

**RELATIONSHIP BETWEEN ANXIETY AND NON-ADHERENCE TO
TUBERCULOSIS TREATMENT AMONG PATIENTS IN SELECTED CHEST
CLINICS IN MOMBASA COUNTY, KENYA**

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DECLARATION

This research project is my own original work and has not been submitted to any other institution of learning for the award of any Certificate, Diploma or Degree

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LIST OF ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
CDC	Centre for Disease Control
HIV	Human Immunodeficiency Virus
MDR-TB	Multi-drug resistant
PTB	Pulmonary tuberculosis
TB	Tuberculosis
WHO	World Health Organization
XDR-TB	Extensively drug resistant tuberculosis

OPERATIONAL DEFINITION OF TERMS

Adherence	Complete compliance to anti TB medication. In the study it is a score in adherence scale
Anxiety	Mild, moderate and or severe fear resulting from being diagnosed with Mycobacterium Tuberculosis. A score from Hamilton anxiety scale.
Factors	It refers to predictors and influencers of non-adherence, in the study they include cultural beliefs, long duration of treatment and stigma
MDR TB	Multidrug resistant TB is a strain of TB resistant to either rifampicin or isoniazid
Non-adherence	Failure to comply with TB treatment regimen or to follow the medical advice given. Measured in a continuum from complete, partial to poor, a score in adherence scale indicating partial or non-adherence
Psychological Distress	Unpleasant thoughts, feelings and emotions that affect and influence normal functioning of an individual they include; anxiety, fear, helplessness and hopelessness.
Stigma	A form of disgrace, disapproval and or being looked down upon because one infected with the TB disease. In the study it is a score in stigma scale
Therapy	Course of treatment aimed at alleviating pain and curing TB disease
XDR TB	TB strain resistant to both rifampicin and isoniazid

ABSTRACT

Non-adherence to anti tuberculosis therapy continues to be a major impediment to the control and management of Tuberculosis (TB) despite many efforts that have been put in place by government. Government initiatives to treat TB include ongoing training for medical personnel and providing free TB drugs in all government facilities. Non-adherence to TB treatment will result to increase the burden of health care, morbidity and mortality. Many drug related factors have been noted to contribute to non-adherence to TB and other chronic ailments. However little has been done on relationship between anxiety and non-adherence. This study sought to find out the relationship between anxiety and Non-adherence to TB treatment. The study was guided by the following objectives; to find out the level of Non-adherence to TB treatment among TB patients, to determine the level of anxiety among TB patients, to establish the effect of anxiety on Non-adherence to TB treatment and to identify intervention measures that would mitigate anxiety among TB patients. The study was anchored on the care-seeking behavior theory and rational emotive theory and adopted Correlation research design. The study population was 5,000 TB patients in Mombasa county; Nasiuma's formula was used to get a sample size of 400 patients. Questionnaire was used to collect quantative and qualitative data. The researcher used content experts to establish validity of the instruments while reliability used test then re-test method to check for consistency. Quantative data was analyzed using descriptive statistics namely; Frequency, percentages and Pearson moment of correlation and SPSS version 23. The study revealed 83% of the respondent's experienced moderate non-adherence, 12.2% low non-adherence while 4.8% had high incidences of non-adherence, the study established that 51.3% of the respondents experienced mild anxiety, 27.2% moderate anxiety while 21.5% had severe anxiety ,the study found that association between the non-adherence and anxiety was not significant finally the study found out that the respondents had a clue on what would help mitigate their anxiety thus reduce incidences of non-adherence. More than thirty percent indicated that information, counseling and social support would be helpful in management of anxiety about tuberculosis treatment hence mitigate non-adherence to TB treatment. The study concludes that that there is non-adherence to TB treatment and a relationship exist between anxiety and non-adherence. The study recommended that the role of counselors and psychologists be emphasized in reducing non-adherence.

CHAPTER ONE

INTRODUCTION

This chapter will discuss the background of the study, statement of the problem, study objectives, research questions, justification and significance of study, limitation and scope of the study finally assumptions of the study.

1.1 Background of the study

Mycobacterium Tuberculosis is the leading cause of death globally and the fourth largest cause of mortality in Kenya (MOH, 2017). Non-adherence to treatment which refers to TB patients not following treatment regimen as advised by their health provider has been listed as among the cause of poor treatment outcomes resulting to an increase in treatment failure, which results to development of resistant strains that are more expensive to manage, increased cost of treatment, increased prevalence, morbidity and mortality (WHO, 2016). The report noted that some of the reasons behind Non-adherence to therapy in general included drug related factors like number of tablets to be swallowed, the size and color of the tablets, health care factors like the attitude of the health personnel and distance of the chest clinic and patient related factors like anxiety and stress over fear of stigma, duration of therapy and cultural beliefs.

According to MOH (2017) TB incidence and prevalence continues to increase gradually. Over ten million people got infected with TB globally and 1.8 million mortality rates from TB were recorded in 2016 (WHO, 2016). New infections were 28,500 reported daily with 4,600 mortalities and 11,100 missed cases. The National Tuberculosis Prevalence Survey of 2016 ranked TB as the fourth leading cause of death in Kenya. According to MOH (2017) the prevalence rate was at 558/100,000,

an increment from 233/100,000 in 2016 with high incidence among youths, urban dwellers and women above 65 years. Mombasa had the leading incidence rate at 535/100,000 followed by Nairobi 490/100,000, Homabay 426/100,000 with the North eastern counties of Wajir and Garissa having lowest incidence. It also showed that Mombasa County had a significant upsurge in cases of Multi-drug resistant tuberculosis. According to MOH (2017) new TB infections stood at 5,000 in Mombasa County. The reported statistics formed the basis in choosing Mombasa as the study area with an aim of finding out the relationship between anxiety and Non-adherence to Tb therapy.

Non-adherence which refers to failure to follow treatment regimen as advised by a healthcare provider has been noted to be a leading cause of treatment failure in management of most long-term diseases. According to Kyngas (1999) an individual's clinical and psychosocial characteristics influenced non-adherence. Non-adherence can be classified into deliberate or undeliberate. He further suggested that some factors that promote Non-adherence included disease and treatment duration, scheduled follow-up, age, patient status, number of pills taken, cultural beliefs, fear of stigma, anxiety among others. Globally, Kosovo had a Non-adherence rate of 14.5% according to a cohort study of 324 respondents (WHO, 2015). In Nepal, an estimated 45% of the total population was infected with TB of which 44,000 of the active TB patients died yearly. Iran, India and Ethiopia had Non-adherence rates of 30%, 40.5% and 25% respectively. Fox et al, (2015) stated that Non-adherence to TB treatment in developing countries stood at 60% hence the reason behind treatment failure. In Ethiopia the Non-adherence rate were at 25% with the side effects of the TB medicines being the lead deterrent, distance from the treatment center and prolonged

waiting time exacerbating the situation. Kenya was ranked position 13/22 with high TB burden; an upsurge had been noted from the early 1990's (Kochi, 1991). The defaulter rates in Kenya were at 35% in the late nineties and Non-adherence resulted from patient related factors, service related and facility related. From the available literature, specific data on Non-adherence rate by region within Kenya could not be clearly distinguished hence the need to have an objective on the prevalence rate of Non-adherence to TB therapy in Mombasa County, Kenya.

In a study done in Ethiopia by Tola, Davoud, Ghulamreza, Azar, Luche, Abebaw, Mehrdad, & Desta (2015) it was stated that anxiety and depression was noticeable in TB patients at 67.5% during the intensive phase and 48.5% after six months. Some of the trigger factors included previous TB treatment, substance use disorder and low social economic status. Anxiety had an effect in TB therapy because it triggered the psychological distress. Some of the notable triggers of anxiety included perception of stigma, long duration of therapy, cultural and religious beliefs.

Bender and Bender (2005) found out that anxiety resulting from fear of stigmatization due to an ailment had a negative effect on adherence to therapy. Some TB patients confessed to keeping away from their family members so that they do not make them anxious or make the family be stigmatized by outsiders upon confessing what their family member was suffering from TB (Fox et al 2015).

Long duration of action has been cited as a contributing factor to Non-adherence. It might be directly or indirectly the cause of anxiety about duration of treatment that might stimulate in a newly diagnosed TB patient Non-adherence (Fox et al 2015). The average treatment duration is six months with the first two months known as intensive phase and the other four months are continuation phase. When the patient relapses, it

goes up to eight months with multi drug resistance TB going for more than a year. This long duration of therapy with periodic visits to the chest clinic makes clients tired and without any support or motivation some patients give up and fail to adhere fully leading to a more complicated and expensive management (Kigozi, Heunis, Chikobvu, Botha & Rensburg, 2016).

Cultural beliefs have influence on management of chronic ailments. It has also been noted to be a trigger of anxiety that affects and influences non-adherence. Some individuals believe that taking herbs would cure them of the Tuberculosis disease. WHO (2016) reported that 40% of Tb cases go undetected and untreated with one untreated case having the potential to infect 10-15 people.

1.2 Statement of the Problem

Despite efforts to ensure adherence to TB treatment, incidents of Non-adherence have continued to be reported not only in Kenya but even globally hence the reason why TB remains the leading cause of death in HIV/AIDS patients globally and the fourth leading cause of death in Kenya. According to Kenya National Tuberculosis survey report of 2017, the incidence of TB in Mombasa has more than doubled as compared to 2016 and this has been projected to be resulting from Non-adherence. This is feared because it results to increase in treatment failure, relapse, development of MDR incidences, the duration and cost of management and mortality. Past studies have focused on drug related factors like side effects and healthcare related factors such as clinician's attitude and their influence on Non-adherence. Little has however been done in Mombasa on anxiety and its relationship to Non-adherence to TB treatment and extent to which duration of therapy, fear of stigmatization and culture beliefs affect this relationship; that is the purpose of this study.

1.3 Objectives of the study

- i. To find out the level of Non-adherence to tuberculosis treatment among TB patients in selected chest clinics in Mombasa County, Kenya.
- ii. To determine the level of anxiety among tuberculosis patients in selected chest clinics in Mombasa County, Kenya
- iii. To establish the effect of anxiety on Non-adherence to tuberculosis treatment among TB patients in selected chest clinic in Mombasa County, Kenya
- iv. To identify intervention measures that would mitigate anxiety thus reduce levels of Non-adherence to therapy by TB patients in chest clinics in Mombasa County, Kenya

1.4 Research Questions

- i. What is the level of Non-adherence to tuberculosis treatment among TB patients attending chest clinics in Mombasa County, Kenya?
- ii. What is the level of anxiety among tuberculosis patients in selected chest clinics in Mombasa County, Kenya?
- iii. What is the effect of anxiety on Non-adherence to tuberculosis treatment among patients in selected chest clinics in Mombasa County, Kenya?
- iv. What are the intervention measures that would help reduce anxiety among tuberculosis patients in selected chest clinics in Mombasa County, Kenya?

