

# PATIENT FACTORS INFLUENCING ADHERENCE TO ANTI-TUBERCULOSIS MEDICATION IN NJORO SUB COUNTY HOSPITAL, NAKURU COUNTY, KENYA

S. O. Oyugi.; C.M. Garama.; Kweri J.K.; N. A. Malik.; S.K. Bett .; Biego S.C;

**Abstract: Background of the study:** Tuberculosis proves to be one of the most serious infections of the world with over 8.6m infections and 1.3m deaths recorded annually. Kenya is one of the 22 high TB burden countries and is ranked 13th according to the World Health Organization (WHO). The cost of treatment of tuberculosis is going up due to the emergent of drug resistant strains of *mycobacterium tuberculosis*. Multi drug resistant tuberculosis (MDR) and extensive drug resistant tuberculosis (XDR) are a complication of poor adherence to anti-tuberculosis medication. Despite several efforts to reduce worldwide prevalence of TB various factors hamper these efforts. One of the prominent factors affecting TB is adherence to anti-TB medication which is determined by several factors including drug availability, side effects, and cost associated to treatment and patient provider relationship. The aim of this study was to identify patient factors which influence adherence to anti-TB treatment among TB patients at Njoro Sub County Hospital.

**Material and Methods:** A cross-sectional analytical study design was adopted where a total of 25 which is 25% of total registered TB patients at Njoro Sub County Hospital was calculated using Cohen and Manion(2006) hypothesis that states that selection of at least a quarter of the sampling units is sufficient for the study of social science in nature. Questionnaires were used to collect data. A pilot test was done to validate the questionnaire's suitability. Descriptive analysis was done to analyze data.

**Results:** Of the 25 patients analyzed, 8 (32%) had interrupted treatment. Out of the 8 clients, 2 (25%) missed one visit; 4 (50%) missed two visits; 1 client (12.5%) missed three visits and another 1 (12.5%) missed four visits. Majority of clients misses at least two visits before coming back for treatment.

**In conclusion:** The study shows that about a quarter of patients in TB treatment program will at one point miss some pills either due to Conflict with work schedule, poor relationship between patients and Health Care Providers and alcoholic.

**In recommendations:** There is need for proper counseling of TB patients on drug side effects, agree on treatment plans based on work schedule, reduction on alcohol intake while on TB treatment and initiation of good relationship between the healthcare provider and the client. This will enhance adherence during the period of treatment.

## INTRODUCTION AND LITERATURE REVIEW

Tuberculosis (TB) is a chronic disease which occurs in both tropical and temperate climates caused by *Mycobacterium tuberculosis* (MTB), a bacilli first identified by a German scientist Robert Koch on March 24, 1882. Other *Mycobacterium* species like *M. bovis*, *M.africanum*, *M. microti*, *M.caprae* *M. canetti* and *M. pinnipedii* can also infect humans and cause TB Raviglioneet al, (2001).

In 2012 TB infected 8.6m people which resulted to 1.3 million deaths throughout the world (WHO, 2013). TB is transmitted through droplet infection from a simple cough, when an uninfected person inhales air contaminated by the tubercle bacilli Raviglioneet al, (2001). TB infection is more common in resource-limited countries with high HIV infection rates co-existing with low social economic status.

Africa is facing the heaviest TB burden in the world. Despite implementing the internationally recommended Directly Observed Therapy Short course (DOTS) strategy, the African region continues to contribute a high proportion of the global TB burden. Of the

22 high burden countries responsible for 80.0% of the total global burden of TB, nine countries are in the African region. Thirteen of the 15 countries with the highest estimated TB incidence rates in the world are found in Africa (WHO, 2009). The lack of infrastructure compounded by the higher HIV prevalence in the African region, contributes to Africa's high TB burden. Patients' limited healthcare seeking behaviours and shortages of healthcare professionals in the region contribute to the high TB prevalence rates in the region Richard E. *et al*, (2008)

Various global efforts have been initiated to control TB including declaration of TB as major global public health problem by the World Health Assembly (WHA) in 1991. This prompted setting of targets for diagnosis and treatment of TB by the year 2000 but the targets were not fully met. The WHA planned to detect 70.0% of smear positive TB cases and to successfully treat 85.0% of smear positive TB cases detected by the year 2000 (WHO, 2009). But the targets were not achieved by the year 2000. Later in the year 2000 the Stop TB partnership the targets of the WHA at 70.0% detection of smear positive TB cases and to successfully treat 85.0% of smear-positive TB cases by the year 2005 through the DOTS programme was launched in 1994 (WHO, 2013). The case detection rate was met in 74 countries and in two regions –the Americas (73.0%) and the Western Pacific region (77.0%). TB case detection and treatment success rates were 47.0% and 75.0% respectively for Africa during 2007 (WHO, 2009).

In Kenya, there has been a steady increase in the number of tuberculosis patients particularly since the early 90's. This rising number of tuberculosis cases poses a major threat to the health and economy of this country. The case notification rate has steadily increased from 54 per 100,000 in 1991 to 326 per 100,000 in 2009. The total number of notified cases in 2010 was 106, 083 (TB-CARE, 2013). WHO estimates that in Kenya only 80% of TB cases are detected, indicating that the remaining 20% undetected cases continue to transmit TB (WHO, 2010). This increasing number of TB cases is thought to be largely associated with the growing HIV epidemic (WHO, 2010). Tuberculosis treatment success rate for the 2009 cohort is 85.5% for new smear positive pulmonary TB cases (n = 37,402). Kenya attained the global TB control targets (70/85) in 2007. Kenya has witnessed a marginal 2% decline in TB cases. The peak age group for TB infection for both males and females in 2012 was 25-34, the economically productive and sexually active age group with a male to female ratio of 1.4.

