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Burden and Consequences of Tuberculosis among HIV-infected Individuals: Insights from the Itojo Hospital HIV Clinic in Ntungamo District

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ABSTRACT

This study aimed to assess the prevalence and impact of Tuberculosis (TB) among HIV-infected patients receiving care at the Itojo Hospital HIV Clinic in Ntungamo District. Utilizing a cross-sectional research design, data from 252 respondents, collected through questionnaires and interviews, were analyzed using Excel and SPSS. The findings revealed a 7.14% prevalence of TB among HIV-infected clients at the hospital, with TB identified as a significant contributor to mortality in this population. Health education initiatives and the provision of IPT (anti-TB drug) were recognized as effective measures in TB control. Additionally, the hospital's utilization of a GeneXpert machine for TB testing was highlighted as instrumental in identifying and segregating TB patients from TB-free individuals. Recommendations include intensifying health education efforts to mitigate TB prevalence and associated risks among HIV patients

Keywords: Tuberculosis, HIV, Patients, Anti-TB, ART.

INTRODUCTION

HIV/AIDS is a continuing health problem globally that causes considerably high morbidity and mortality, especially in resource-limited countries. It has so far caused more than 36 million deaths since its discovery. As of 2015, there were about 37 million people who were living with HIV/AIDS [1-3]. Sub-Saharan Africa (SSA) is the most struck region of the world [4, 5]. HIV infects CD4-positive cells as its host cells which it replicates causing destruction and reduction of the number and quality of functional immune cells. With time, the body fails to control the viral replication, and immune paresis sets in, being marked by low CD4 counts with increased morbidity and mortality from opportunistic infections, Tuberculosis being the most common opportunistic infection at HIV diagnosis [6, 7]. TB/HIV is the most common co-infection which still carries high mortality and morbidity worldwide [8, 9]. The 2016 WHO report indicates that, in 2015, there were 10.4 million new TB cases worldwide with 11% of these cases being HIV co-infected. Additionally, there were 1.8 million deaths worldwide with 0.4 million occurring among HIV-positive patients [10]. Tuberculosis occurs as the first manifestation of HIV/AIDS in more than 50% of HIV-positive patients and deaths that are linked to TB are significantly high, especially in sub-Saharan Africa. The major high-risk groups included: heterosexually promiscuous, intravenous drug abusers and blood donors [11, 12]. Tuberculosis often appears before other opportunistic infections occur in persons infected with HIV. In African developing countries, TB is the most common opportunistic infection and a leading killer of people living with HIV/AIDS (PLWHA). The risk of developing tuberculosis (TB) is

estimated to be between 26 and 31 times greater in people living with HIV (PLHIV) than among those without HIV infection [13, 14]. In 2013, there were 9 million new cases of TB, of which 1.1 million were among people living with HIV in the world [15]. HIV fuels the TB epidemic in several ways. HIV promotes the progression of active TB disease, both in people with recently acquired TB infection and with latent M. tuberculosis infection. HIV is the most powerful risk factor for the reactivation of latent tuberculosis infection to active disease. HIV-infected persons are more susceptible to becoming infected with TB when exposed to M. tuberculosis. HIV increases the rate of recurrent TB disease, which may be due to either endogenous reactivation (true relapse) or exogenous re-infection [16, 17]. To achieve an AIDS-free generation, the UNAIDS has set an ambitious target code-named90-90-90, which aims to ensure that 90% of all people living with HIV will know their status, 90% of all people diagnosed will receive sustained antiretroviral therapy (ART), and 90% of all people receiving ART will have viral suppression, all by 2020 [18]. To achieve this target, countries will need to review the current programs to identify the potential barriers that might hinder the achievement of these goals. In Uganda, a country historically hit hard by the epidemic, progress has been made but more is left to be done to achieve these UNAIDS targets. The adult HIV prevalence is still high at 6.2% in the general population, based on the 2017 national serosurvey [18]. The Uganda National TB and AIDS Control Programs work together to implement a set of collaborative TB/HIV activities to reduce the burden of TB in PLHV and reduce the burden of HIV in patients with presumptive and diagnosed TB. The Uganda MOH recommends TB and HIV services be provided at a single facility at the same time and location(one-stop-shop service). A patient receives all the services they require during one consultation. It includes a TB clinic providing HIV treatment and an HIV clinic providing TB treatment [19]. Despite the above effort, tuberculosis remains a major public health problem in Uganda with an annual incidence of 330 cases of all forms and 136 new smear-positive cases per 100,000 people per year. The expected caseload per year is 102,000 [20]. Uganda is one of the few high TB burden countries where TB figures have not improved in recent years, with an estimated TB incidence in 2015 of 552 cases per 100000 people [10]. With 58% of all notified TB cases in the world being HIV-positive, Uganda also has one of the highest TB/HIV co-infection rates in Africa. However, the Ministry of Health and other private research organizations in Uganda have not put much emphasis on what they have put on HIV/AIDS on it as in establishing its prevalence in different parts of the country, its impact, and how it can be managed. If this is not done fast, the spread of TB among HIV-infected patients will not stop and more will continue to die due to TB. Therefore, this study was conducted in Itojo Hospital, Ntugamo District to help the policymakers in filling this gap. The purpose of the study was to establish the prevalence and impact of Tuberculosis in HIV- infected patients in the Ntugamo district; using a case study of the HIV clinic at Itojo Hospital.