1.5 Justification and Significance of the study

The attention given to TB disease continues to lessen despite the increased morbidity and mortality it causes, its ease of acquisition should also be of paramount concern and the fact that more patients are developing resistant strains which are more expensive to manage and takes a comparatively longer period to manage. These

complications of TB to some extent have occurred due to treatment failure as a result of Non-adherence. This study therefore aims at establishing the relationship between anxiety and Non-adherence and how adherence can be improved by mitigating anxiety thus help in curbing TB treatment failure, controlling and treating multidrug resistant tuberculosis and XDR TB.

The study is helpful in adding to the body of knowledge noting that most studies on TB always have the medical perspective but seldom do they elucidate the psychological aspect in management and reducing Non-adherence. The study findings may be of value to the county government, national government, interested donors and even the world health organization in policy formulation that incorporates the psychological component of TB treatment.

1.6 Scope and Limitations of the study

The researcher interviewed the patients but this was a challenge since some clients do not show up for collection of medicine in their registered clinics while others send relatives or treatment supporters. The researcher interviewed only those patients who come in self and those willing to participate in the study voluntarily.

The study was conducted on TB patients enrolled in selected chest clinics in Mombasa County with an aim of establishing the relationship between anxiety and Non-adherence to tuberculosis treatment. Anxiety is the independent variable which focused more on anxiety about the disease and the treatment course. The dependent variable is Non-adherence to TB therapy which could mean not following treatment guidelines as advised by a healthcare provider. Some of the extraneous variables include service-related factors like having to wait for a long period of time, drug related factor like side effects of the drugs among others.

The study area was Mombasa County which has 6 sub counties including Jomvu, Changamwe, Kisauni, Nyali, Mvita and Likoni. The county also has three main hospitals that are well equipped to manage TB clients and are used as treatment center and they include Port Reitz sub county hospital, Likoni Sub county Hospital and Coast provincial General Hospital. The study will therefore focus on these three hospitals.

1.7 Assumptions

- i.** The researcher assumed that there is Non-adherence of TB in selected hospitals in Mombasa County.
- ii.** The researcher assumed that there is anxiety about TB treatment among patients attending TB treatment in Mombasa County.
- iii.** The researcher assumed that anxiety influence Non-adherence to TB treatment among patients attending chest clinics in Mombasa County
- iv.** The researcher also assumed that the respondents suggested ways to help mitigate anxiety among tuberculosis patients with an aim of reducing Non-adherence.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter contains reviewed literature based on themes derived from the objectives of the study. In addition, the chapter presents summary of the knowledge gaps revealed in the literature reviewed. The chapter also highlights theories underpinning the study as well as conceptual framework.

2.2 Review of related literature

Fox et al (2015) suggested that Non-adherence to chronic medication had been noted as the key factor that hampers treatment and management of the ailments. Tuberculosis is the leading cause of death in patients living with HIV/AIDS (WHO, 2017). According to the report, Non-adherence to therapy is the greatest promoter of treatment failure, development of resistant strains and increase in morbidity and mortality globally. The following literature shows previous empirical studies done on Tb and Non-adherence globally and locally.

2.2.1 Levels of Non-adherence to Tuberculosis Treatment among TB Patients

Obwoge, Sang & Wakube (2016) in their study on factors influencing Non-adherence to tuberculosis in Baringo County, Kenya discovered that the level of Non-adherence at intensive phase was 46% whereas during continuation phase Non-adherence was 54%. The sample population was 46 respondents, 72% being male while 28% were female. The study brought out aspects of social-economic influence to Tuberculosis management but it was not clear on the psychological influencers on Non-adherence to treatment. The study was also conducted in a sparsely populated environment in a semi-arid environment and relatively few respondents, the current study will be done

in a coastal town, which is densely populated and the population will be close to tenfold.

A study on psychotic patients conducted in the US, noted that psychosocial support and monitoring of patient taking medication reduced Non-adherence (Kane, Kishimoto & Cornell, 2013). According to the same study Non-adherence to chronic therapy stood at 50% globally with a cost of more than a quarter a trillion per annum in the US. Patient self-report, pill count and drug concentration in blood were some of the methods used to determine adherence and Non-adherence.

It has also been observed that for hypertensive patients, Non-adherence is highest among newly diagnosed patients at 28.4% and hyperlipidemia at 28.2%. Diabetes mellitus still has the highest Non-adherence rate at 31.4%. Highest adherence has been noted to be in pediatric patients in medication intake than adults in a study conducted in the U.S by (Fisher, Mullan, Arian, Glasgow, Hessler & Masharani, 2010).

Studies on tuberculosis have not been overlooked. In determining adherence and Non-adherence. According to WHO (2015) Iran, India and Ethiopia had a non-adherent rate of 30%, 40.5% and 21% respectively. Fox (2015) stated that Non-adherence to anti-Tb medication in developing countries was the reason behind treatment failure. In Ethiopia the Non-adherence rate stood at 24.7% with side effects of the medication being the lead deterrent, distance from the treatment Centre and prolonged waiting time exacerbating the situation.

Non-adherence has been noted to be high in Mombasa thus increasing relapse rate, hospitalization and emergence of MDR-TB. This study therefore seeks to find out the

recent prevalence rate of TB in Mombasa County as at 2019-2020 and a comparison might be necessary to establish whether there has been an increase or a decrease in Non-adherence within the year. The study will also compare the geographical and population size to Non-adherence and determine the level of Non-adherence of Mombasa County in comparison to the national Non-adherence levels in Kenya.

2.2.2 Level of Anxiety on TB treatment among Patients

Aamir (2010) found out a close relationship between anxiety/ depression and pulmonary tuberculosis. In his study conducted in Pakistan among 61 respondents, 47 (72%) showed signs of severe to moderate levels of anxiety and depression indicated from hospital anxiety and depression scale. Fourteen (22%) showed comorbidity between anxiety/depression and MDR tuberculosis. This study therefore seeks to determine the levels of anxiety among patients in the Kenyan coastal town of Mombasa County.

In another study done in South Ethiopia by Duko, Gebeyeha, Ayona (2015) with a sample of 417 tuberculosis patients as respondents, 173 respondents (41.5%) showed symptoms of anxiety while 43.4% (181 respondents) had depression. The study aimed at finding out the prevalence and correlates of depression and anxiety among patients with Tuberculosis at Wolaitasodo University Hospital and Sodo health Centre in South Ethiopia. The study suggested that anxiety could be triggered by other secondary factors to tuberculosis like poor social support, being female, HIV infection, substance use and being in the intensive phase of treatment. The same study suggested that in Pakistan 46% of tuberculosis patients had shown signs of anxiety, in Romania 72.8%, Greece 40.67% of tuberculosis patients had anxiety while in Kenya anxiety levels were at 61%. This study gave a national outlook of anxiety among

tuberculosis patients. It would therefore be informative to determine the level of anxiety in tuberculosis patients attending selected chest clinics in Mombasa, County.

Louw, Peltzer, Naidoo, Matseke, Mchunu & Tut Shana (2012) in their study on quality of life among tuberculosis, TB retreatment and TB-HIV co-infected in primary public healthcare patients with a sample of 4,900 with 54.5% male and 45.5% females noted the levels of psychological distress among these respondents was at 81%. The study was done in South Africa and the researcher of this current study would therefore seek to do a study in East Africa, Kenya in particular and do a comparative analysis of both Countries.

2.2.3 Influence of Anxiety on Non-Adherence to TB Therapy among TB Patients

Katz, Annemarie, Afiachukwu, Onegbu, Psaros, Weiser, Bangsberge & Alexander (2013) did a retrospective study and reviewed 14,854 records, 960 journal articles. Among 41 of quantitatively reviewed studies and 24 of 33 cross-sectional studies 71% showed a positive relationship between anxiety and Non-adherence to tuberculosis treatment. Psychosocial support was important in reducing anxiety over stigma hence enabling patients to disclose their status to significant others and adhere to treatment.

Tola et al (2015) in their study to identify factors associated with tuberculosis treatment Non-adherence, upon review of 27 articles they found out that fear of stigma triggered anxiety among the tuberculosis patients their by negatively influencing adherence. The study also had an objective of finding out factors that determined psychological distress hence resulting to Non-adherence to tuberculosis treatment. Factors that promoted non adherence included anxiety over social stigma and feeling better in morocco, feeling judged and negative attitude by service providers in Ethiopia, substance use in Brazil among others. Anxiety about stigma

also featured in Uganda, Kenya and Thailand. It is interesting to note that anxiety was high in the intensive phase and low in continuation but Non adherence was also noted more in the continuation phase of Tb therapy than in the initial phase.

Brain, Same, Allerby, Quinlan, Joas, Lindstrom, Burns & Waern (2014) in their study conducted in Swedish Coast with a sample respondents of 111, Non-adherence was at 27.3% with 66% of the non-adherent respondents stating discrimination and 70 % anticipated discrimination as the cause of anxiety thus Non-adherence to tuberculosis treatment. They noted that only 30% of patients did not anticipate discrimination. Majority of the patients 88% preferred keeping their condition a secret in order to avoid discrimination and the anxiety the anticipated discrimination brought that could hamper their adherence and lead to Non-adherence. Their study focused more on the relationship between discrimination and Non-adherence in Swedish Coast a place that could have similar geographical conditions like Mombasa hence this current study would seek to find out whether the results can be replicated in the Kenyan Coast.

Some notable factors that have been documented to cause anxiety thus influencing Non-adherence to Tuberculosis treatment include; the long duration it takes in treatment and the side effects the patient has to experience over the prolonged duration of time. This was reported in a study done in Istanbul Turkey (Torun, Gungoro, Ozem, Bolukbasi, Madden & Bicaki, 2005). Another study done in Iran by Tola, Davoud & Garmaroudi (2015) cited stigma as another factor with great influence on Non-adherence to tuberculosis treatment.

Cultural beliefs and misconceptions were also cited to influence Non-adherence by patients diagnosed with tuberculosis. A study conducted in Addis Ababa, Ethiopia

stated that knowledge and understanding of tuberculosis and treatment model enhanced treatment outcome (Sahile, Yared & Kaba, 2018)

2.2.4 Intervention measures mitigating Anxiety and Nonadherence by Tuberculosis Patients

Past studies have come up with recommendations on how Non-adherence can be reduced among patients on chronic medication. In a study done by Peltzer (2012) among 4,900 respondents, he suggested health care workers in chest clinics and in tuberculosis management should be trained on proper screening for anxiety and how to properly refer and on psychological intervention measures that can help reduce anxiety among tuberculosis patients, a comprehensive care approach and economic empowerment of tuberculosis patients.

Another study on animal assisted therapy conducted among 12 acutely depressed tuberculosis patients by Hoffmann, Lee, Wertenaue, Ricken, Jansen, Gallinat & Lang (2009) found out that psychological wellbeing could be improved by linking therapy to animals especially pets like dogs and cats. This animals help in highly significant reduction of anxiety their by enhancing treatment outcomes. The study suggested that the interaction between anxious human beings and the pets had a resultant calming down effect on humans thus reduction in anxiety and that reduced their Non-adherence to treatment.

