocial factors associated with poor adherence to anti tuberculosis treatment among patients on treatment and follow up at Riruta Health Centre.

Benefits

There is no immediate benefit to you but the findings of this research study will/may be used to improve health care services that are offered for TB patients in the health facilities.

Risks

There are no risks in participating in this research study. It is voluntary and the information about the patient is confidential thus will not cause any danger to you.

Compensation mechanism

There is no compensation mechanism if one participates in the research study.

Alternative Treatment

There is no alternative treatment to be given when you participate in this research study. You will continue with your anti-tuberculosis treatment as per the guidelines.

Voluntarism

Participation in research study is voluntary; you cannot be forced to participate in the study if you do not want to be in the research. It is ok and nothing changes. You will receive the services you come for then leave afterwards.

Type of specimens and amount to be obtained

If you participate in the research study, no specimen will be obtained from you in order to participate in this study.

Follow up schedules/expected time in the study

This research study is for patients who are on anti-TB treatment and follow up at Riruta Health centre at the Tuberculosis clinic and above 18years of age.

Purpose of this research

To assess factors contributing to poor-adherence among TB patients on anti-Tuberculosis treatment at Riruta Health Centre. I am carrying out the research on TB patients aged 18-65 years.

Procedure

You may answer the questionnaire yourself or it can be read to you and you can say out loud the answer you want me to write down.

Reimbursements You will not be paid for participating in this research.

Confidentiality

We will not tell other people that you are in this research and we won't share information about you to anyone who is not part of this research. The information is confidential; your name will not be included on the form

Sharing the findings

The findings will be shared as report in Journals and in meetings and conferences. This proposal has been reviewed and approved by the KNH Ethics Committee and Department of Psychiatry University of Nairobi

Information on researchers and telephone numbers in case to be contacted:

Keziah Aringa Anunda/ Tel no- 0722699976

In case of any queries or enquiries you can call KNH/UON/ ERC on 0722-315002

Or write to them at **P. O. Box** 19676 Code 00202.

Part II.

CONSENT

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have asked have been answered to my satisfaction. I consent voluntarily to be participant in the study.

Name of participant _____

Signature of participant _____ Date _____

If illiterate

I have witnessed the accurate reading of the consent form to the participant, and the individual has had the opportunity to ask questions. I confirm that the individual has freely consented

Print name of witness _____ Thumb Printing participant _____

Signature of witness _____ Date _____

Statement by the researcher/person taking consent

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands that they will be required to answer questions.

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly. I confirm that the individual has given consent freely and voluntarily. A copy of the ICF will be provided to the participant.

Name of the researcher _____

Signature of researcher _____ Date _____

APPENDIX II

RIDHAA YA KUSHIRIKI KWA UTAFITI

MADA YA UTAFITI: DHANA ZA KISAIKOLOJIA ZA KIJAMII ZINAZOAMBATANISHWA NA UCHOCHOLE ZA KUTOZINGATIA MAAGIZO YA TABIBU ZA DAWA ZA KIFUA KIKUU NA KUFUATILIA MATIBABU KUTOKA ZAHANATI YA RIRUTA.

SEHEMU YA KWANZA: HABARI MUHIMU KUHUSU UTAFITI UTANGULIZI:

Jina langu ni Keziah Aringa Anunda. Mimi ni mwanafunzi washahada ya uzanifu katika Chuo Kikuu cha Nairobi, na kazi yangu nikufanyautafiti na kujua kuhusu Matumizi za dawa za kifua kikuu. Nakupa ujumbe nakukukaribisha katikautafiti. Una chaguo la kushiriki au kutoshiriki wala hautashurutishwa kuwa mshiriki kwenye utafiti huu. Ni kwa hiari yako kushiriki katika utafiti huu. Kama hautashiriki hamna badiliko lolote, huduma za kutoka hiki kituo hatizakoma, zitaendelea. Unaweza kuacha kushiriki wakati wowote ukitaka.

Madhumuniyautafiti huu nikutathmini huduma bora za afya kwa wagonjwa wa kifua kikuu katika hospitali ya Riruta katika jimbo la Nairobi. Washiriki wanaohitajika ni wa miaka 18 na zaidi.