TB is the leading cause of mortality and morbidity in persons with HIV/AIDS. It has been reported that one of every three person who dies of AIDS is due to TB infection (UNAIDS, 2009). In 2009, the HIV sero-positive prevalence among the tuberculosis patients was 44%. The numbers of TB cases have stabilized and continue to steadily decline.

Just like many other chronic diseases unsatisfactory patient compliance with medication is a challenge for TB patients (Addington, 1979). Majority of TB patients started on TB treatment do not complete their treatment leading to prolonged infectiousness, relapses, drug resistance and death Munro *et al*, (2007). Patients who fail to complete the standard course of treatment may develop Multi (MDR-TB) and extensively drug resistant TB (XDR-TB). This situation jeopardizes the prevention and control strategy of TB, especially in developing countries, where there are high rates of HIV, poor housing, poor nutrition, poor access to quality health care, stigma and poor social economic status. This in turn increases the rates of tubercle bacilli transmission in the communities and result in more cases of full-blown TB compliance to TB treatment continues to be one of the major obstacles that TB control programmes worldwide have to deal with, especially in developing countries (Tessema, Muche, Bekele, Reissig, Emmrich & sack 2009:20) thus understanding patient compliance to treatment in NJORO could help tackle issues to improve compliance to treatment and health outcomes at large.

The study targeted patients undergoing treatment for tuberculosis in a bid to find out the healthcare factors that affect patient adherence towards anti-TB medication.

## 2.1 Adherence

Successful treatment of tuberculosis (TB) involves taking anti-tuberculosis drugs for at least six months. Poor adherence to treatment means patients remain infectious for longer and are more likely to relapse or succumb to tuberculosis and could result in treatment failure as well as foster emergence of drug resistant tuberculosis.

Poor adherence leads to prolonged infectiousness, relapses, drug resistance and death Munro *et al*, (2007).

Due to the long courses of anti-TB medication and the associated side effects patient compliance with the medication is normally a struggle and this is a common occurrence among many other chronic diseases and the non-adherence rates reported are between 21-32% in countries like USA (Addington, 1979) and may be as high as 50% in some developing countries Kulkarni P *et al*, (2013). Closer in Uganda this has been found to be 25% among HIV/TB co infected patients.

This study sought to determine the salient patient factors related with compliance to anti-TB drugs among patients attending Njoro Sub County Hospital-Nakuru Kenya. It was found that TB patients attending the Njoro Sub County Hospital chest clinic frequently, tended to adhere to their medication. Patients' also taking shorter time to be attended also adhered to their TB medication. TB patients with enough knowledge about the disease also complied with their medication. Non-alcoholic patients however conformed better than alcoholic patients with regards to TB medication.

## 2.2 Defaulting

Defaulting from tuberculosis (TB) treatment has been one of the major obstacles to treatment management and an important challenge for TB control. Understanding of various factors accounting for treatment default could help to achieve better compliance from patients.

The greatest danger to defaulters and those around them is the development of resistant forms of TB like MDR-TB and extensively drug resistant TB (XDR-TB) which are difficult to cure and cost a lot more Raviglione *et al*, (2001). The pressure is greater in the intensive phase of treatment where clinic duration are closer and longer duration of therapy Sagbaken *et al*, (2008) and more patients are found to default during this phase Kulkarni P. *et al*, (2013). The attitude of health workers to TB patients or patients' perceptions of health provider may also influence patient compliance. Patients who feel they are unfairly or rudely treated may be discouraged from continuing with the treatment Sagbaken *et al*, (2008). Study done in Russia showed that substance abuse was a barrier to TB treatment and care which eventually led to non compliance, default and development of MDR TB Gelmanova *et al*, (2007:649). This study sought to investigate patient factors related with defaulting anti-TB drugs among patients attending Njoro Sub County Hospital-Nakuru Kenya. The investigations concluded that patients with poor relationship with health care providers were susceptible to default TB medication. Alcohol intake also contributed to defaulting. This study also indicates that patients on other drugs were highly susceptible to defaulting.

## 2.3 Statement of the Problem

The STOP TB campaign aims to have Zero MDR-TB, mortalities and high cure rate. For the last 2 years NJORO Sub County has experienced a slight number of multidrug resistant tuberculosis with only a patient reported in Njoro Sub County Hospital. High TB defaulting rates was also observed in NJORO Sub County Hospital which contributed to drug resistant tuberculosis among patients in the area. Distance to the treatment centers, alcoholism, unhealthy patient provider relationship, and appointment schedule are among factors thought to contribute to poor adherence in NJORO division. Poor adherence leads to prolonged infectiousness, relapses, drug

resistance and death Munro *et al*, 2007). Patients who fail to complete the standard course of treatment may develop MDR-TB and extensively drug resistant TB (XDR-TB). This situation jeopardizes the prevention and control strategy of TB and that may result to high treatment cost, development of relapses, mortalities and MDR-TB. This study sought to explore patient factors that contribute to adherence to anti-tuberculosis medication.

## 2.5 Justification

Poor adherence to anti-tuberculosis drugs has led to the emergence of resistant TB strains. Some of the forms are multi-drug resistance tuberculosis (MDR) and extensive drug resistant (XDR). These forms of tuberculosis are expensive to treat and therapies take long. The cost of treating resistant forms of TB is more expensive than the non-resistant forms. Approximately Ksh. 2 million is required to treat each patient with MDR-TB (Partnership, 2013). This put a lot of stress on an already strained health budget. Drugs used to treat resistant forms of TB have severe side effects (Torun T, 2005). In addition the success rates of treating resistant forms of TB are much lower (48% for MDR-TB) compared to the non-resistant TB forms (87%) (WHO, 2012). Therefore understanding factors considered important by patients which may contribute to TB medication adherence, will facilitate the reduction of TB resistant cases and lower the number of new infection. This study sought to contribute to policy makers' ideas when formulating laws guiding TB treatment and also recommendations to implementers for enhancing TB prevention and control strategies and suggest further studies in more identified gaps. The study aimed to answer the following questions:

- i. What patient factors are related with patient compliance to anti-TB medication in Njoro Sub County Hospital?
- ii. What patient factors are related with patient defaulting anti-TB medication in Njoro Sub County Hospital?