Sang et al (2016) suggested family social support in reducing anxiety levels, continuous patient education on demerits of Non-adherence and the advantages of adherence, reduce side effects of medicines, fixed dose combination among others.

According to the WHO (2016) direct observation therapy, short message reminders, use of community health workers to follow up patients who do not come for drug refills and periodic sputum tests to confirm suppression of the disease are some of the intervention measure that have been employed to contain and control the spread of TB. It also reported that one untreated case has the potential of infecting ten to fifteen people hence the need to reduce Non-adherence which will reduce treatment failure, morbidity and mortality. (Barkhof, Meijer, Sonnevile, linszen & Huan, 2011) in a study conducted in Soweto South Africa suggested a systematic intervention strategy where they touched on psycho-education and behavior training in patient-based intervention, dynamic therapy for groups, family therapy to include the family in patient support and assertive community training. They suggested that the mixed modality approach would be the most suitable in reducing Non-adherence. Costa, Giardini, Savin, Menditto, Elaine, Laosa, Percorelli, Monaco & Marengoni (2015) suggested other measures that would reduce Non-adherence to be telephone follow-ups, home visits and social support. They suggested integrative care with constitutes self-management skills, psycho-education and structured counseling to be components that improve the quality of care.

2.3 Theoretical Framework

The study is guided by two theories namely; care seeking behavior by Triandi's and rational emotive theory by Albert Ellis. The two theories seek to clarify how impression of treatment outcomes, the incentive for seeking care, the perception of the disease, and other external deterrents for rational emotive theory can all have an impact on non-adherence to TB treatment.

2.3.1 Care Seeking Behavior

The researcher adapted the theory of care-seeking behavior by Triandi's (1982) which focuses on understanding how psychosocial variables influence health seeking behavior. The variables include; affect-feelings associated with care seeking behavior like anxiety about a serious diagnosis or being embarrassed by one's diagnosis, expectations-beliefs about the likelihood of relevant outcomes of care seeking, values-importance of care seeking outcomes and utility- the overall worth of care seeking behavior.

According to the theory, a patient is motivated to seek treatment for certain ailments when they have positive feelings about the available treatment options and they have been assured thus have reduced anxiety. This has been observed mostly in patients diagnosed with cancer who have to choose among the various treatment options available for them like surgery, radiotherapy and chemotherapy. It also suggests that the outcome of therapy is key in determining adherence and choice of treatment, Patients will be more non-adherent to invasive treatments with less positive outcomes and this they always do upon critically evaluating past treatment outcomes. The value attached to life and a treatment model also has an influence in care seeking behavior in that if a patient has belief and high regard for a treatment option and also a healthcare provider then they tend to be less non-adherent to therapy unlike if there is less value. Utility affects care-seeking behavior in that the patient may be willing, but inability due to other outside factors may limit adherence; as a result, a patient may assess all the treatments alternatives and choose one depending on ability or inability. The researcher will seek to establish how anxiety about tuberculosis as a disease and

treatment misconceptions influences a tuberculosis patient's Non-adherence to tuberculosis treatment.

2.3.2 Rational Emotive Theory

Rational Emotive theory by Albert Ellis would also be informative for it assumes that it is not an event that causes a discomfort but rather an individual's perception of that event (Velten, 2010). In this study, anxiety over the TB diagnosis would be the activating agent, patient belief about treatment and treatment course and Non-adherence the consequence of the irrational belief. During the data collection process it would be important to assess how the patient cognition affects their adherence levels and recommends measures necessary in helping the patient improve on adherence. Some clients also stop taking medicine after the first two weeks because they believe they are well because they have stopped experiencing the signs and symptoms of TB (Ellis, 1962).

2.4 Conceptual Framework

The Figure 2.1 shows the relationship between the independent variable which is anxiety and Non-adherence to TB medication. Non-adherence can be classified into complete Non-adherence, partial adherence and poor adherence. Some other factors might confound on these relationship which include the side effects of the medication, interaction with the service provider, distance of the treatment and chest clinics, general state of health, availability of stocks and other facility related factors. Confounding effects of extraneous variables will be controlled by collecting information about them in research instrument and use partial correlation to control extraneous effects.

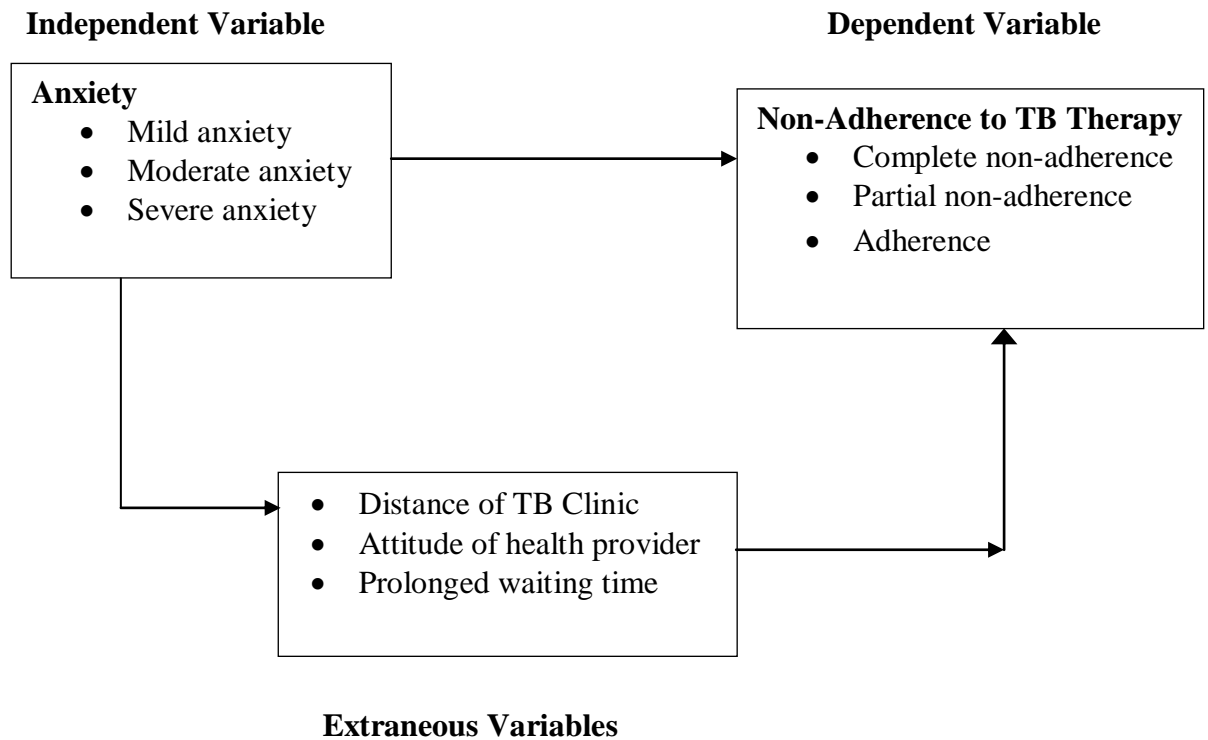


Figure 2.1: Conceptual Framework

Source: Author (2022)

The relationship is diagrammatically presented in the figure 2.1 which shows how independent variable as anxiety influences the dependent variable as Non-adherence to TB therapy. The relationship is also affected by extraneous variables like the distance from the clinic and altitude of the health provider. Extraneous variables moderate the relationship between anxiety and non-adherence on TB therapy.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter discussed the research design, study variables, location of the study, target population, sampling and sample size, research instrument, validity and reliability, pilot study, data collection procedure, data analysis and presentation and data management and ethical considerations.

3.1 Research Design

The research adopted correlation design to explain the relationship between anxiety and Non-adherence to TB therapy among patients registered and attending TB chest clinics in Mombasa County. Correlation research design was preferred because it enabled the researcher to establish whether a relationship exists between anxiety (independent variable) and Non-adherence (dependent variable) to TB therapy, the extent of that relationship and direction of the relationship (Gust, 2017).

3.2 Study Variables

The independent variable was anxiety which was classified as Mild anxiety, moderate anxiety and severe anxiety caused by excessive feelings of fear and worry about a variety of factors like TB diagnosis, long duration of therapy, stigma, and cultural beliefs, anxiety can be characterized by unpleasant thoughts, feelings and emotions. The dependent variable was Non-adherence to therapy to be measured in a continuum-complete Non-adherence, partial Non-adherence and adherence. The extraneous variables were indicated by distance from the TB clinics, attitude of the healthcare provider, prolonged waiting time and educational level. The researcher used statistical method of partial correlation to control effects of extraneous factors.

3.3 Study Area

The study was conducted in Port Reitz sub county hospital, Likoni Sub county Hospital and Coast provincial General Hospital this are the three main chest clinics in Mombasa County. According to Ministry of Health National Tuberculosis prevalence survey of 2016 the county had the highest incidence of TB cases reported (MOH, 2017) though it is the smallest County in Kenya covering 229.7 km². It has a population of 1,097,472 (MOH, 2015). Mombasa County borders Kilifi County to the North and Kwale County to the South West. It had six sub counties namely: Chagamwe, Jomvu, Kisauni, Nyali, and Likoni. The county has one provincial General Hospital, three district hospitals namely Port Reitz, Tudor and Likoni sub-county Hospitals, 20 dispensaries and a community health Centre (MOH, 2010).

3.4 Target Population

All tuberculosis patients diagnosed with active tuberculosis disease who are registered and collect their medicines from Port Reitz sub county hospital, Likoni Sub county Hospital and Coast provincial General Hospital was the targeted population. Mombasa County according to The National Tuberculosis Report of 2017 had a prevalence rate of 588/100,000 and with an approximate population of 1,100,000 the target population would be above 5,000 registered TB patients (MOH, 2017)

3.5 Sampling Design and Sample size

According to Nasiuma (2000) sample size was arrived at by:

$$n = \frac{Nc_u^2}{(cv^2 + (N-1)e^2)}$$

Where;

n= Sample size

N= Population

C_u = Coefficient of variation less than 30%

e- Margin of error 5%

$$n = 5000 \times 0.09$$

$$0.09(5000-1) = 0.0025$$

$$n = 400$$

Sampling was applied because only patients on TB treatment within the period of study were interviewed. Purposive sampling was used for those clients who attended the chest clinics during the period of study. Using sampling frame of past records, sample sizes proportionate to population by gender and Sub County was arrived at to ensure no segment of population is under/overestimated using random stratified sampling techniques. Simple random sampling was used to select participants from each stratum to be involved in the study. Simple random sampling was done by writing YES and NO on pieces of paper equivalent to population size. The YES pieces should be equivalent to sample size arrived at from each stratum. Any member who chooses YES was allowed to participate in the study.

3.6 Research Instrument

The researcher adopted questionnaire which consisted of both open ended and closed ended questions to collect data. The questionnaire consisted of five parts including section A) demographics which consisted of seven items 1- 7 that helped the researcher identify the individual respondents and their basic information, Section B) was on The levels of Non-adherence and consisted of ten items adapted from Thompson (2000) Medication Adherence reporting tool, for this subscale item 8-13 and 16-17 when answered “NO” indicates adherence and item 14-15 when answered “YES” indicates adherence.

