



# Prevalence of Tuberculosis among HIV Sero-Positive Patients Attending HIV Clinic at Kampala International University Teaching Hospital, Bushenyi District.

Okello Andrew

Faculty of Clinical Medicine and Surgery, Kampala International University, Uganda

## ABSTRACT

This study on the prevalence of TB among HIV seropositive was carried out at the HIV CLINIC of Kampala International University Teaching Hospital (KIUTH), Ishaka Bushenyi district. To find out the prevalence of tuberculosis among HIV seropositive patients aged 15 years and above attending the HIV clinic at Kampala International University Teaching Hospital as well as to assess knowledge, attitudes, and perceptions about TB/HIV co-infection among HIV seropositive patients aged 15 years and above attending HIV clinic at Kampala International University Teaching Hospital. A retrospective cross-sectional study design was used to conduct this proposed study. The study targeted all patients attending the KIUTH HIV/TB clinic. A standard structured and semi-structured questionnaire was designed and pre-tested for validity and reliability at Kampala International University Teaching Hospital HIV/Tuberculosis clinic before being used for data collection. Data collection started with the recruitment of qualified research assistants, appropriate training, and orientation of the interviewers before the survey for example when reading the questions. Quantitative methods of data analysis were used in which data was presented in the form of bar graphs and tables before being discussed. The prevalence of TB among HIV seropositive patients attending the HIV clinic at KIUTH stands at 8.06 per 100 participants. The study found that generally, people are aware of the modes of transmission of TB but there is still a need for more awareness. Many patients are still not certain whether TB is curable in HIV patients. Also, most people are not yet aware of whether HIV goes hand in hand with tuberculosis. The prevalence of TB in HIV seropositive attending the HIV clinic at KIUTH is high. Generally, TB is affecting patients of all ages and most patients are still not aware if TB in HIV is curable. Most patients have a perception that all TB patients have HIV.

Health workers in the HIV clinic of KIUTH should teach patients the modes of transmission and prevention of TB. KIUTH also needs to provide easy access to TB screening services to patients. There is a need for financial support by the government for unemployed patients and low-income earners to curb down TB infections.

**Keywords:** Tuberculosis, HIV seropositive, Prevalence, HIV clinic, Kampala International University Teaching Hospital

## INTRODUCTION

World Health Organization (WHO) defined tuberculosis (TB) is an infectious disease of humans and animals caused by a species of *Mycobacterium*, usually *Mycobacterium tuberculosis*, mainly infecting the lungs where it causes tubercles characterized by the expectoration of mucus and sputum, fever, weight loss, and chest pain, and transmitted through inhalation or ingestion of the bacteria [1]. Tuberculosis is the most common cause of infectious disease-related mortality worldwide [2]. *Mycobacteria* such as *Mycobacteria tuberculosis* are aerobic, non-spore-forming, non-motile facultative, curved intracellular rods measuring 0.2-0.5 micrometers by 2-4 micrometers [3]. Because of the ability of *Mycobacterium tuberculosis* to survive and proliferate within the mononuclear phagocytes, which ingest the bacterium, *Mycobacterium tuberculosis* can invade the local lymph nodes and spread to the extra-pulmonary sites causing TB meningitis, TB adenitis, spinal TB, gonadal TB, gastrointestinal TB, etc [3,4]. The risk factors of tuberculosis include alcoholism, diabetes mellitus (DM), Human Immunodeficiency Virus (HIV) infection, age below 5 years, immunosuppressive therapy [5], and smoking [6]. HIV infection increases the risk of rapid TB progression and complicates diagnosis HIV patients are more likely to present with non-typical and extra-pulmonary TB. Despite all this, TB is treatable in HIV-positive individuals [7]. Tuberculosis is the