## 2.6 Objectives

### 2.6.1 Broad Objective

The study aimed at determining patient factors influencing adherence to anti-TB medication among patients attending Njoro Sub County Hospital-Nakuru, Kenya.

### 2.6.2 Specific objectives

- i. To determine patient factors associated with patient adherence to anti-TB drugs among patients attending Njoro Sub County Hospital-Nakuru Kenya.
- ii. To determine patient factors associated with patient defaulting anti-TB drugs among patients attending Njoro Sub County Hospital-Nakuru Kenya.

### 2.6.3 Scope and Limitation of the Study

The study mainly focused on TB patients attending the chest clinic for the last two years at Njoro Sub County Hospital. A total number of 25 patients formed part of the study.

## CHAPTER THREE: METHODOLOGY

### **3.0 Introduction**

This chapter addressed the set of methods, rules and postulates employed in the study. It involves set procedures of inquiry on adherence and defaulting on anti-TB drugs among patients in Njoro Sub County Hospital. This includes Study Area, Study Design, Study Population among other postulates.

### **3.1 Study Area**

The study area was at Njoro sub county health Centre which is located in Njoro division in Njoro District, Nakuru County. It is 18km south west of Nakuru and it is the District headquarters of Njoro Sub County. It is the town of Kenya Agricultural research Institute and Egerton University which is situated 5km south from town centre. Njoro sub county hospital serves a catchment population of 141352 persons drawn from 5 locations (Kenya National Bureau of Statistics, 2010). The average number of patients per annum is 20,853 (NJORO medical Records Office). The TB clinic offers outpatient services and the average number of patients per year is 100

### **3.1 Study design**

The study design adopted a cross-sectional study design. The choice of this design was due to fact that the study was to be carried out at one time or over a short time Stommel M *et al*, (2004). The rationale behind this research design was that, the study attempts to identify factors which influence a patient's decision to strictly stick to TB treatment. Cross-sectional design was settled on because it is relatively easy, economical, and also considering time limitation to carry out study.

### **3.2 Study population**

The study population was 100 TB patients attending NJORO sub county hospital TB clinic. Target population was TB patients currently on TB medication, defaulters or those who have completed TB medication.

### **3.3 Sampling Frame**

The sample frame included all patients who are in TB clinic register and receive anti-TB medication.

### **3.4 Sampling technique**

Convenient sampling technique was used to select study participants . Convenience method of sampling was also used for data collection. The minimum sample size required was 25 patients (25% of TB patients for a whole year). The sampling technique applied for patients in this study is coherent to that of Cohen and Manion (2006) that states that selection of at least a quarter of the sampling units is sufficient for the study of social science in nature. 25% of the respondents (patients) were sampled.

### **3.5 Inclusion and exclusion criteria**

Patients who were 18years old and above attending Njoro chest clinic were interviewed. However, patients who were too weak, sick and on transit were excluded from the study. Informed consent was sought before recruitment and administration of the questionnaires. Participant's privacy and confidentiality was assured since interview was conducted in private. All identifiers were removed from questionnaires and only study numbers were used.

### **3.6 Instruments**

Data was collected using questionnaires and where the respondents could not understand the researcher explained to them.

### **3.7 Data Collection Procedure**

Questionnaire was used to collect data from TB patients at Njoro Sub County chest clinic to determine the salient factors influencing their adherence to anti-TB medication. The questionnaire was a suitable method of data collection because it allowed the researcher to reach a large number of respondents within the shortest period of time possible. It also ensured confidentiality and thus gathered more candid and objective information.

### 3.7.1 Pilot Test

The questionnaire was pre-tested to ensure that the tool had the capacity to measure what is intended. The questionnaire's internal validity was assessed and vague terms identified and modified to enhance respondents' understanding. This was done at Wesley Mission Health Centre with the help of the facility nurse and a random TB patient.

### 3.7.2 Data Processing and Analysis

The questionnaires yielded quantitative and qualitative data (from open ended questions). The quantitative data was collected from the patients visiting Njoro chest clinic. Data processing and analysis was done with the assistance of MS-Excel 2007. Descriptive analysis was used to summarize data and the findings then presented using bar and line graphs and also pie charts.

## CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSIONS

### 4.0 Introduction

This chapter interprets and explains the findings with regards to the stated research questions and specific objectives. The purpose of the study was to investigate the patient factors influencing anti-TB drugs adherence/defaulting among TB patients attending Njoro Sub-County Hospital, Nakuru County. Among the factors considered was alcohol intake, relationship between health care giver and the patient, smoking, side effects among other factors. The section also covers all the methods of data analysis, results and discussions. The results in this chapter have been organized according to the research objectives, with the first section dealing with demographic characteristics of respondents.

### 4.1 Demographic characteristics of respondents

The demographic characteristics that were discussed are age, gender, level of education, pills missed, employment and marital status. These characteristics were important because they had a bearing on the TB patients' adherence/defaulting.

#### 4.1.1 Age of respondents

When the study sought to establish the average age and mode of respondents, the results were as shown in figure 1.