Section C) consisted of fourteen items measuring medical treatment related to anxiety the items have been adopted from Hamilton Anxiety Scale (Lovan, 2012). They are to

be scored from 0- 4 with a score of 25 and above being severe anxiety, 18-24 moderate anxiety while 0-17 is normal/mild anxiety. Section D) consisted of seven self-constructed items measuring factors influencing anxiety over TB management and lastly section E) had six items and cover intervention measures that would help curb anxiety and Nonadherence to TB therapy (Sahile, 2018).

3.7 Validity and Reliability

3.7.1 Validity

Validity which refers to an instrument measuring what it is intended to measure was enhanced by revision of the questionnaire by the researcher's supervisor and upon pre-testing the tool. According to Metcalfe et al (2015) content validity was ensured by both the researcher and the supervisor going through the item in detail to ensure they test what they purport to test. Construct validity was ensured as study is guided by theories and formulations of instrument items were generated from standardized instruments.

3.7.2 Reliability

Reliability was ensured by conducting a pretest then retesting the same sample to check for consistence in the response to be obtained before the actual data collection. The researcher ensured correlation coefficient is above 0.7 for the tool to be reliable for data collection (Rosner, 1995). Any inconsistencies noted was corrected and approved by the supervisor.

3.8 Pilot Study

The tool was pre-tested in a pilot study. For a sampling research project, a sample population of 1–10% is advised, according to Mugenda & Mugenda (2003). This signifies that for the pilot study, the researcher used 40 respondents. The researcher

conducted a pilot study in Malindi sub-County hospital in Kilifi County. This was because Kilifi County resembles Mombasa County in most of the demographics. It is among the leading public health facilities offering TB treatment in Kilifi County and it is easily accessible by most patients due to its closeness to the central business district.

3.9 Data Collection Procedure

The researcher proceeded to collect data only upon receiving the authorization letter from NACOSTI, subject approval from Kenyatta University Ethics and Research committee and County government of Mombasa. The study was conducted during chest clinic days and when clients come for drug refill. The patients were requested to participate and only those who voluntarily accepted were included in data collection. The researcher used structured questionnaires in collecting data, focused interviews and observations. TB site coordinators came in handy in ensuring rapport was built between the respondents and the researcher. The questionnaires were administered and confidentiality was of utmost concern. The instrument were collected upon completion of the session and safely kept by the researcher for analysis purposes.

3.10 Data Analysis and Presentation

The researcher used descriptive statistics to help in organizing of data and it would also be helpful in summarizing of data for ease of making interpretations. Statistical Package for Social Science version 23 aided in data analysis. Frequency, percentages and moment was used in data analysis. Frequency and percentages was used to indicate prevalence of anxiety and Non-adherence levels. Pearson moment of correlation was used to establish nature and direction of relationship between anxiety and Non-adherence to TB therapy. Multiple regressions were used to indicate

predictive strength of duration of therapy, fear of stigma and cultural beliefs on anxiety of TB treatment. Theme analysis was used to classify responses on intervention measures suggested by the participants. Presentation of results was done using bar graphs, pie charts, and tables.

3.11 Data Management and Ethical Considerations

The researcher sought permission from various bodies before commencing the study. These included National Commission of Science, Technology and Innovation (NACOSTI), from the commission the research sought permit to conduct the study. Kenyatta University Ethics and Research Committee the researcher sought subject approval for the study. County government of Mombasa health ministry was requested for authority to conduct the study in their County and in charge officers of the chest clinics was requested to help in according the researcher access to their patients and any relevant documents. Respondents were engaged upon being informed of the rationale of the study and ones the researcher obtains a signed informed consent from the respondents. Privacy and confidentiality of obtained information was enhanced where clients were interviewed in a confidential and safe environment and names were not used, information obtained was only accessible to the researcher. To ensure anonymity, codes were used not names in the questionnaires.

CHAPTER FOUR

RESULTS ANALYSIS AND PRESENTATION

4.1 Introduction

This chapter presents the findings of the study in accordance with the research objectives. Chapter four contains presentation of findings, interpretations, and discussion of the study as per the objectives of the study. The study was on the level of anxiety among tuberculosis patients in selected chest clinics in Mombasa County, Kenya. The chapter is presented in two parts; the first part presents general and demographic findings which elucidates general features of participants. The second part presents findings of the study as per the objectives and research questions of the study.

The objectives of study were as follows:

1. To find out the level of Non-adherence to tuberculosis treatment among TB patients in selected chest clinics in Mombasa County, Kenya.
2. To determine the level of anxiety among tuberculosis patients in selected chest clinics in Mombasa County, Kenya
3. To establish the influence of anxiety on Non-adherence to tuberculosis treatment among TB patients in selected chest clinic in Mombasa County, Kenya
4. To identify intervention measures that would mitigate anxiety thus reduce levels of Non-adherence to therapy by TB patients in chest clinics in Mombasa County, Kenya

4.2 Response Rate

The study issued out 400 questionnaires to a sample of 400 respondents. However, only 312 questioners were correctly filled and returned which represented a response rate of 78%. According to Babbie (2002), any response of 50% and above is adequate for analysis return response rate as indicated in Table 4.1.

Table 4. 1: Response Rate

Sample size	Questionnaires returned	Response Rate (%)
400	312	78

4.3 Demographic Characteristics of Respondents

The demographic characteristics comprised of the gender of the respondents, the age of the respondents, marital status, economic activities, and education level of the respondents plus their religion.

4.3.1 Gender of the Respondents

The respondents were requested to indicate the gender. The distribution of the respondents and the findings were as indicated in Table 4.2.

Table 4. 2: Gender of the Respondents

Gender	Frequency	Percentage
Male	218	69.9
Female	94	30.1
Total	312	100

Table 4.2 shows that Majority of participants were male (69.9%.) while female was at 30.1% the finding imply that anxiety and non-adherence of TB treatment among males was high compared to that of females in Mombasa County

4.3.2 Age Bracket of Respondents who attended TB Clinics in Mombasa County

The age bracket of respondents who attended TB clinics in Mombasa is shown in Figure 4.1.

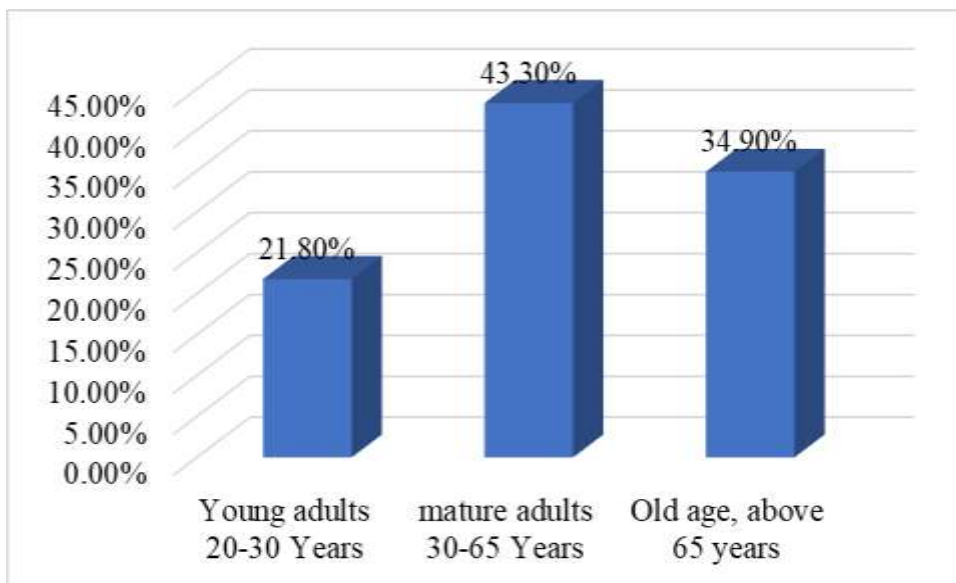


Figure 4.1: Age Bracket of the Respondents

The study findings in Figure 4.1 revealed that majority of respondents were aged 30-65 at (43.3%) followed by old age who were above 65years and above at 34.90% lastly young adults aged between 20-30 years were at 21.8% these imply that anxiety and non-adherence of TB treatment was high among adults of 30-65 years.

4.3.3 Marital Status of the Respondents

Moreover, the researcher sought to determine the marital status of the respondents; the findings were as indicated in Figure 4.2.

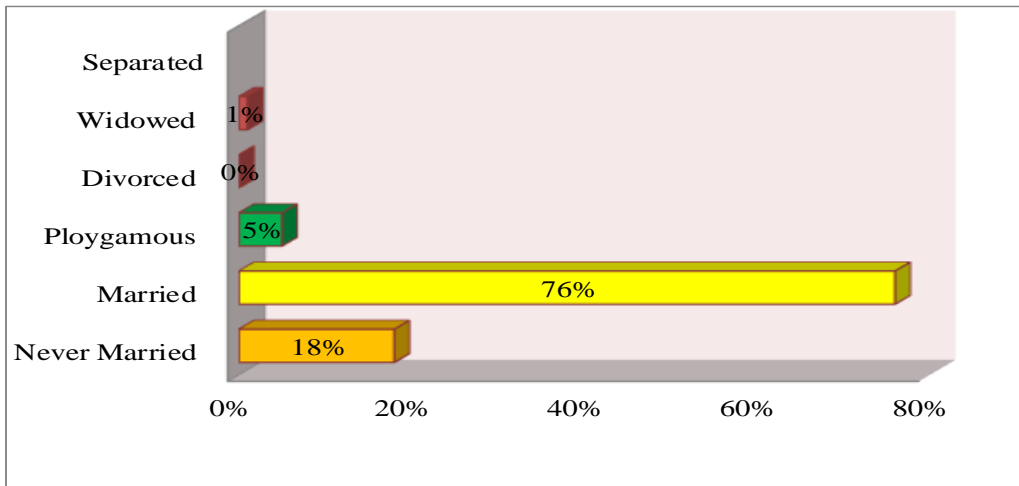


Figure 4.2: Marital Status of the Respondents

Figure 4.2 revealed that Majority of respondents were married at (76%), never married at 18%, polygamous at 5% widowed at 1% while separated and divorced were at 0%. This implied that anxiety and non-adherence to TB treatment among married respondents were high compared to other categories of marital status.

4.3.4 Economic Activity of the Respondents

The researcher further sought to establish the economic status of the respondents who attended TB clinic in Mombasa County. The findings were presented in Figure 4.3.