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leading cause of death among HIV-positive patients [8]. TB occurs in every part of the world with the largest number of cases occurring in Asia at 61%, Africa at 26%, and the six countries named to be greatly affected are India, Indonesia, China, Nigeria, Pakistan, and South Africa [9]. Globally more than 1 in 3 individuals are infected with TB [10]. There were 8.8 million incident cases of TB worldwide in 2010, with 1.1 million deaths from TB among HIV sero-negative persons and an additional 0.35 million deaths from HIV-associated TB. The highest prevalence of TB infection is in Southeast Asia and sub-Saharan with the HIV/AIDS pandemic causing an increase in TB incidence both in Africa and Southeast Asia [11]. In Uganda, the World Health Organization (WHO) estimates of TB mortality, prevalence, and incidence rates in the country have declined from 50, 492 and 624 per 100,000 population in 1990 to 13, 175 and 179 respectively per 100,000 population in 2012 [1]. However, an accurate estimate of TB prevalence or mortality is not available due to weaknesses in surveillance and vital registration limiting the certainty of firm conclusions. In western Uganda, research done randomly among the pastoral and Agro pastoral tribes of Mbarara and Bushenyi found that cattle infected with TB are the ones predisposing humans to tuberculosis [12]. The risk of developing TB is estimated to be between 26 and 31 times greater among those without HIV infection [1]. Globally, 14.8% of HIV patients have TB infection. In 2014, there were 9.6 million new cases of TB of which 1.2 million were among PLHIV. TB remains the most common cause of death in patients with AIDS [13]. Increasing data demonstrates that antiretroviral therapy (ART) is effective in reducing the risk of TB in HIV seropositive persons. ART at a CD4 count of 200-350 microliter compared with waiting until the CD4 count is below 200 cells per microliter reduced the risk of active TB by 50% [14]. It has also been highlighted that healthcare workers are often not aware of the knowledge and beliefs of the communities they serve, which can negatively affect healthcare provision [15]. In-depth knowledge of how the local people understand the interaction between TB and HIV is currently not available for healthcare providers in most parts of Uganda. This study aims to find out the prevalence of tuberculosis as well as to assess knowledge, attitudes, and perceptions about TB/HIV co-infection among HIV seropositive patients aged 15 years and above attending HIV clinic at Kampala International University Teaching Hospital.

## **MATERIALS AND METHODS**

### **Study Design**

A retrospective cross-sectional study design was used to conduct this proposed study.

### **Study Area**

The study took place in Kampala International University Teaching Hospital (KIUTH) HIV/Tuberculosis Clinic - Ishaka- Bushenyi. Bushenyi is in the South-Western part of Uganda, approximately 56 kilometers (35 miles), by road, Western of Mbarara the major town in the region, approximately 290 kilometers by road, South-Western of Kampala, the capital city of the country. The coordinates of Bushenyi town are: 0°32'30.0" S and 30°11'16.0" E; latitude 0.541667, longitude 30.187778 (Wikipedia, 2017). KIUTH is located northeast of Ishaka Town, Bushenyi District along Mbarara-Kasese Road.

### **Selection of Study Population**

The study targeted all patients attending the KIUTH HIV/TB clinic.

### **Inclusion Criteria**

All patients 15 years of age and above diagnosed with HIV attending KIUTH HIV/TB clinic

### **Exclusion Criteria**

All patients below 15 years of age diagnosed with HIV and patients above 15 years of age without HIV attend KIUTH HIV/TB clinic.

### **Sample Size Determination**

The sample size was determined using Krejcie and Morgan's sample size formula for finite population. Therefore about 66 patients were to participate in this exercise but only 62 were considered because of limited time and financial constraints.

### **Sampling Techniques**

The study employed a purposive sampling technique. This is where patients attending the KIUTH HIV/TB clinic answered the questions during the first time of the study. The technique was to give each member of the target population an equal and independent chance of being selected for the study. This ensured that the selected sample was a good representative of the whole population.

### **Data Collection Method**

A standard structured and semi-structured questionnaire was designed and pre-tested for validity and reliability at Kampala International University Teaching Hospital HIV/Tuberculosis clinic before being used for data collection. Respondent bias and researcher bias were checked by comparing data with the one summarized in the literature review, documented in chapter two.

### Proofing and Data Analysis

All data collections were reviewed at two levels before data entry into the research database and upon entry before analysis. The data collection and entry process are planned in such a way that all data collection sheets completed in a day are reviewed and entered on the same day. Data was analyzed using a Microsoft Excel spreadsheet and information was summarized in the form of graphs, tables, and pie-charts to give descriptive statistics as per the theme of the study.

### Quality Control

Quality assurance started with the recruitment of qualified research assistants, appropriate training, and orientation of the interviewers before the survey. Exact answers of the respondents were coded. Pre-testing of the tools shall be done and data management is to be executed professionally. Respondent bias and researcher bias were checked by random selection of eligible patients.

### Ethical Considerations

Patients were included in the study upon giving informed consent for participation. The study was carried out only after approval by the Research Committee School of Allied Health Sciences Kampala International University- Western Campus.

### Limitations to the study

Time was a limiting factor since the researcher has many ongoing events to be executed in the same time frame, eg community placement. There was also a financial challenge as put clearly in the budget.