METHODOLOGY

Study design

A cross-sectional study design was used to establish the prevalence and impact of Tuberculosis in HIV-infected patients in Ntugamo district. The Cross-sectional study design was used because it enables a researcher to collect data at a given period as reflected by the general situation in the study area.

Study population

The target population was comprised of 692 clients' active HIV-infected patients (HMIS 106 report, 2018). The researcher also involved all 4 health workers in the HIV clinic of Itojo Hospital who will be the key informants on the impact and Prevention of TB.

Sample size determination

A sample refers to the proportion of the population. The researcher used Solven's

(1960) formula of sampling which states as;

$n=N/ (1+N (e^2))$

Where n= sample size N= population e=standard error

Therefore, $n= 696/ (1+699(0.05^2))$

n=254 in this case therefore; the researcher studied a sample of 254 participants

Table 1: Distribution of the respondents

Category	Frequency	Sampling technique
HIV clients	252	Simple random sampling
Health workers	2	Purposive sampling
Total	**254**	

Sources of data

The researcher collected both secondary data and primary data. Secondary data was collected to find out the prevalence of TB-HIV co-infection from the registers, and primary data was collected from all the participants.

Sampling technique

The researcher used simple random sampling to select the study respondents. Simple random sampling provides an equal and unsystematic chance of selection of both variables. Simple random sampling helped the researcher balance the representation of the demographics of these respondents to get unbiased data.

Data collection tools

The researcher used a questionnaire, an interview guide and an observation checklist to collectdata. Health workers in the study area were given questionnaires to fill out. The questionnaires included the questions in an attempt to answer objectives two and three of the study. An interview guide was used to collect information from the HIV clients who participated in the study. This was used because it is fast and most of these clients do not know how to read and write. An observation checklist was used to collect secondary data that guided the researcher inanalyzing the prevalence of TB in HIV-infected clients at Itojo Hospital.

Data analysis

After coding, data was analyzed using Excel to generate graphs and frequency tables that aided the researcher in the discussion of the findings and generating conclusions.

Ethical Consideration

The researcher explained the essence of the study to the participants to create a rapport and trust from them; those who were willing to participate in the study would sign the consent form. The responses from the respondents were not shared among other participants not included in the study. This ensured the confidentiality of their opinions. All respondents were treated equally and with utmost respect. No respondent was discriminated against and victimized using the information obtained.