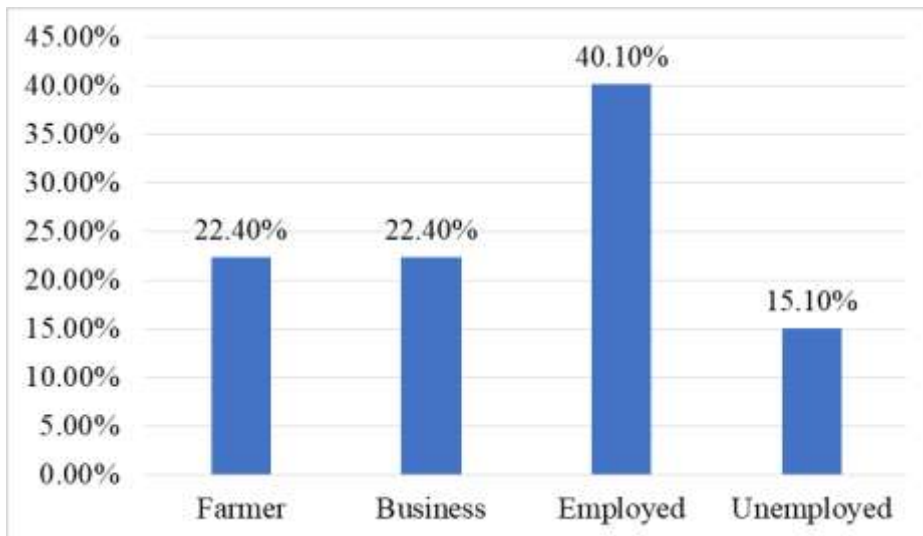


Figure 4.3: Economic Activity of the Respondents

The results in figure 4.3 revealed that 40% of participants were employed, followed by business and farmers at 22.40% lastly unemployed at 15.1% ,the finding imply that anxiety and non-adherence of TB treatment among employed patients was high compared to other respondents.

4.3.5 Sub-county of the Respondents

The researcher sought to establish the sub-county of the respondents who attended TB clinic in Mombasa. The findings were as indicated in Figure 4.4.

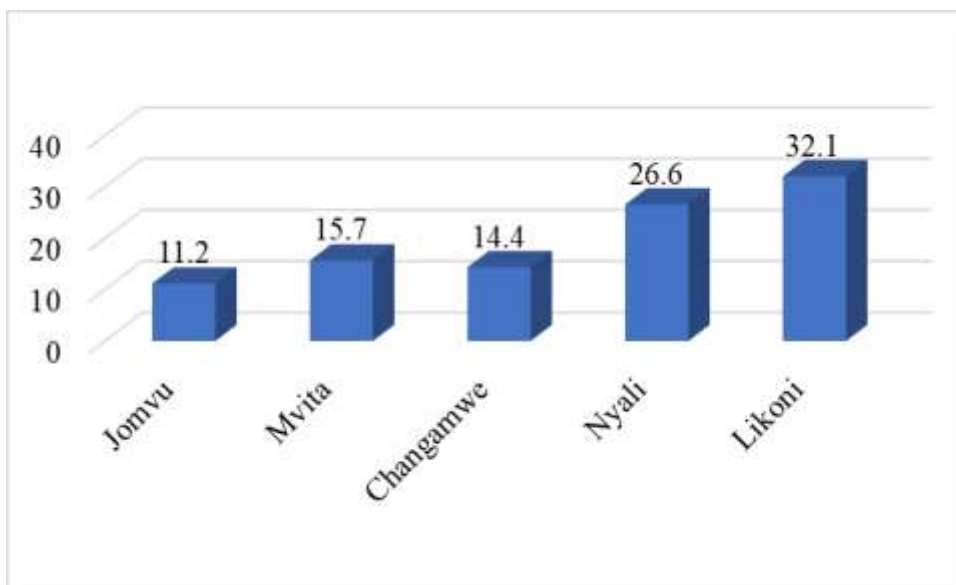


Figure 4.4:Sub-county of the Respondents

The findings in figure 4.4 indicated that 32% come from Likoni, followed by Nyali at 26.6%, Mvita at 15.7%, Changanwe at 14.4% finally Jomvu at 11.2%, this implied that anxiety and non-adherence of TB treatment was high at Likoni sub-county compared to other sub-county in Mombasa county

4.3.6 Education Level of the Respondents

The researcher further sought to determine the education level of the respondents in the study and the findings were as indicated in the Figure 4.5.

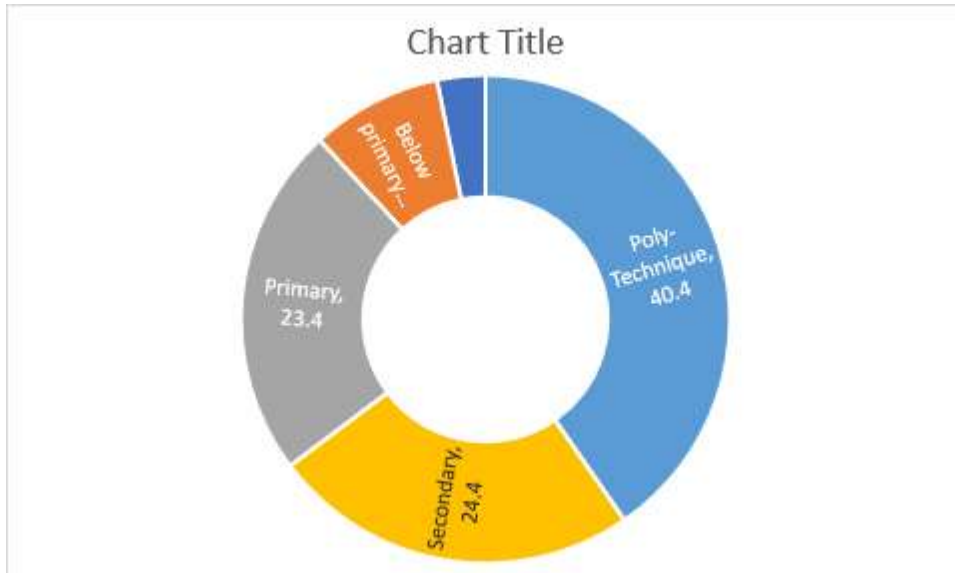


Figure 4.5: Education Level of the Respondents

Figure 4.5 indicated that 40.4% had acquired education level above polytechnic, secondary school level at 24.4%, primary school level at 23.4% while 11.8% had not gone to school. The study finding imply that anxiety and non-adherence of TB treatment was high among educated respondents

4.3.7 Religion of the Respondents

The researcher sought to establish the religion of the respondents; the findings were as indicated in the Figure 4. 6. Majority of them were Christians (59%).

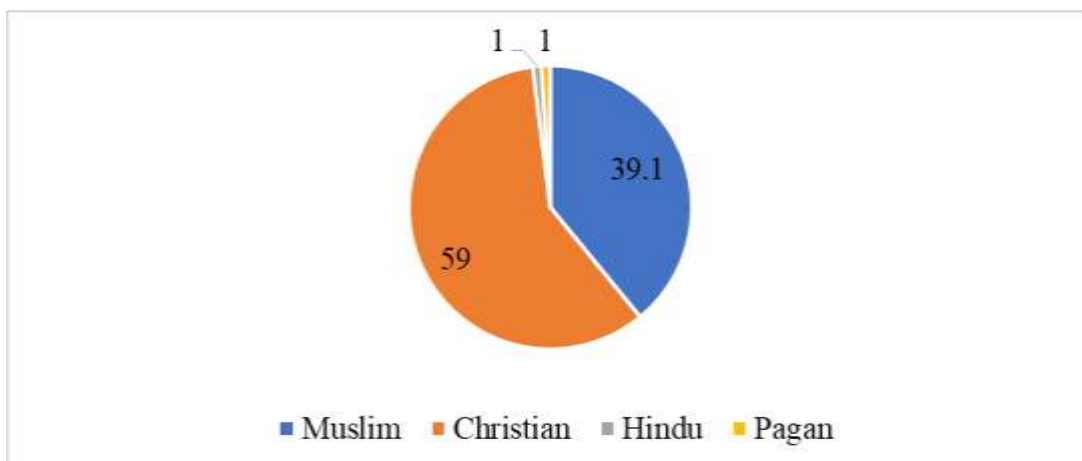


Figure 4. 6: Religion of the Respondents

The study findings in figure 4.6 indicated that most respondents were Christian at 59%, followed by Muslims at 39.1% while Hindus and pagans were at 1% each, this implies that anxiety and non-adherence of TB treatment was high among Christians compared to other religions

4.4 Level of Non-adherence to Tuberculosis Treatment among TB Patients in Selected Chest Clinics in Mombasa County, Kenya.

This objective aimed to establish levels of non-adherence to TB treatment among patients attending chest clinics in Mombasa County. Thompson medication adherence tool (Thomson, 2000) (items 8-17 in questionnaire) was adapted to measure non-adherence to the TB treatment. For questions 8, 14, 15, 16 and 17; a response NO (2) is indicative of non-adherence whereas YES (1) is indicative of adherence. For items 9-13 a response of YES (2) is indicative of non-adherence whereas NO (1) indicative of adherence. To achieve this objective all ten scores of items were summed up and then transformed to categories to indicate the levels of non-adherence. The highest score was 20 and lowest score was 10. Three levels were as follows: Low (10-13), Moderate (14-17) and high (18-20). From the Table 4.3, summarizes the findings of levels of non-adherence to TB treatment

Table 4.3: Levels of Non-adherence to TB Medication

Levels of Non-adherence	Frequency	Percent
Low (10-13)	38	12.2
Moderate (14-17)	259	83
High (18-20)	15	4.8
Total	312	100

	Yes		No	
	Freq.	%	Freq.	%
8. Understand TB Treatment	284	91	28	9
9. Whether the Respondents forget to take TB Medication	103	33	209	67
10. Whether the Respondents have been careless Taking TB Medication	12	3.8	300	96.2
11. Whether feeling better sometimes make you not to take TB medication	24	7.7	288	92.3
12. Whether Respondents Stop Taking TB Medication when they feel better	9	2.9	303	97.1
13. Whether Respondents only take TB Medication when they feel worse.	3	1	309	99
14. Whether TB Medication alters the Body/Mind	310	99.4	2	16
15. Whether Respondents know the TB Medication they take	14	4.5	298	95.5
16. Whether Respondents know the outcome of not taking TB Medication	44	14.1	268	85.5
17. Whether the TB Medication gives you Drowsiness and Feel Weird	24	7.7	288	92.3

Table 4.3 presents responses on levels of non-adherence to TB treatment in selected chest clinics in Mombasa County the findings shows that majority of participants were at moderate level of non-adherence at (83%). Those who had high level of non-adherence were 4.8%.

From responses on individual items, participants indicated lack of knowledge on TB medication they are taking (95.5%), outcome of not taking TB medication (85.5%) and side effects of TB medication (92.3%). Some participants indicated that they forget to take TB medication (33%).