## RESULTS

**Table 1:** Age distribution of the respondents (n=62)

Age(years)	Frequency	Percentage (%)
15-20	03	4.80
21-25	06	9.70
26-30	08	13.0
31-35	06	9.60
36-40	18	29.0
41-45	03	4.80
46-50	09	14.5
51-55	09	14.5
<b>Total</b>	<b>62</b>	<b>100</b>

**Table 2:** Gender of the respondents (n=62)

Gender	Frequency	Percentage (%)
Male (M)	28	45.2
Female (F)	34	54.8
Total	62	100

**Table 3:** Education level of the respondents (n = 62)

Education level	Frequency	Percentage (%)
No formal education	13	21.0
Primary education	31	50.0
Secondary education	12	19.3
Tertiary & university	06	09.7
Total	62	100

**Table 4:** Occupation of respondents (n = 62)

Occupation	Frequency	Percentage (%)
Peasant farmers	28	45.2%
Business	07	11.3%
Self employed	10	16.1%
Unemployed	06	9.7%
House wife	06	9.7%
Civil servant	05	8.1%

**Table 5:** Religion of the respondents (n=62)

Religion	Frequency	Percentage %
Catholics	27	43.5
Protestants	23	37.2
Muslims	09	14.5
Others	03	04.8
Total	62	100

**Table 6.** Respondents who have and have not tested for Tuberculosis. (n=62)

Participant tested for TB	Frequency	Percentage (%)
Yes	12	19.4
No	50	80.6
Total	62	100

**Table 7.** TB test result of the respondents (n =12)

Test result	Duration	Frequency
TB positive	>12monthago	01
	<6monthago	04
TB negative	Not applicable	07
<b>Total</b>	<b>Not applicable</b>	<b>12</b>

**Table 8.** Showing patients knowledge, attitude and perception on TB/HIV co-infection

Knowledge of mode of transmission of TB	Frequency	Percentage
Sitting near a TB patient	26	42.0
Sharing eating utensils	19	30.6
Air-borne	17	27.4
<b>Total</b>	<b>62</b>	<b>100</b>
<b>TB can be cured</b>		
Yes	30	48.4
No	07	11.3
Not Sure	25	40.3
<b>Total</b>	<b>62</b>	<b>100</b>
Perceptions on TB patients having HIV		
All	15	24.2%
Most	22	35.5%
Not sure	25	40.3%
<b>Total</b>	<b>62</b>	<b>100</b>

## DISCUSSION

Out of the 62 patients who participated in the study, only 12 (19.4%) had tested for tuberculosis and 50(80.6%) had not tested for tuberculosis. This shows a lack of availability and accessibility of TB testing facilities and services similar to [16] findings. During the study, 5 respondents reported that they tested positive for tuberculosis, one tested more than 12 months ago and 4 tested within the last 6 months. According to these findings, the prevalence of TB is therefore 8.06 %. This is in line with a few studies conducted in resource-limited settings in Uganda which showed that the prevalence of TB among people living with HIV ranged between 5.5%-7.9%. [17, 18]. Most of the respondents 26(42.0%) said TB can be acquired through sitting near a patient with TB, followed by shearing eating utensils, 19 (30.6%), and airborne 17(27.4%). The study found that generally, people are aware of the modes of transmission of TB but there is still a need for more awareness. From the data collected and analyzed, thirty respondents (48.4%) said TB can be completely cured, 07 (11.3%) respondents said TB cannot be cured and 25(40.3%) are not yet sure about the cure of TB. This means many people are still not aware that TB can be cured and still need more sensitization. The finding is in line with another one which highlighted that healthcare workers are often not aware of the knowledge and beliefs of the communities they serve, which can negatively affect healthcare provision [15]. There is a lack of information and knowledge about TB/HIV co-treatment, leaving many patients still not certain whether TB is curable in HIV patients. This was evidenced by the following findings; The highest number of respondents 36 out of 62 (58.1%) said they are not sure whether TB can be cured in HIV patients, 07 out of 62 (11.3%) said TB not can be cured in HIV patients and 19 out of 62 (30.6%) of the respondents said TB can be cured among HIV patients. This shows that most patients still lack reliable sources of information on TB treatment. The study is in line with another study in Tanzania [19], whose study focused on group discussions to assess knowledge attitudes, and practices around TB and treatment. The study found low knowledge of TB, frequent self-treatment, and friends and family being the main source of information about TB [19]. The study found that most of the respondents 28(45.2%) know that having TB means having HIV, 18 respondents (29.0%) said having TB does not mean having HIV, and 16(25.8%) are not sure. This study showed that most people are not yet aware of whether HIV goes hand in hand with tuberculosis. The lack of awareness is still due to limited easy access to information about TB/HIV co-infection.

## CONCLUSION

From this study, it was deduced that the prevalence of TB in HIV seropositives attending the HIV clinic at KIUTH has increased. Generally, TB affects patients of all age groups. The illiterate and low-income earners are the most affected by tuberculosis. Patients still lack access to TB screening facilities and services. Most patients are still not aware if TB in HIV is curable. There are still co-treatment challenges in TB/HIV patients. TB/HIV patients still have challenges accessing their health services.

## RECOMMENDATIONS

Health workers in the HIV clinic of KIUTH should teach patients the modes of transmission and prevention of TB KIUTH also needs to provide easy access to TB screening services to patients. There is a need for financial support by the government to the unemployed patients and low-income earners to curve down TB infections.

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