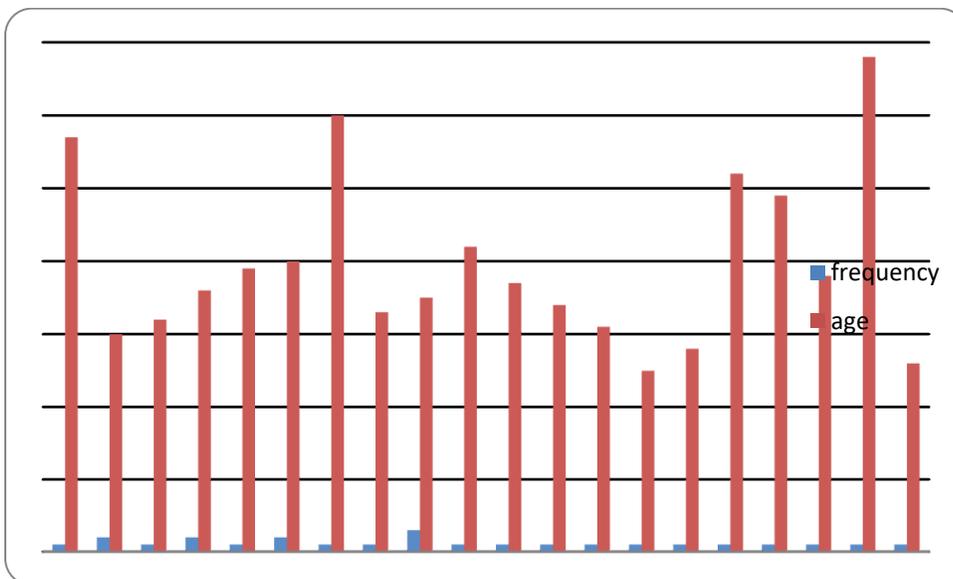
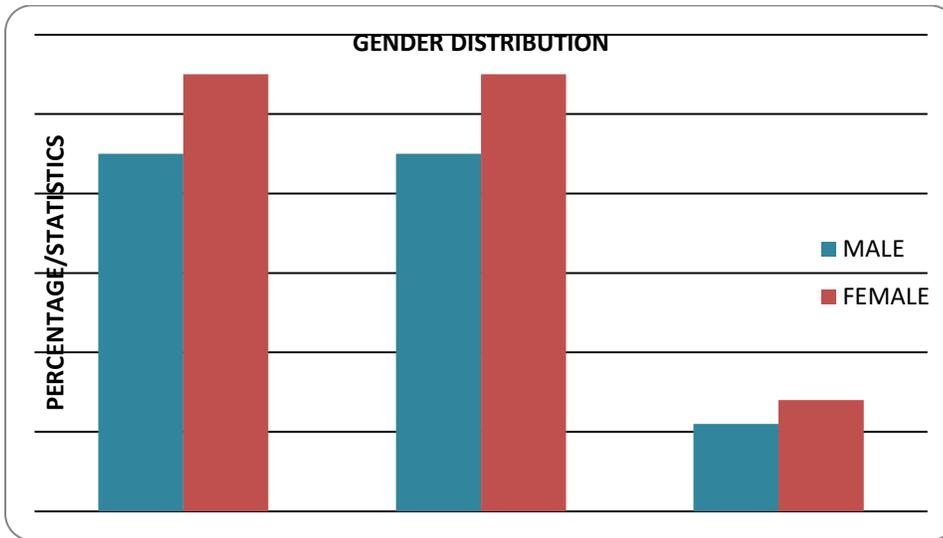


Figure 1 Descriptive statistics on the respondents' age

The average age of respondents was at 38.72 with a majority of female respondents having reached the age of 38 and above as compared to their male counterparts. The mode age was 35 with two of who are male and one being a female respondent.

**4.1.2 Distribution of TB patients in Njoro Sub-County by sex by 25%**

Regarding gender among the TB patients, the study got the responses indicated in figure 2.



**Figure 2**

Results showed that Majority of registered TB patients at Njoro sub-county chest clinic were female at 55% while their male counterparts were 45%. The study established that most female TB patients attended Njoro chest clinic as opposed to their male counterparts.

**4.1.3 Distribution of TB patients in Njoro Sub-County chest clinic by Education level**

Regarding the level of education among TB patients, the study obtained the responses indicated in Table 4.1.

**Table 4.1**

	Frequency	Percentage (%)
None	2	8
Primary	10	40
Secondary	8	32
Tertiary	5	20
Total	25	100

Results indicated that majority of patients with 40% had primary education as the highest qualification. 32% had secondary education with 5% having tertiary education. A paltry 8% had no education qualification. A study conducted on assessment of factors contributing to treatment adherence and knowledge of TB transmission among patients on TB treatment in Ndola, Zambia found out that most male TB patient respondents tended to be older and more educated than the female TB patients respondents.

#### 4.1.4 Distribution of TB patients in Njoro Sub-County chest clinic by Marital Status

Marital status of respondents as shown in Table 4.2.

**Table 4.2**

<b>Marital Status</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Single	5	20
Married	15	60
Widowed	3	12
Separated/Divorced	2	8
<b>Total</b>	<b>25</b>	<b>100</b>

The results showed that a number of participants were married at 60% followed by single at 20% while 12% were widowed. Only 8% of the participants had separated/divorced.

#### 4.1.5 Distribution of TB patients in Njoro Sub-County by Employment status

Employment status as indicated in Table 4.3.

**Table 4.3**

<b>Employment</b>	<b>Frequency</b>	<b>Percentage (%)</b>
None	9	36
Self	6	26
Salaried	3	12
Casual	7	28
<b>Total</b>	<b>25</b>	<b>100</b>

The results indicated that a bigger portion of the participants were unemployed at 36%, with 28% being casual labourers, 26% were self-employed and only 12% were salaried.