4.5 Level of Anxiety among Tuberculosis Patients in Selected Chest Clinics in Mombasa County, Kenya

The objective aimed to determine levels of medical related anxiety to TB treatment. Medicine related Anxiety was measured using fourteen items adopted from Hamilton Anxiety Scale (Lovan, 2012). The items had four likert scale (no symptoms present=0, mild symptoms=1, moderate symptoms=2, severe symptoms=3 and very severe symptoms=4). The highest score was to be 56 and lowest score was to be 0. Any score below 17 was normal or mild anxiety, 18-24 was moderate, and 25-30 was severe anxiety and 31-56 very severe anxiety. From the results shown Table 4.5, summarizes the levels of anxiety among TB treatment

Table 4.4: Levels of Anxiety

Level	Frequency	Percent
Mild (≤ 17)	160	51.3
Moderate (18-24)	85	27.2
Severe (25-30)	67	21.5
Total	312	100

Table 4.4 presents respondents response on anxiety levels among TB patients there were no participants with very severe anxiety. Half of participants had mild level of anxiety related medication of TB treatment (51.3%) whereas those who indicated moderate were 27.2%. Majority of participants (more 90%) affirmed nine of items that they had mild symptoms of TB medication related anxiety. The remaining five items more than 80% of participants indicated mild anxiety.

The researcher requested TB patients to respond to items related to anxiety symptoms on treatment in the questionnaire which adopted and contextualized the Hamilton anxiety scale on a 4 point scale. The responses were ranging from Mild] , Moderate, severe and very severe the analysis was done using weighted average of the responses in percentages as indicated in table 4.6

Table 4.5: Descriptive Statistics of Anxiety Symptoms

Statements	Mild		Moderate		Severe		Very Severe	
	F	%	F	%	F	%	F	%
Nervous/worried about taking the drugs	278	89.1	27	8.7	7	2.2	0	0
Restless about taking the medicine	271	88.9	39	12.5	2	.6	0	0
Fearing the side effects of the drugs	284	91.0	21	6.7	7	2.2	0	0
Difficulty in falling and or staying a sleep because of TB therapy	268	85.9	41	13.1	3	1.0	0	0
It affects my concentration and memory	283	91.3	22	7.1	5	1.6	0	0
Loss of interest in life and activities previously enjoyed.	287	92.0	16	5.1	9	2.9	0	0
I hear strange voices after taking the medicine.	299	95.8	9	2.9	4	1.3	0	0
Vision is affected	304	97.4	4	1.3	4	1.3	0	0
The diagnosis elicits palpitations	285	91.3	23	7.4	4	1.3	0	0
Sighing due to TB therapy	277	88.8	31	9.9	4	1.3	0	0
I experience nausea, vomiting and stomach discomfort due to TB therapy	283	90.7	24	7.7	5	1.6	0	0
I experience low libido and frequent micturition	292	93.6	16	5.1	4	1.3	0	0
I experience dry mouth, I sweat and tension headache	287	92	18	5.8	7	2.2	0	0
Fidgeting, Tremors and Pallor	278	89.1	30	9.9	3	1.1	1	.3

Table 4.5 presents response on anxiety symptoms on TB treatment, accordingly, the results show that more than three quarter (89.1%) of the respondents were Nervous and orworried about taking the drugs while more than half (88.9%) were rrestless about taking the medicine, further findings show that three quarters (91.0%) of the patients were Fearing the side effects of the drugs in addition (89.9%) of the patient had ddifficulty in falling and or staying a sleep because of TB therapy, similarly more than half (93.1%) admitted that TB treatment had effect on their concentration and memory, moreover more than two third (92%) agreed that they experienced Loss of interest in life and activities previously enjoyed lastly more than half agreed that they experienced low libido and frequent micturition

4.6 Effect of Anxiety on Non-adherence to Tuberculosis Treatment among TB Patients in Selected Chest Clinic in Mombasa County, Kenya

This objective aimed to establish the effect of levels of anxiety on non-adherence of TB treatment. To achieve this objective, cross tabulation was run between levels of anxiety and non-adherence levels. Then descriptive presentation of factors that influence this relationship was done.

4.6.1 Cross Tabulation of Levels of TB Medication Related Anxiety on Non-adherence of TB Medication

Table 4.6 presents a cross tabulation of TB medication related anxiety on non-adherence of TB medication , Non-adherence levels were presented in three levels as low, moderate and high while anxiety levels were presented in three levels namely mild, moderate and severe

Table 4.6: Cross Tabulation of Levels of TB Medication Related Anxiety on Non-adherence of TB Medication

Non adherence levels	Levels of anxiety					
	Mild		Moderate		Severe	
	Freq.	%	Freq.	%	Freq.	%
Low	21	6.7	7	2.2	10	3.2
Moderate	130	41.7	75	24	54	17.3
High	9	2.9	3	1	3	1
Total	160	51.3	85	27.2	67	21.5

Those who had moderate non-adherence and had severe anxiety were 17.3%. When the participants were asked whether anxiety affected their TB treatment, 91% affirmed the statement. Seventy five percent of the participants indicated that source of anxiety emanates from side effects of drugs whereas 16.3% indicated the long duration of TB therapy. Few indicated misinformation (8.7%) as source of their anxiety. Few experiences unknown fear (7.4%). However, the association between the non-adherence and anxiety was not significant as indicated by chi-square ($\chi^2(4, 312) = [2.532], p = [p=.639]$).

4.7 Factors influencing Relationship between TB Medication related Anxiety and Non-adherence to TB Medication

This objective aimed to establish the factors influencing relationship between TB medication related anxiety and non-adherence of TB medication. To achieve this objective, cross tabulation was run between extent of factors and anxiety influence to non-adherence levels.

Table 4.7: Extent of Factors which TB Medication related Anxiety Influence Non-adherence to TB Medication

Extent of factors	Mildly affect		Moderately affect		Severely affect	
	Freq	%	Freq	%	Freq	%
Stigma	129	41.3	142	45.5	41	13.1
Belief system	82	26.3	157	50.3	73	23.4
Cultural values	105	33.7	200	64.1	7	2.2
Long duration of TB treatment	92	29.5	130	41.7	90	28.8

The findings on table 4.7 shows descriptive presentation of factors that influence this relationship In terms of extent, long duration of TB treated severely affect 28.8% of participants whereas cultural values moderately affect 64.1% participants in TB therapy.

4.8 Intervention Measures that would mitigate Anxiety and Levels of Non-adherence to Therapy by TB Patients in Chest Clinics in Mombasa County, Kenya

This objective aimed to establish intervention measures that mitigate anxiety hence reducing non-adherence to TB therapy. To achieve this objective the findings are presented in two section the first section is on intervention measure of handling anxiety and the second section is on intervention measure to increase adherence

4.8.1 Intervention Measures for Handling Anxieties

Intervention measures for handling anxiety were identified as exercise, seeking professional service or counseling, social support and information empowerment the frequency was tabulated and percentage summarized in table 4.8

Table 4.8: Intervention Measures for Handling Anxieties

Intervention	Yes		No	
	Frequency	%	%	%
Exercise	115	36.9	197	63
Seeking professional service/counselling	99	31.7	213	68.3
Social support	95	30.4	217	69.6
Information empowerment	121	38.8	191	61.2

The study findings in table 4.8 indicated that more than a third (38.8%) of the respondents require information empowerment to deal with anxieties associated with TB treatment while a third (31.7%) seek professional and counseling services

4.8.2 Intervention Measures to Increase Adherence

Intervention measures to increase adherence were identified as improved relationship with service providers, social support and information empowerment the frequency of occurrence was tabulated and percentage summarized in Table 4.9

Table 4.9: Intervention Measures to Increase Adherence

Intervention	Yes		No	
	Frequency	%	Frequency	%
Improved relationship with service providers	93	29.3	309	99
Social support	140	44.9	172	55
Information empowerment	9	2.9	303	97.1

Table 4.9 shows that almost half of participants (44.9%) require social support to adhere to TB therapy, a third (29.9%) advocated for improved relationship with service providers and minority at (2.9%) need information empowerment to adhere to TB therapy.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter has information on the discussion of findings, conclusions made and some recommendations made from the study on relationship between anxiety and non-adherence to therapy among TB patients in Mombasa County. The chapter gives a brief summary of the findings followed by the discussions of the results, conclusions made from the findings and possible recommendations that could be implemented to mitigate the challenge of non-adherence.

5.2 Summary of the findings

After completion of the analysis of data obtained from the study, the response rate was noted to be 78% of the sampled population. 69% of those sampled were male while 31% were female. The results also showed majority of the respondents were mature adults from 30-65 years of age 44%. Most of the respondents 76% were married while polygamous and those never married constituted 5% and 18% respectively. Those employed constituted 35%, unemployed 15%, in business and farming 23% and 27% respectively. Nyali had the leading number of respondents at 29% followed by Likoni 28%, Changamwe and Mvita recoded similar numbers 16% while Jomvu had 11%. The study majority of the respondents had higher tertiary levels of education; university 31%, TVET 31% and college 25% only a minority had primary level of education 3%. Christianity as a religion had majority of the respondents 60% while Muslims, Hindus and Pagans constituted 38%, 1%, 1% respectively.

The study also noted that levels of non-adherence were at 12.2% low non-adherence, moderate 83% and 4.8% had high incidences of non-adherence. Respondents with mild anxiety were 51.3%, moderate anxiety 27.2% while severe anxiety had 21.5 respondents.

From the study it was also clear that 17.3% of those respondents with moderate non adherence had severe anxiety, 91% reported that anxiety affected their non-adherence. Side effects of the medication, long duration of treatment and misinformation were the main triggers of anxiety at 75%, 16.3% and 8.7% respectively

To mitigate the influence anxiety has on non-adherence, 31.7% said they needed professional assistance like counseling, 38.8% required information while 30.4% social support. To reduce non-adherence, 29.3% stated that improved relations with the service provided would be helpful and 44.9% needed social support.

5.3 Discussions of findings

Under this section, research findings will be discussed in the following subsections; demographics, levels of non-adherence to TB therapy, levels of anxiety and anxiety and its influence on non-adherence

5.3.1 Demographic characteristics of respondents

The results obtained showed that majority of the respondents were male 69% while females were 31%. This was study shows a similar trend to the one done by Obwonge et al (2016) in his study on non-adherence to tuberculosis in Baringo County, their study noted a response rate of 72% among males while females were 28%. In another study conducted by Sahile et al (2018) they had a response rate of 70 male while 30 %

were female respondents. This therefore suggests that the response rate of this study conformed to other previous studies done.

In a study done by Tola et al (2017) it clearly shows that majority of respondents in tuberculosis studies are mature adults 29.8% with their age starting from 25 years. This also agrees with Krasniqis et al (2017). This therefore implies that this study was in tandem since it reported that most of the respondents were mature adults 43.3%

Majority of those sampled were married 76% while those who were never married constituted 18% of the respondents. These results contradicted a study done by Krasniqis et al (2017) that showed 59.8 % of their respondents were married. Another study done by Tola (2017) showed the proportion of married respondents to never marry was 52.3% to 38.1%. This studies suggested that marital status had an influence in non-adherence since most of those who had social support during their treatment duration had low levels of non-adherence vis a vie their counterparts who were single. Being single also predisposed one to forgetfulness and carelessness due to lack an accountability partner.