UTARATIBU:

MADHARA: Utafiti huu hauna madhara wowote kwako.

UTARATIBU WA KUJIBU MASWALI: Unaweza jibu maswali mwenyewe, au maswali yanaweza kusomwa kwako nauseme kwa sauti kubwa jibu unalotaka liandikwe. Kama hutaki kujibu maswali yoyote unaweza ruka na kuendelea na swali lingine.

SIRI YAKO KAMA MSHIRIKI: Majibu yako yatakuwa ya siri, majina yako hayataandikwa kwenye fomu lakini nambari itatumiwa kutambua hio habari. wakati wamahojiano, tutajadiliana. Kama hutaki kujibu maswali yoyote wakati wa mahojiano. Unaweza kusema hivyo na mtafiti ataendelea na swali lingine. Hakuna mtu mwingine atakuwepo isipokuwa mwenye upendekezayo.

FAIDA; Hakuna faida yanayotokana na utafiti huu lakini matokeo ya utafiti huu yanaweza kutumika kuboresha huduma za afya ambayo inapatikana na wagonjwa wa Kifua kikuu.

MALIPO: Hakuna malipo yoyote kwa kukubali kushiriki katika huu utafiti.

MATOKEO: Matokeo hayatajulishwa washiriki wote ila tahasi muhimu kama Wizara ya Afya.

Je, unamaswaliyoyote?

MAWASILIANO:

Kama unamaswali zaidi ama wasiwasi yeyote kama bado utafiti unaendelea au baada ya kushiriki kwenye utafiti, tafadhali wasiliana nami kwa simu au unaweza tuma ujumbe kwenye nambari hii-0722-699976]. Pendekezo hili ilipitishwa na kamati ya kisyansi na maadili (hospitali kuu ya kenya ya Uchunguzi, ambalo lina jukumu la kuhakikisha kwamba washiriki wautafiti wako salama kutokana na madhara yoyote yanayo weza zuka utafiti ukiendelea au kutokana na utafiti. Kama unamaswali yanohusu haki zako kama mshiriki wa utafiti huu, unaweza wasiliana na karani/ Mwenya kiti wa kamati hii kwenye Nambari - 0722-315002, au kutuma barua pepe kwenye email uonknh_erc@uonbi.ac.ke.

SEHEMU YA PILI: FOMU YA RIDHAA YA MSHIRIKI

KAULI YA MSHIRIKI

Nimesoma fomu ya ridhaa hii ama nimesikiza maneno ambayo nimesomewa. Nimepata muda wa kujadiliana juu ya utafati huu na mshauri wa utafiti. Maswali yangu yamejibiwa kwa lugha ambayo ninaelewa. Nimeelezewa juu ya madhara na faida na ninaelewa kuwa kushiriki kwenye utafiti huu ni kwa hiari yangu na ninaweza kujitoa wakati wowote kama mshiriki. Ninakubali kuhisika na utafiti huu.

Ninaelewa kuwa watafiti watafanya juhudi na mikakati ambayo yatahakikisha kuwa mambo yangu (utambulisho) yatabaki kuwa siri.

Kwa kutia saini kwenye fomu hii, sijawapa au kukana haki zangu za kisheria ambayo ninazo kama mshiriki wa utafiti huu.

Nakubali kuwa mshiriki wa utafiti huu	Ndio	La
Nakubali kuwa dodoso yangu inaweza wekwa na kutumika Katika utafiti mwingine	Ndio	La
Nakubali kuwapa nambari yangu ya mawasiliano iliniweze Fuatiliwa virahisi	Ndio	La

Jina la Mshiriki: _____

Saini la Mshiriki / Kidole _____ Tarehe _____

Mtafiti

Mimi niliyepiga saini yangu hapa, nimemweleza mshiriki maneno yote muhimu juu ya utafiti huu na nina amini kuwa ameelewa na kuamua kwa hiari yake kuwa mshiriki wa utafiti huu. Jina la Mtafiti: _____ Tarehe _____