#### 4.1.6 Distribution of pills missed in the last five days

Distribution of visits which were missed by respondents, as shown in Table 4.4

**Table 4.4**

Number of drugs missed	Frequency	Percentage (%)
1.00	2	25
2.00	4	50
3.00	1	12.5
4.00	1	12.5
5.00	0	0

The findings indicated that out of the 8 participants who missed the anti-TB drugs, majority 50% had missed 2 pills in the last five days, 25% had missed only 1 pill while the rest had missed 3 or more times as shown on the table.

#### 4.2 Patient factors associated with patient adherence to anti-TB drugs among patients attending Njoro Sub County Hospital-Nakuru Kenya

##### 4.2.1 Chest Clinic Attendance and Adherence

Chest clinic attendance as indicated in Table 4.5

**Table 4.5**

How often do you come for chest clinic						
			Once a week	Twice in a month	Once in a month	Total
<b>Ever missed anti-TB drugs</b>	<b>YES</b>	Frequency	1	2	2	5
		% within Ever missed anti-TB drugs	20%	40%	40%	100%
	<b>NO</b>	Frequency	10	7	3	20
		% within Ever missed anti-TB drugs	50%	35%	15%	100%
<b>Total</b>	Frequency		11	9	5	25
	% within Ever missed anti-TB drugs		44%	36%	20%	100%

The results show that majority of the patients who defaulted their drugs visited the chest clinic either once a month (40%) or twice a month (40%). Consequently, majority of patients who visited chest clinics weekly (50%) did not default their drugs. These visits to the chest clinic had a major impact on adherence.

#### 4.2.2 Side Effects and Adherence

Side effects as indicated in Table 4.6.

**Table 4.6**

Do you experience side effects after taking drugs					
			Yes	No	Total
<b>Ever missed anti-TB drugs</b>	<b>YES</b>	Frequency	3	2	5
		% within Ever missed anti-TB drugs	60.0%	40.0%	100.0%
	<b>NO</b>	Frequency	4	16	20
		% within Ever missed anti-TB drugs	20%	80%	100.0%
<b>Total</b>	Frequency		7	18	25
	% within Ever missed anti-TB drugs		28%	72%	100.0%

The findings indicate that a number of patients (60%) who defaulted cited that they experienced side effects upon taking the drugs. This implies that a side effect is among the contributors to poor adherence. A bigger proportion 80%) of those who complied with the treatment indicated that they never experienced side effects after taking the drug. A study conducted by Graner, 2007 in Kyrgystan prisons in Zurich on factors promoting adherence to TB medication, found out that the regimen recommended for treatment of TB was associated with significant side-effects. Side effects such as hepatitis, dyspepsia, and arthralgia were responsible for termination of therapy in up to 23% of patients during the intensive phase of treatment. These side-effects were also found to be significantly associated with defaulting hence influencing drug adherence.

#### 4.2.3 Information, Knowledge and Adherence

Information/knowledge on the disease as indicated in Table 4.7

**Table 4.7**

Did health care give any information					
			Yes	No	Total
<b>Ever missed anti-TB drugs</b>	<b>YES</b>	Frequency	3	2	5
		% within Ever missed anti-TB drugs	60%	40%	100.0%
	<b>NO</b>	Frequency	18	2	20
		% within Ever missed anti-TB drugs	90%	10%	100.0%

<b>Total</b>	Frequency		21	4	25
	% within Ever missed anti-TB drugs		84%	16%	100.0%

The findings show that a high proportion of patients adhering to anti-TB drugs (90%) indicated that health care providers assisted them with all the relevant information about the disease. Consequently, 40% of defaulters cited that they were not provided with information on the disease as opposed to 60% who had the information but defaulted. This showed that adherence was highly related to the information held by the patient on the disease.

#### 4.2.4 Counseling on Drug Adherence

Counseling on drug as indicated in Table 4.8.

**Table 4.8**

Did health care counsel you on drugs					
			Yes	No	Total
Ever missed anti-TB drugs	YES	Frequency	4	1	5
		% within Ever missed anti-TB drugs	80.0%	20.0%	100.0%
	NO	Frequency	19	1	20
		% within Ever missed anti-TB drugs	95%	5%	100.0%
Total	Frequency		23	2	25
	% within Ever missed anti-TB drugs		92%	8%	100.0%

The findings revealed that patient counseling determined adherence. This is because 95% of the patients counseled have never missed their anti-TB drugs while 20% of those who missed were not counseled at all. However, 80% of those counseled missed their drugs, and only 5% were not counseled but still adhered.

#### 4.2.5 Alcohol and Adherence

Alcohol intake as indicated in Table 4.9.

**Table 4.9**

Do you take alcohol					
			Yes	No	Total
Ever missed anti-TB drugs	YES	Frequency	2	3	5
		% within Ever missed anti-TB drugs	40.0%	60.0%	100.0%
	NO	Frequency	3	17	20
		% within Ever missed anti-	15.0%	85.0%	100.0%

		TB drugs			
<b>Total</b>	Frequency		5	20	25
	% within Ever missed anti-TB drugs		20%	80%	100.0%

The findings revealed that 80% of patients who adhered to the anti-TB drugs did not take alcohol. Further 40% of the patient who defaulted the drugs also took alcohol. This implies that challenges of adherence were higher among alcohol lovers as opposed to non-alcoholics.