This study showed 35% of respondents were employed, 15% unemployed, 27% farmers while 23% were business owners. The study also showed majority of those employed were male while those unemployed were females who were taking care of their families. Those who were employed were in the low income sector hence this study supported the findings of Obwonge et al (2016) that showed majority of Tb patients were engaged in low income activities. In their studies 41% of the respondents were employed of which 85% were casual workers. The above findings support previous studies that have shown Tuberculosis as a disease that is mostly

prevalent in low income setups. The studies have postulated that the dense population could form part of the challenge in the spread of TB.

It is evident from the study results that most of the respondents had post-secondary education with university and TVET having similar number of respondents at 31% while those with college education were 25%, primary and secondary level of education constituted 3% and 10% respectively of respondents. The level of education had an influence in a patient's level of non-adherence indirectly in that the patients with low level of education were less informed on the side effects of the medication, duration of treatment and would stop treatment immediately feelings of illness had resolved (Obwonge, 2016). In the study reported by Sahile et al (2018) it was clear that those respondents with higher levels of education would have low non-adherence rate because they understood the consequences of discontinuing treatment. They were also well empowered on the possible side effects, the duration therapy would take and management strategies in case of anxiety plus social support.

Tola (2017) findings on tuberculosis treatment showed that majority of the respondents were Christians 77% while 13.6% were Muslims. They thus support this study where majority of the respondents are Christians 60% while Muslims constituted 38 % of the respondents. It would be interesting to study the role religion plays on non-adherence to medication therapy appreciating that belief systems have an impact in adherence and non-adherence and religion influence respondent's belief system.

5.3.2 Levels of non-adherence to TB therapy among patients attending in selected chest clinics in Mombasa County

Data analysis from this study that was summed and transformed into categories revealed 83% of the respondent's experienced moderate non-adherence, 12.2% low non-adherence while 4.8% had high incidences of non-adherence. In the study by Tola (2017) they noted non-adherence rate to be 19.5 %. From their findings it was difficult to tell whether their respondents had mild, moderate or high non-adherence rate. Sahile et al (2018) noted a non-adherence rate of 20% in their study that aimed at finding out the impact DOT had on non-adherence in Ethiopia. Krasniqis (2017) noted non-adherence at 14.5%. From all the above studies it would be important to note that most of them did not cluster their level of non-adherence hence making it a bit difficult to compare these studies to the current study. Krasniqis noted that low incidences of non-adherence had been reported in Tanzania at 5%, Uganda reported 8% while Iran, Ethiopia and India had high non-adherence rate to tuberculosis treatment at 30%, 21% and 40% respectively. Cognizance to the fact that Kenya falls in the category of the 16 countries with TB burden and Mombasa being one of the Counties with high tuberculosis burden it would be of interest to appreciate that a mean of the categories would suggest that the non-adherence rate stood at 33%. Therefore the findings of current study are consistent and support the findings with past studies that there is non-adherence of TB treatment. Non-adherence to TB treatment contributes not only drug resistance but also increase disease morbidity and mortality that adversely affect the treatment success rate. Any level of non-adherence is a health concern that needs to be addressed by identification of intervention points. Hence the rationale for the current study.

5.3.3 Level of anxiety among TB patients attending selected chest clinics in Mombasa County

The analysis of data showed that 51.3% of the respondents experienced mild anxiety, 27.2% moderate anxiety while 21.5% had severe anxiety. The data did not show any respondent who reported very severe anxiety. These findings resonate with the findings of the studies that were done in Pakistan and Ethiopia. Study done in Pakistan and Ethiopia found there 72% and 41.5% of TB patients displayed moderate to severe symptoms of anxiety (Aamir 2010; Duko, Gebeyeha, Ayona, 2015).

Some of the factors that the respondents stated triggered their anxiety included; side effects of the medicine 75%, 16.3% long duration of therapy and 8.7% said misinformation about TB treatment made them become anxious. The results are consistent with the past studies findings that anxiety could be triggered by other secondary factors to tuberculosis like poor social support, being female, HIV infection, substance use and being in the intensive phase of treatment (Duko, Gebeyeha, Ayona, 2015; Louw, Peltzer, Naidoo, Matseke, Mchunu & Tut Shana 2012). Diagnosis of TB is characterized by deep seated anxiety of knowing HIV status, persistence and severity of TB symptoms and low clinical status. The stigmatizing attitudes and behaviors of community members towards the disease and sufferers leads to that isolation.

5.3.4 Influence of Anxiety on Non-adherence to Tuberculosis Treatment among Patients attending Selected Chest Clinics in Mombasa County

As much the current study found that there was the association between the non-adherence and anxiety was not significant those who had moderate non-adherence and who affirmed that anxiety affected their TB treatment were slightly 90%. These

results contradicted the findings that found significant close relationship between anxiety levels and adherence to TB treatment (Obwonge et. al., 2016; Sahile, 2018; Wamala et al, 2007; Lovan et al. 2012). The fact that participants of current study acknowledged the effects of anxiety emanating from stigma, side effects of drugs and long duration on non-adherence is consistent with the previous studies whose findings are similar. As part of intervention efforts there is need for screening and intervention of anxiety and other related conditions like depression to TB patients to ensure that adherence of TB treatment is upheld.

5.3.5 Measures to mitigate anxiety among TB patients attending selected chest clinics in Mombasa County

The research study sort to identify mitigation measure that could help reduces incidences of anxiety among the TB patients that were attending selected chest clinics in Mombasa County. It was important to involve the respondents so that they would come up with measures that they could own and those that they would be ready to uptake when implemented. This was aimed at giving them an opportunity to drive the agenda on reduction of anxiety thus reduction in non-adherence. The study found out that the respondents had a clue on what would help mitigate their anxiety thus reduce incidences of non-adherence. More than thirty percent indicated that information, counselling and social support will be helpful in management of anxiety about tuberculosis treatment hence mitigate non-adherence to TB treatment. It would be important to note that similar sentiments had been noted in previous studies on tuberculosis treatment reported by Obwonge et al (2016) that stated information empowerment would help in reducing stress levels associated with drug related factors that had led to non-adherence and this would therefore result in reduce non-

adherence levels. Reduction of stigma and social support was also noted by Sahile et al (2018) as being crucial in reducing non-adherence while Krasniqis et al (2017) suggested that knowledge being equated to power, knowledge of Tb and Tb treatment would provide the tuberculosis infected patients with the ability to understand the impact of non-adherence and thus reduce non-adherence incidences.

5.4 Conclusion of the study

The following conclusions came up from the study;

Based on the first objective Non adherence is a major problem to TB treatment among TB patients in Mombasa county from the study three quarter (83%) had some levels of non adherence to treatment

The second objectives concludes more than a half (51.3%) of TB patients experienced mild level anxiety among TB patients in Mombasa County and TB treatment related anxiety

As regards the third objective, the study concludes that higher (90%) number of patients affirmed TB and TB treatment related anxiety contributed to some level of non-adherence to TB treatment

Finally the fourth objective concludes that, a third (30%) of the TB patients suggested possible intervention measures to be taken to mitigate the effects of anxiety on non-adherence to TB treatment that will boost treatment success rates and overall health of TB patients.

5.5 Recommendations

Following the conclusions emanating from this study, the researcher recommends several measures to help mitigate incidences of non-adherence. The measures would

be of help to the patients, the family or household contacts, the health care provider and facility, the county government of Mombasa, ministry of health and the donors who are supporting tuberculosis treatment

5.5.1 Recommendation for the TB patients

- i. There is need for patients to be empowered with information on the importance of adherence to TB treatment to mitigate incidences of treatment failure and multidrug resistant tuberculosis through health education using Tuberculosis ambassadors and TB champions
- ii. There is need for screening and intervention of mental health conditions like anxiety and depression among TB patients to mitigate non-adherence of TB treatment. This should be done through screening, assessment and use of evidenced based psychological intervention.
- iii. There is need for community awareness to demystify diagnosis and treatment of TB, mitigate stigma and discrimination associated with TB and promotion of social support to TB patients in seeking and adhering to TB treatment.

5.5.2 Recommendation to the family, household contacts, society

There is need for community awareness to demystify diagnosis and treatment of TB, mitigate stigma and discrimination associated with TB and promotion of social support to TB patients in seeking and adhering to TB treatment. They should offer social support to the TB patient and reduce stigma, this will encourage disclosure and make it easy for the TB patient to protect and keep them safe and encourage isoniazid preventive therapy for close contacts. Their support would also be important in promoting adherence to treatment thus reduce incidence of non-adherence, relapse and resistance

5.5.3 Recommendation to the healthcare providers, Treatment centers and county governments

- i. Information empowerment and dissemination is very integral in the success of the treatment alliance and in promoting adherence their by reducing non-adherence
- ii. Close and periodic follow up of clients is necessary to reduce incidences of non-adherence, treatment failure, MDR and XDR TB.
- iii. Monitoring of side effects is important in order to reassure for minor side effects and for major side effects support the client as needed
- iv. There is need to integrate psychosocial screening, assessment and intervention to deal with mental conditions associated with TB and TB treatment

5.5.4 Recommendation for further research

This study aimed at finding out the relationship between anxiety and non-adherence to therapy among TB patients in Mombasa County. It might not have been exhaustive in that several other factors have influence non-adherence. The researcher therefore recommends future studies can be done on.

- i. The influence of stigma of Covid 19 on diagnosis, management and non-adherence to tuberculosis treatment
- ii. The effect withdrawal of funding by donors of Tuberculosis would have on non-adherence to TB treatment
- iii. Relationship between service provider training on tuberculosis management and its impact on non-adherence by TB patients
- iv. It would also be important to find out the role of adherence counselors and psychologist play and their impact on non-adherence to TB treatment

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APPENDICES

APPENDIX I: WORK PLAN

EVENT	Mar,20	Apr,20	May,20	June,20	July,20	Aug,20	Sep,20	Oct,20	Nov,20	Dec,20	Jan,21	Feb,21	Mar,21	Apr,21	May,21	June,21	July,21	
1 ST Proposal developme nt																		
Proposal correction																		
Proposal defense and correction																		
Pilot testing																		
Data collection																		
Data analysis																		
Research reporting and submissio n																		

APPENDIX II: BUDGET

ITEM/ SERVICE	ITEM(S) NUMBER	UNIT COST (KSH)	TOTAL AMOUNT (KSH)
Typing, email and printing 1 st copy	5	2000	10,000
Binding	3	500	1500
Printing for defense	3	1000	3500
Transport for defense	1	7500	7500
Reprinting after defense correction	3	1000	3000
Transport for reconnaissance	2	2500	5000
Accommodation during reconnaissance	7	5000	35000
Printing of questionnaires	500	100	50000
Transport for and during research	5	3000	15000
Accommodation during research period and miscellaneous expenses	7	10000	70000
Printing and photocopy of research report	5	1000	5000
Binding research report	5	600	3000
Publishing research	1	20000	20000
Total cost			228,500

Source of funds is from researcher and his friends

APPENDIX III: QUESTIONNAIRE

INTRODUCTION

My name is Victor Okello Osoo a final year masters of counseling psychology student in Kenyatta University. I am expected to undertake a research on Influence of anxiety on Non-adherence to TB therapy by patients attending TB clinics in Mombasa County. The results of the study/research are aimed at improving treatment and uptake of tuberculosis by reducing levels of Non-adherence.