Saini _____

Jukumu langu kwa utafiti huu: _____

APPENDIX III
ASSESSMENT TOOLS

PART I: Mo risky Medication Adherence Rating Scale

1. Do you sometimes forget to take your medicine? Yes () No ()
2. People sometimes miss taking their medicines for reasons other than forgetting. Thinking over the past 2 weeks, were there any days when you did not take your medicine? Yes () No ()
3. Have you ever cut back or stopped taking your medicine without telling your doctor because you felt worse when you took it? Yes () No ()
4. When you travel or leave home, do you sometimes forget to bring along your medicine? Yes () No ()
5. Did you take all your medicines yesterday? Yes () No ()
6. When you feel like your symptoms are under control, do you sometimes stop taking your medicine? Yes () No ()
7. Taking medicine every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan? Yes () No ()
8. How often do you have difficulty remembering to take all your medicine? **A- is 0 Score ; B to E =1Score.**
 - a. Never/rarely
 - b. Once in a while
 - c. Sometimes
 - d. Usually
 - e. All the time

Total scoring:

For questions 1 to 5; yes is 0 score and No is 1.

For questions 6 and 7, Yes is 0 score while No is 1

VIFAA VYA KIPIMO

Kipimo Cha Kuzingatia Matibabu Cha Morisky (8)

Mtafiti ataweza kuthibitisha uzingatifu na uwezo wa kutumia madawa yako kila siku. Hii ni ripoti binafsi ya kipimo inakadiria msimamo wa kuzingatia dawa na tabia za matumizi ya dawa. Kukadiria inahitaji kutafsiriwa. Ni kweli kushiriki matibabu haionyeshi uzingativu wa tabia. Kipimo cha matumizi ya madawa ina idadi ya maswali nane zinazotoa ripoti ambayo inatokana na mchanganyiko wa utumizi wa madawa na jedwali la tabia ya matumizi.

1. Je! Wakati mwingine husahau kuchukua dawa yako? Ndio () La ()
2. Wakati mwingine watu hukosa kuchukua dawa zao kwa sababu nyingine isipokuwa kusahau. Kufikiria zaidi ya wiki 2 zilizopita, kulikuwa na siku yoyote wakati husha sahu kabisa kuchukua dawa yako? Ndio () La ()
3. Je! Umewahi punguza kiwango au kusimamisha kuchukua dawa yako bila kumwambia daktari wako kwa sababu ulihisi kuwa mbaya zaidi wakati ulipochukua?
Ndio () La ()
4. Unaposafiri au kutoka nyumbani, je, wakati mwingine husahau kuleta dawa yako?
Ndio () La ()
5. Je, ulichukua dawa zako zote jana? Ndio () La ()
6. Unapohisi Kama dalili zako ni chini ya udhibiti, je, wakati mwingine huacha kunywa dawa yako? Ndio () La ()
7. Kuchukua dawa kila siku ni usumbufu halisi kwa watu wengine. Je! Umewahi kujisikia uharibifu kuhusu kushikamana na mpango wako wa matibabu?
Ndio () La ()
8. Ni mara ngapi una shida kukumbuka kuchukua dawa zako zote? (**A- ni 0 ; B hadi E ni 1.**)
A. Kamwe / mara chache
B. Mara moja moja
C. Mara nyingine
D. Kawaida
E. Kila wakati

**Jumla: Kwa maswali 1 hadi 5; ndio ni alama 0 na la ni alama 1
Kwa maswali 6 na 7; ndio ni alama 1 na la ni alama 0**

PART II: Kessler Psychological distress scale. K10Test

These questions concern how you have been feeling over the past 30 days. Tick a box below. Each question that best represent how you have been