#### 4.2.6 Frequency of Alcohol and Adherence

Alcohol frequency as indicated in Table 4.10

**Table 4.10**

How frequent do you take alcohol							
			Daily	Once a Week	Once a month	Occasionally	Total
Ever missed anti-TB drugs	YES	Frequency	2	0	0	0	2
		% within Ever missed anti-TB drugs	100.0%	0.0%	0.0%	0.0%	100.0%
	NO	Frequency	1	0	2	0	3
		% within Ever missed anti-TB drugs	33.3%	0.0%	66.7%	0.0%	100.0%
Total	Frequency		3	0	2	0	5
	% within Ever missed anti-TB drugs		60.0%	0.0%	40.0%	0.0%	100.0%

The results show that all of the TB patients taking alcohol on daily basis (100%) missed their TB drugs only 33.3% of patients who took alcohol daily adhered to their TB medication.

#### 4.2.7 Clinic Duration and Adherence

Duration to be attended to at Njoro Sub County Hospital as shown in Table 4.11

**Table 4.11**

Duration to be attended						
			Less than 15 mins	15-30 mins	More than 30 minutes	Total
Ever missed anti-TB drugs	YES	Frequency	0	2	3	5
		% within Ever missed anti-TB drugs	0.0%	40.0%	60.0%	100.0%
	NO	Frequency	2	13	5	20
		% within Ever missed anti-	10.0%	65%	20.0%	100%

		TB drugs				
<b>Total</b>	Frequency		2	15	8	25
	% within Ever missed anti-TB drugs		8%	60%	32%	100%

The findings revealed that the majority 60% of patients who missed drugs took more than 30 minutes to be attended to. On the other hand, majority 65% of patients who did not default indicated that they were served between 15 and 30 minutes while 20% were served in more than 30 minutes. This implies that the duration taken for patients to be attended in the hospitals influenced a lot on their compliance/defaulting to anti-TB medication.

### 4.3 Patient factors associated with patient defaulting anti-TB drugs among patients attending Njoro Sub County Hospital-Nakuru Kenya

#### 4.3.1 Relationship with Health Care Provider and Defaulting

Table 4.12

Relationship with health care provider								
			Very good	Good	Somewhat Good	Bad	Very bad	Total
<b>Ever missed anti-TB drugs</b>	<b>YES</b>	Frequency	1	1	3	0	0	5
		% within Ever missed anti-TB drugs	20.0%	20.0%	60.0%	0.0%	0.0%	100%
	<b>NO</b>	Frequency	12	5	2	1	0	20
		% within Ever missed anti-TB drugs	60.0%	25.0%	10.0%	5.0%	0.0%	100%
<b>Total</b>	Frequency		13	6	5	1	0	25
	% within Ever missed anti-TB drugs		52.0%	24.0%	20.0%	4.0%	0.0%	100%

The results indicate that about half of the patients 60% and 25% who adhered well to the TB drugs had a very good relationship respectively with health care providers at the Njoro Sub-County chest clinic. The number was however smaller for those who defaulted with only 20% having very good and a good relationship respectively. This hence indicates that relationship with health care provider played a very major role on adherence. Poor relationship promoted defaulting. Some scholars have found that compliance is good when health care providers are emotionally supportive, give reassurance or respect and treat patients as equal partners (Jin, et al., 2008). Furthermore, results of a study by Gebremariam, et al., 2010 showed that the majority of patients were happy about the way health professionals received and treated them at the health centers. Some participants said that they were encouraged to go for treatment because health professionals received them with a “good face” and encouraged them to finish their treatment.

### 4.3.2 Other Drugs and Defaulting

Other drugs as indicated in Table 4.13.

**Table 4.13**

Are you on other Drugs			Yes	No	Total
<b>Ever missed anti-TB drugs</b>	<b>YES</b>	Frequency	3	2	5
		% within Ever missed anti-TB drugs	60.0%	40.0%	100.0%
	<b>NO</b>	Frequency	4	16	20
		% within Ever missed anti-TB drugs	20%	80%	100.0%
<b>Total</b>	Frequency	7	18	25	
	% within Ever missed anti-TB drugs	28%	72%	100.0%	

The study found that most of TB patients who adhered to their drugs (80%) were not on other drugs as opposed to 40% who missed their drugs. Consequently, 60% of those who missed their drugs were also on other drugs. This therefore, implies that other drugs averagely affected adherence to anti-TB drugs. Other types of drugs commonly administered to some TB patients include; Anti-retroviral (50%), Anti-diabetic drugs (13%), Anti-hypertensive (12%) and others at 25%. In respect to these findings a study conducted by (Gebremariam, et al., 2010) showed that patients attributed pill burden to be one of the major challenges of concomitant treatment: They used expressions such as “becoming a drug bag” and “becoming a pharmacy”.

### 4.3.3 Smoking and Defaulting

Smoking as shown in Table 4.14

**Table 4.14**

#### Influence of Smoking and defaulting to anti-TB drugs

Do you smoke			Yes	No	Total
<b>Ever missed anti-TB drugs</b>	<b>YES</b>	Frequency	1	4	5
		% within Ever missed anti-TB drugs	20.0%	80.0%	100.0%
	<b>NO</b>	Frequency	2	18	20
		% within Ever missed anti-TB drugs	10.0%	90.0%	100.0%
<b>Total</b>	Frequency	3	22	25	
	% within Ever missed anti-TB drugs	12.0%	88.0%	100.0%	

The results show that majority of anti-TB drug defaulters (80%) were not smokers, only 20% were. Consequently, 90% of drug compliant patients were not smokers and 10.0% smoked yet they never defaulted the drugs. Smoking therefore had a very minor influence on defaulters if any.

#### 4.3.4 Medical Cost Incurred and Defaulting

Medical Cost Incurred as indicated in Table 4.15.