The study will require your participation through answering of the questions in the questionnaire to the best of your ability, honestly and without any influence and or coercion.

Participation in the study is voluntary; acceptance or decline to participate in this study will not affect in any way the kind of care you receive in your registered facility. You can also withdraw yourself from the study at any moment without being influenced otherwise. Please feel free to ask and enquire freely about any process of the study. In case of any form of discomfort, please consult with the researcher for support and assistance.

Your honest voluntary participation will be beneficial in helping manage anxiety in other patients thus reduce the burden of tuberculosis in your county. A reduction in Non-adherence will also reduce incidences of multidrug resistant tuberculosis and reduce the cost of treatment thus a healthy and productive society.

There will be no reward or any financial benefit to be accrued for participating in the study.

The study guarantees privacy and confidentiality by ensuring the study is conducted in a safe and private room. Your name will not be indicated in the questionnaire and the researcher will ensure safety of all filled and received questionnaire.

I am kindly requesting you to participate with honesty and freely with the knowledge that your particulars will not be noted and utmost confidentiality am guaranteed for your feedback will only be accessed by the research assistant and researcher only. In case you are not comfortable please know that participation is voluntary and withdrawal will not result to any loss or you being disadvantaged in any way. Thank you in advance for your voluntary participation.

In case of any concerns please do not hesitate to contact the researcher on 0731420831 or Kenyatta University department of Psychology through my supervisor DR. John Samson Oteyo

SECTION A: DEMOGRAPHICS

Please tick the most appropriate of the answers given below the question

1. What is your gender

Male ()

Female ()

Intersex ()

2. In what age bracket do you fall

Early adulthood, 20-30 years ()

Mature adulthood, 30-65 years ()

Old age, above 65 years ()

3. What is your marital status?

Never married ()

Married ()

Polygamous ()

Divorced ()

Widowed ()

Separated ()

4. Which economic activity do you engage in?

Farmer ()

Business ()

Employed ()

Unemployed ()

Any other please specify ()

Self-employed ()

5. In which sub county do you live within Mombasa county

Jomvu ()

Mvita ()

Changamwe ()

Nyali ()

Likoni ()

6. What is your highest level of education attained?

No formal education ()

Below primary school ()

Primary ()

Secondary ()

Poly-technique ()

College ()

University ()

Others please clarify ()

7. What is your Religion?

Muslim ()

Christian ()

Hindu ()

Buddhist ()

Pagan ()

Other religion ()

SECTION B: QUESTIONS ON LEVELS OF NONADHERENCE

Select either YES or NO for each of the statements that you agree with based on the question. (Adapted from Medication Adherence Reporting tool by Thompson, 2000)

No.	Question	Yes	No
8.	Do you understand your TB treatment?		
9.	Do you sometimes forget to take your TB medication?		
10.	Have you been careless in taking your TB medicines?		
11.	Does feeling better sometimes make you not to take your TB medication?		
12.	Do you stop taking your TB medication when you feel worse?		
13.	Do you take your TB medication only when you are unwell?		
14.	Does your mind and body get altered by the TB medication		
15.	Do you know the TB medicines you take		
16.	Would you know the outcome of not taking your TB medication as advised?		
17.	Do your TB medicines give you drowsiness and make you feel weird?		

C: QUESTIONS ON INFLUENCE OF ANXIETY ON TREATMENT

Adopted from integration and contextualizing of Hamilton anxiety scale

Feeling/thought	Severe	Moderate	Mild	Not present
18. Nervous/worried about taking the drugs				
19. Restless about taking the medicine				
20. Fearing the side effects of the drugs				
21. Difficulty in falling and or staying a sleep because of TB therapy				
22. It affects my concentration and memory				
23. Loss of interest in life and activities previously enjoyed.				
24. I hear strange voices after taking the medicine.				
25. Vision is affected				
26. The diagnosis elicits palpitations				
27. Sighing due to TB therapy				
28. I experience nausea, vomiting and stomach discomfort due to TB therapy				
29. I experience low libido and frequent micturition				
30. I experience dry mouth, I sweat and tension headache				
31. Fidgeting, tremors and pallor				

SECTION D: FACTORS INFLUENCING ANXIETY OVER TB THERAPY

32. Do you experience unknown fears over treatment and drugs?

Yes () No ()

33. If yes above, what are some of the fears you have

Please specify

.....
.....

34. What are some of the reasons why you develop fears and anxiety?

Duration ()

Side effects ()

Misinformation ()

Others please specify

.....

35. Do you think/ feel that the anxiety and fears influence/ affect you in taking your
Tb medication

Yes () No ()

36. Does the following factors affect your anxiety and Non-adherence to TB Therapy?

(Choose all the possible choices)

Stigma ()

Belief system ()

Cultural values ()

Long duration of therapy ()

37. To what extent do they affect your anxiety and Non-adherence to TB therapy?

(Tick the most appropriate)

Factor	Mildly affects	Moderately affects	Severely affects
Stigma			
Belief system			
Cultural values			
Long duration of TB treatment			

SECTION E: INTERVENTION MEASURES

38. What is the greatest trigger to your anxiety?

Please specify

.....

.....

.....

39. How have you managed to handle your anxieties about treatment?

Exercise ()

Seeking professional help ()

Social support ()

Others please specify ()

40. What are some of the methods you think can be used to help TB patients manage their anxieties about TB treatment ()

Counseling ()

Information empowerment ()

Social support ()

Others please specify ()

41. In your opinion, what do you think can help in reducing Non-adherence to TB Treatment?

Please specify

.....
.....
.....

42. What are some measures that can help increase adherence?

- Information dissemination ()
- Improved relationships with service provider ()
- Social support ()
- Others please specify ()

43. What support would you require from your health provider to reduce Non-adherence?

Please specify

.....
.....
.....

44. What do you think would be the consequences of reduced Non-adherence and increased adherence?

Please specify

.....
.....
.....

APPENDIX IV: INFORMED CONSENT

Introduction

My name is Victor Okello Osoo a final year masters of counseling psychology student in Kenyatta University. I am expected to undertake a research on Influence of anxiety on Non-adherence to TB therapy by patients attending TB clinics in Mombasa County. The results of the study/research are aimed at improving treatment and uptake of tuberculosis by reducing levels of Nonadherence.

Procedure for participation

The study will require your participation through answering of the questions in the questionnaire to the best of your ability, honestly and without any influence and or coercion.

Discomfort and Risks

Participation in the study is voluntary; acceptance or decline to participate in this study will not affect in any way the kind of care you receive in your registered facility. You can also withdraw yourself from the study at any moment without being influenced otherwise. Please feel free to ask and enquire freely about any process of the study. In case of any form of discomfort, please consult with the researcher for support and assistance.

Your honest voluntary participation will be beneficial in helping manage anxiety in other patients thus reduce the burden of tuberculosis in your county. A reduction in Nonadherence will also reduce incidences of multidrug resistant tuberculosis and reduce the cost of treatment thus a healthy and productive society.

Benefit and rewards

There will be no reward or any financial benefit to be accrued for participating in the study.

Confidentiality

The study guarantees privacy and confidentiality by ensuring the study is conducted in a safe and private room. Your name will not be indicated in the questionnaire and the researcher will ensure safety of all filled and received questionnaire.

I am kindly requesting you to participate with honesty and freely with the knowledge that your particulars will not be noted and utmost confidentiality am guaranteed for your feedback will only be accessed by the research assistant and researcher only. In case you are not comfortable please know that participation is voluntary and withdrawal will not result to any loss or you being disadvantaged in any way. Thank you in advance for your voluntary participation.

Contact information

In case of any concerns please do not hesitate to contact the researcher on 0731420831 or Kenyatta University department of Psychology through my supervisor DR. John Samson Oteyo

Participant statements

I do confirm that I have read the foregoing information, or it was read to me. I have had an opportunity to ask the questions that I had which have been answered to my satisfaction. I therefore voluntarily consent to participate in the study noting no adverse risk might be incurred.

Code of participant.....

Signature.....

Date.....

Investigators statement

I have accurately read out the information on the informed consent sheet to the respondents and to the best of my ability ensured he/she understands the nature and purpose of the study, I have also guaranteed confidentiality, privacy and voluntary participation. I confirm the interviewee was given an opportunity to ask the questions they had and the same were answered to their level of satisfaction. The interviewee therefore accepts to participate voluntarily.

Name of interviewer..... Date.....

VICTOR OKELLO OSOO

CURRICULUM VITAE AS AT JUNE, 2021

Address: 15464-20100

Phone number: 0731420831/0728273838

Email: vosoo.vo@gmail.com

CAREER OBJECTIVE

To be an ethical, hardworking, focused and committed professional. Whose driven by the desire to promote and enhance the psychosocial and wholistic wellbeing of all Human's.

SUMMARY OF QUALIFICATION

Masters of art's in counseling psychology (Kenyatta University-course work done, project work ongoing)

Bachelors of Psychology (Egerton University-first class)

Diploma in pharmaceutical technology (K.M.T.C)

PROFESSIONAL EXPERIENCE

March 2016 to date – Head of psychology and pharmaceutical services Evans Sunrise Medical Centre, Nakuru.

Responsibilities:

- Team leader of counselors and therapist
- Supporting human resource in offering employee assistance programmes
- Counseling and supporting employees and clients
- handling all administrative pharmaceutical roles and duties
- dispensing and stock taking
- making orders, receiving medicines from suppliers
- offering adherence counseling and psychological care to clients

October 2012- March 2017 Pharmaceutical technologist Evans Sunrise Medical Centre

- Dispensing
- Stock taking
- Receiving and ordering drugs
- Advising clinicians on the suitability of a prescription for a patient
- Patient follow-up for HIV and TB clients
- Record keeping

Other responsibilities

- Consultancy for Kenya Red-cross on psychological first aid and support in East Pokot, Baringo County

-Worked at Rift Valley Provincial General Hospital- gender based violence Centre in offering psychosocial support to victims of GBV, youth friendly center, psychiatric department and comprehensive care center.

EDUCATION

Masters in counseling psychology- project on going, done with course work

Bachelor of psychology-Egerton University 2013-2016

Diploma in pharmacy-Kenya Medical Training College 2009-2012

Pharmacy and poisons board enrolment October 2012

Kenya Certificate of Secondary education- Solai Boys High School 2004-2008

PAPERS PRESENTED

Ethics in pharmacy practice- The role of health care providers in addiction and addiction management- 14th scientific conference held at Cathy hotel on 5-6th October 2018.

SKILLS

Counseling skills developed include; focusing, empathy, unconditional positive regard, drawing out, confidentiality, privacy, genuiness

Knowledgeable in; case in-take processing, case management, theories of counseling

Competent in debriefing, psychological first aid, stress management, addiction, suicidal attempts, relational challenges, individual, family and group counseling

INTERESTS

Swimming, working out, listening to music and reading informative business, psychological and health articles.

REFERENCES

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