1. During the last 30 days, about how often did you feel tired out for no good reason?			
a) None of the time	b) A little of the time	c) Some of the time	d) All of the time
2. During the last 30 days, about how often did you feel nervous?			
a) None of the time	b) A little of the time	c) Some of the time	d) All of the time
3. During the last 30 days, about how often did you feel so nervous that nothing could calm you down?			
a) None of the time	b) A little of the time	c) Some of the time	d) All of the time
4. During the last 30 days, about how often did you feel hopeless?			
a) None of the time	b) A little of the time	c) Some of the time	d) All of the time
5. During the last 30 days, about how often did you feel restless or fidgety?			
a) None of the time	b) A little of the time	c) Some of the time	d) All of the time
6. During the last 30 days, about how often did you feel so restless you could not sit still?			
a) None of the time	b) A little of the time	c) Some of the time	d) All of the time
7. During the last 30 days, about how often did you feel so restless you could not sit still?			
a) None of the time	b) A little of the time	c) Some of the time	d) All of the time
8. During the last 30 days, about how often did you feel everything was an effort?			
a) None of the time	b) A little of the time	c) Some of the time	d) All of the time
9. During the last 30 days about how often did you feel so sad that nothing could cheer you up?			
a) None of the time	b) A little of the time	c) Some of the time	d) All of the time
10. During the last 30 days, about how often did you feel worthless?			
a) None of the time	b) A little of the time	c) Some of the time	d) All of the time

SCORING

K 10 Total Score Level

10 – 15 – Low

16 - 21 – Moderate

22 – 29 – High

30 – 50 – Very High

This is a questionnaire for patients to complete. It is a measure of psychological distress. The numbers attached to the patients 10 responses are added up and the total score is the score on the Kessler Psychological Distress Scale (K10). Scores will range from 10 to 50. People seen in primary care who

- * Score under 20 are likely to be well
- * Score 20-24 are likely to have a mild mental disorder
- * Score 25-29 are likely to have moderate mental disorder
- * Score 30 and over are likely to have a severe mental disorder

SEHEMU YA PILI

KIPIMO CHA KESSLER KUHUSU MSONGO WA KISAIKOLOJIA

Haya maswali yanahusu jinsi ulivyokuwa unahisi siku thelathini zilizopita

Weka alama kwenye kila swal inayowakilisha ulivyokuwa unahisi

1. kwa muda wa siku thelathini, ni nyakati zipi ulikua mchovu bila sababu yoyote
 - a) sio wakati wowote
 - b) kwa muda mfupi
 - c) nyakati usio dhihirika
 - d) wakati mwingi
 - e) wakati wote
2. kwa muda wa siku thelathini zilizopita, ni nyakati zipi ulijihisi una wasiwasi
 1. sio wakati wowote
 2. kwa muda mfupi
 3. nyakati usio dhihirika
 4. wakati mwingi
 5. wakati wote
3. kwa muda wa siku thelathini zilizopita ni wakati upi ulihisi wasiwasi mkubwa bila kupata utulivu mkubwa
 1. sio wakati wowote
 2. kwa muda mfupi
 3. nyakati usio dhihirika
 4. wakati mwingi
 5. wakati wote
4. kwa muda wa siku thelathini zilizopita ni wakati upi ulijihisi kupoteza tama
 1. sio wakati wowote
 2. kwa muda mfupi
 3. nyakati usio dhihirika
 4. wakati mwingi
 5. wakati wote
5. kwa muda wa siku thelathini zilizopita ni wakati upi ulihisi kutokuwa na msimamo
 1. sio wakati wowote
 2. kwa muda mfupi
 3. nyakati usio dhihirika
 4. wakati mwingi
6. kwa muda wa siku thelathini ulikosa zilizopita ni wakati upi utulivu na jawabu
 1. sio wakati wowote

2. kwa muda mfupi
 3. nyakati usio dhahirika
 4. wakati mwingi
 5. wakati wote
7. kwa muda wa siku thelathini zilizopita, ni wakati upi ulihisi kusonggwa
1. sio wakati wowote
 2. kwa muda mfupi
 3. nyakati usio dhahirika
 4. wakati mwingi
 5. wakati wote
8. kwa muda wa siku thelathini zilizopita, ni wakati upi ulihisi kuwa kila kitu ni bidii
1. sio wakati wowote
 2. kwa muda mfupi
 3. nyakati usio dhahirika
 4. wakati mwingi
 5. wakati wote
9. kwa muda wa siku thelathini zilizopita, ni wakati upi ulikosa uchangamfu
1. sio wakati wowote
 2. kwa muda mfupi
 3. nyakati usio dhahirika
 4. wakati mwingi
 5. wakati wote
10. kwa muda wa siku thelathini zilizopita, ni wakati upi ulijihisi usiyefaa/dhamana
1. sio wakati wowote
 2. kwa muda mfupi
 3. nyakati usio dhahirika
 4. wakati mwingi
 5. wakati wote

ALAMA

Haya maswali ni ya kujazwa na wenye ndwele. Ni kipimo cha msongo wa kisaikolojia

Maswali yaliyoambatanishwa ni ya kujibiwa na wahusika soma na jawabu lipo kwenye karatasi hili.