**Table 4.15**

Any Medical Cost incurred						
			Yes	No	Not Sure	Total
Ever missed anti-TB drugs	YES	Frequency	1	4	0	5
		% within Ever missed anti-TB drugs	20.0%	80.0%	0.0%	100.0%
	NO	Frequency	3	17	0	20
		% within Ever missed anti-TB drugs	15%	85%	0.0%	100%
Total	Frequency		4	21	0	25
	% within Ever missed anti-TB drugs		16%	84%	0.0%	100%

The findings revealed that majority of patients 84% indicated that they never incurred any medical cost. Majority 80% of those who defaulted never incurred any medical costs similarly to 85% who complied. Cases of medical charges were scanty across those who were interviewed. Hence there is no clear indication on whether charges influenced defaulting.

#### 4.3.5 Chest Clinic Interference with Work Schedule and Defaulting

Interference with work schedule as shown in Table 4.16.

**Table 4.16**

Does chest clinic interfere with work schedule						
			Not at all	A little	A lot	Total
Ever missed anti-TB drugs	YES	Frequency	1	1	3	5
		% within Ever missed anti-TB drugs	20.0%	20%	60%	100.0%
	NO	Frequency	6	2	3	11
		% within Ever	54%	18.9%	27.2%	100.0%

		missed anti-TB drugs				
<b>Total</b>	Frequency		7	3	6	16
	% within Ever missed anti-TB drugs		43.75%	18.75%	37.5%	100%

The findings revealed that majority of those patients who defaulted the drugs 60% found the chest clinic to interfere a lot with their work schedules, 20% cited that it interfered but a little. Consequently, 18.9% of those who complied indicated that the chest clinic had little interference while 54% cited that this did not at all interfere with their work schedule. This hence shows that interference with work schedule influenced defaulting.

#### 4.3.6 Side Effects and Defaulting

Side effects as shown in Table 4.17.

**Table 4.17**

	Frequency	Percent (%)
Peripheral Neuropathy	7	28
Nausea and Vomiting	10	40
Jaundice	3	12
Gastritis	2	8
Diarrhea	3	12
<b>Total</b>	<b>25</b>	<b>100.0</b>

The results indicate that nausea and vomiting was the most experienced side effect by patients at 40% followed by Peripheral Neuropathy (28%), Jaundice and Diarrhea tying at 12% and gastritis (8%). This majorly contributed to defaulting on anti-TB drugs

### 4.3.7 Frequency of Alcohol and Defaulting

Frequency of alcohol intake as shown in Table 4.18.

**Table 4.18**

#### Frequency of Alcohol and adherence to anti-TB Drugs

How frequent do you take alcohol			Daily	Once a Week	Once a month	Occasionally	Total
<b>Ever missed anti-TB drugs</b>	<b>YES</b>	Frequency	2	0	0	0	2
		% within Ever missed anti-TB drugs	100.0%	0.0%	0.0%	0.0%	100.0%
	<b>NO</b>	Frequency	1	0	2	0	3
		% within Ever missed anti-TB drugs	33.3%	0.0%	66.7%	0.0%	100.0%
<b>Total</b>	Frequency		3	0	2	0	5
	% within Ever missed anti-TB drugs		60.0%	0.0%	40.0%	0.0%	100.0%

The results indicate that all of the TB patients taking alcohol on daily basis (100%) missed their TB drugs. 33.3% of patients who took alcohol daily adhered to their TB medication. Hence the frequency of alcohol consumption among TB patients determined greatly their default to anti-TB drugs.

## CHAPTER FIVE: SUMMARY CONCLUSIONS AND RECOMMEDATION

### 5.0 Introduction

This chapter discussed the findings of the study in summary, concludes and recommends measures for action by various stakeholders in public health and TB prevention and cure programmes. Default to TB treatment is a major barrier to optimal care of TB patients, and an important challenge in the national TB control program. Completion of treatment is the necessary condition for the patient's cure and the prevention of multi-resistant TB strains.

### 5.1 Summary of the research findings

The aim of the study was to identify patient factors that influence compliance and default to anti-TB drugs respectively among patients attending Njoro chest clinic in Nakuru County. Questionnaire was used to take data from patients attending Njoro chest clinic while the interview guide helped to explain to patients on the nature and response expected from questions. Data obtained from the questionnaires was analyzed using excel and tables. Analysis was based on the respondents' responses in relation to their adherence or compliance with the drug. The study established the following as the factors contributing to default in anti-TB drugs among patients.

The findings revealed that 50.0% of the patients had missed anti-TB drug within the last five days preceding the date of the interview. This implies that the level of drug default was relatively high. Majority of the patients who defaulted their drugs visited the chest clinic either once or twice a month. Meaning that regular visit to the clinic improved or enhanced perfect adherence may be through

regular remainders of how to take their drugs well. Consequently, the duration taken for patients to be attended at the hospital influenced a lot on their compliance to medication. Cases of medical charges were scanty across; however, there is no clear link on whether charges influenced default. Compliance was highly associated with the level of interference with their work schedules. Majority of patients who defaulted drugs attributed it to conflict with work schedules. Relationship with health care providers also played a very key role on adherence; good relationship improved adherence while bad relationship derailed compliance. Compliance was also highly related with the information held by the patient on the disease, similarly patient counseling also determined adherence. Majority of patients who missed drugs confirmed that indeed this was as a result of the side effects. Being on multiple drugs also influenced default on anti-TB drugs, these meant multiple side effects. Default challenges were higher among alcohol lovers as opposed to non-alcoholics. This was due to alcohol influence that may have resulted into forgetfulness or ignorance. Smoking however, did not significantly influence patients to comply or default the anti-TB drugs.

## 5.2 Conclusions

This study therefore concludes that default to anti TB drugs was still common among TB patients attending Njoro Sub County Hospital.

- i. The main factors that enhance adherence include the level of information held by the patient on the disease, side effects, Alcohol, clinic duration, lack of counseling and frequency of attendance to chest clinic.
- ii. Consequently, the main factors that contributed to defaulting anti TB drugs include alcohol influence, poor relationship with the health care provider, side effects, patients on other drugs and conflict between visiting hours and work schedule.

## 5.3 Recommendations

The study therefore recommends the following action by Njoro Sub County Hospital Stakeholders, the Ministry of Medical Services and the Division of Public Health:

- i. More awareness campaigns should be done for patients to understand more about the disease, the medication process and the importance of regular visits to enhance compliance.
- ii. The time should be adjusted accordingly to accommodate the busy schedules of employees who find it difficult to get to the health facility and health care providers should improve their relationship with TB patients to enhance adherence.

There is also an urgent need for Njoro Sub County Hospital with the help of Nakuru County Government and NACADA to device a programme that would help sensitize TB patients on the dire effects of alcohol abuse in turn this would help reduce the possibility of missing anti TB drugs and defaulting.

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APPENDICES

**Appendix I- Informed Consent Form**

**TITLE: Health care system factors that influence adherence to anti-tuberculosis medication among patients in Njoro sub county health center**

**INVESTIGATOR: Spencer Oyugi**

**PROCEDURES**

**An interviewer administered questionnaire will be used to collect baseline data.**

**RISKS**

**There exists no potential risks**

**BENEFITS**

**No direct benefits will be realized by the participants. However the information collected will contribute to scientific knowledge on management of TB cases in our healthcare settings.**

**PRIVACY AND CONFIDENTIALITY**

**I understand that I am entitled to utmost privacy during all the steps that will be undertaken during this research study. Only authorized research staff will be privy to private information I divulged as a result of this study and such information can only be shared with another third party after my express written consent**

**RIGHT TO REFUSE PARTICIPATION/WITHDRAW**

**I understand that it is within my right to freely to withdraw from this study or any of its procedures at any time that I feel I cannot go on without a feeling of guilt or obligation to anyone.**

**PRIVACY AND CONFIDENTIALITY**

**I understand that I am entitled to utmost privacy during all the steps that will be undertaken during this research study. Only authorized research staff will be privy to private information I divulged as a result of this study and such information can only be shared with another third party after my express written consent**

**SIGNATURE OF PARTICIPANT..... DATE .....**

**SIGNATURE OF STUDY STAFF ..... DATE .....**



## Appendix II-Questionnaire

Questionnaire Unique No. \_\_\_\_\_

### Part A

---

1. Date of interview \_\_\_/\_\_\_/\_\_\_ (dd/mm/yy):
2. Age (in years) \_\_\_\_\_
3. Education level: None [1]      Primary [2]      Secondary [3]      Tertiary [4]
4. Employment: None [1]      Self [2]      Employee [3]
5. If employed does clinic attendance interfere with your work schedule  
    Not at all [1]      A little [2]      A lot [3]      Extremely [3]
6. Marital Status:      Single [1]      Married [2]      Widowed [3]
7. How long does it take you to reach the health facility?  
    Less than 30 mins(1)30min to 1 hour (2)    between1-2 hours (3)    more than 2hours (4)
8. How long does it take for you to be attended to  
    Less than 15mins [1]    15-30mins [2]    more than 30mins [3]
9. How often do you come to the chest clinic?  
    Once a week [1]      Twice in a month [2]    once a month [3]
10. How much do you pay for transport per trip per visit? Ksh.....
11. Do you incur any cost of medication?  
    Yes [1]      No[2]
12. If yes how much per visit? Ksh.....
13. How is the relationship between you and your health care provider?  
    Very good (1)      Good (2)      Somewhat good (3)    Bad (4)    Very Bad (5)
14. Did the health care provider give you any information concerning your illness?  
    Yes (1)      No (2)
15. If yes specify.....  
    .....  
    .....
16. Did the health worker counsel you on drug adherence  
    Yes [1]      No[2]
17. Are drugs always available at the health facility on every visit? Yes(1) No(2)
18. How many pills do you take per day?.....
19. Do you receive any injections?  
    Yes [1]      No [2]
20. Have you ever missed any injections or drugs?  
    Yes [1]      No [2]
21. How many injections or drugs have you missed taking in the last 5 days.....
22. Do you experience any serious side effects after taking your drugs

Yes [1]                      No [2]

23. Have you ever missed taking drugs because of any side effects

Yes [1]                      No [2]

24. If yes which ones.....

25. Are you on any other medication for any other chronic illness?

Yes [1]      No [2]

26. If yes which one

ART [1]      Anti-diabetics [2] Anti-Hypertensive [3]      other [4] (specify).....

27. Do you receive any food support

Yes [1]                      No [2]

28. Do you take alcohol

Yes [1]                      No [2]

29. How frequent

Daily [1]                      Once a week [2]      Once a month [3]                      occasionally [4]

30. Do you smoke

Yes [1]                      No [2]

31. How frequent

Daily [1]                      Once a week [2]      Once a month [3]                      occasionally [4]

### Appendix III- Implementation Schedule

<b>DATE</b>	<b>ACTIVITY</b>
3 <sup>RD</sup> JANUARY TO 31 <sup>ST</sup> JANUARY 2016	PROPOSAL DEVELOPMENT
2 <sup>ND</sup> FEBRUARY TO 29 <sup>TH</sup> FEBRUARY 2016	DATA COLLECTION
1 <sup>ST</sup> MARCH TO MARCH 2016	DATA ANALYSIS
12 <sup>TH</sup> APRIL	PRESENTATION



### Appendix V-Budget

<b>ITEMS</b>	<b>COST</b>
Stationaries	1500
Internet	2000
Transport	1200
Photocopies	1000
miscellaneous	570
Totals	5570