Alama zitatuzwa kuanzia kumi hadi hamsini.

Wale watu walio chini ya matibabu

20 – wazima

20 – 24 kadiri

25 – 29 wastani

30 – walioathirika

PART III: SOCIO-DEMOGRAPHIC QUESTIONNAIRE

Q- Age: What is your age?

Q – Gender

What is your gender?

- Male
- Female

Q – Marital status

- Single
- Married
- Divorced
- Separated
- Widowed

Q – Education

What is the highest level of school you have completed?

- None
- Primary
- Secondary
- College
- University
- Other (please specify)

Q – Religion

What is your religion preference?

- Protestant
- Catholic
- Muslim
- Other (please specify)

Q- What is your primary language?

- English
- Kiswahili
- Others (please specify)

Q – Professional or Employment Status

- Employed
- Self-employed
- Not employed
- Retired
- Other (please specify)

Q – If employed, are employed

- Full time
- Part time
- Other (please specify)

Q – Including yourself, how many people live within your household?

- 1
- 2
- 3
- 4 or more
- Other (please specify)

Q – Are there any children under the age of eighteen years currently living in your household?

- Yes
- No

Q – How many other people in the house earn an income?

- All
- None
- Other (please specify)

Q – Which of the following best describes the area you live in?

- Urban
- Suburban
- Rural
- Are you homeless
- Others (please specify)

Q – Do you smoke cigarettes?

- Yes
- No

Q – Do you take alcohol (in the last month)?

- Yes
- No

Q – Is the hospital/ dispensary near your home?

- Yes
- No

Q – Does the distance affect how you pick your medication (with regards to time)?

- Yes
- No

Q – Do you feel like getting treatment cost a lot of money?

- Yes
- No

SEHEMU YA TATU: MASWALA YA KIJAMII/DEMOGRAFIA

Swali – Una miaka mingapi?

Swali - jinsia yako

- Kiume
- Kike

Swali – ndoa

- Umeoa
- Hujaoa
- Talaka
- Kutengana
- Mjane

Swali - Kiwango cha elimu

- Hamna
- Msingi
- Upili
- Chuo
- Chuo kikuu
- Nyinginezo

Swali – Dini yako

- Anglikana
- Katholiki
- Muislamu
- Nyinginezo

Swali – Lugha msingi

- Kiingereza
- Kiswahili
- Nyinginezo

Swali – tajriba ya uajiri wako

- Ajiriwa
- Jiajiri
- Hujaajiriwa
- Staafu
- Nyinginezo

Swali - ajira

- Kamilifu
- Ya mda
- Nyinginezo

Swali – Mnaishi na watu wangapi nyumbani kwako

- 1
- 2
- 3
- 4 ama zaidi
- Nyinginezo

Swali – wangapi wana mtaji kwako nyumbani

- Wote
- Hamna
- Nyinginezo (toa maelezo)

Swali – janibu/ makao

- Mjini
- Jijini
- Mashambani
- Hauna pahali pakuishi
- Nyinginezo(toa maelezo)

Swali– Je, unavuta sigara?

- Ndio
- La

Swali – Je, kwa mwezi huu umepita, umekunywa pombe?

- Ndio
- La

Swali – Je, hospitali iko karibu na pahali unapoishi?

- Ndio
- La

Swali- Jambo hili hukuzuia kuchukua dawa kwa wakati unaofaa?

- Ndio
- La

Swali- Je, unahisi kuwa kuchukua dawa inakugarimu pesa mingi?

- Ndio
- La