RESULTS

Table 2: the table showing the descriptive statistics of the demographic information

Characteristic	Frequency	Percentage, %
Sex		
Male	103	41
Female	149	59
Age Group		
Less than 20 years	139	55
20-30 years	47	19
31-40 years	42	17
Above 40 years	24	9
Marital Status		
Single	48	19
Married	107	42
Separated	66	26
Widow/er	33	13
Level of Education		
None	76	30
Certificate	134	53
Diploma	25	10
Bachelors	15	6
Postgraduate	3	1

Source: Primary data, 2019

In this study; most of the study respondents were female- 59% and only 41% of the respondents were males.
55% of the respondents were less than 20 years of age; 19% were in the age group of 20-30 years;17% were in the age group of 31-40 years and 9% were above 40 years. 19% of the study respondents were single; 42% were married; 13% were widows/ers and finally26% had separated. On the level of education, 53% were of certificate level; 30% had no education qualification; 10% were of diploma level; 6% were of bachelors' level and only 1% was of post graduate level.

Table 3: The Prevalence of TB in HIV-infected clients by sex at Itojo Hospital

		TB status				Total
		Not reactive (Negative)		Reactive (positive)		
		Frequency	%	Frequency	%	
HIV patients	Male	93	41	10	37	103
	Female	132	59	17	63	149
Total		**225**	**100**	**27**	**100**	**252**

Source: Primary data, 2019

The table above shows the preference for TB among HIV-infected clients at Itojo Hospital. From the table above, of the 27 respondents who had reactive (positive results); the Majority 63% - [17]) were female and only 37% - [10] were male.

Table 4: The Prevalence of TB in HIV-infected clients at Itojo Hospital.

TB status	Frequency	Percentage
Negative	234	92.86
Positive	18	7.14
Total	**252**	**100.00**

Source: Primary data, 2019

The table above shows that the prevalence of TB among HIV clients at Itojo Hospital is 7.14%.

Prevention of TB among the HIV-Infected Clients

Table 5: Patients' responses to TB prevention

Response	Frequency	Percentage
Attending health education on TB	164	65
Taking the full dose of Anti TB drugs	204	81
Seeking medication when I get cough and TB signs	252	100
Separate from the suspected TB Patients	134	53

Source: Primary data, 2019

From the table, all the clients responded that they seek medication whenever they get a cough or any signs of TB; 81% responded that they had taken the full dose of Anti-TB drugs (IPT); 65% of the clients responded that they attend health education on TB to know how to control TB; and 53% responded that they separate themselves from suspected TB patients.

Responses from health workers

The TB clinic in charge of Itojo Hospital responded "I always give health talks on TB to all the HIV clients, as the clinic we give IPT drugs for six months to all our HIV clients; we put on face masks when handling TB clients; we widely open all the windows for proper aeration; we have a separate patient's room for TB suspects and we recommend Gene expert for all suspects" Primary data, 2019. The counselor TB clinic at Itojo Hospital responded "We counsel all the HIV clients to take well their drugs including anti-TB drugs; we give IPT drugs; we have all the TB testing machines if there is any suspect; we counsel clients not to share utensils most especially cups with TB suspects.

Table 6: The impact of TB among HIV-infected clients at Itojo Hospital.

Response	Frequency	Percentage
Negative	252	100
Positive	0	0
None	0	0
Total	**252**	**100**

Source: Primary data, 2019

The findings in the table above show that all of the participants (100%) responded that TB hurts HIV-infected clients.

DISCUSSION

On the first objective which was to establish the prevalence of TB among HIV-infected patients at Itojo Hospital, the researcher established that the prevalence of TB among HIV- infected clients at Itojo Hospital was 7.14% which was almost equal to the national prevalence which is 7.4% and less than the worldwide prevalence which was at 11% [21]. On the second objective which was to find out the impact of TB among HIV-infected patients at Itojo Hospital; the study found that TB hurt the health of HIV-infected clients as the health workers further explained that TB was one of the leading causes of death among the HIV-infected clients. This corresponds with WHO [22] which stated that Tuberculosis (TB) remains an important public health concern and a leading cause of disease and death worldwide. Mwinga et al. [23] added that people living with HIV (PLHIV) are at a higher risk of developing active TB, which is the main cause of death among this population, accounting for 26% of AIDS-related deaths. The third objective was to find out the prevention of TB among HIV-infected patients at Itojo Hospital; the study found out that the patients sought medication whenever they got a cough and any signs of TB; and they took the full dose of Anti-TB drugs (IPT); in conjunction with attending health educationon TB to know how to control TB; and they separated themselves from suspected TB patients. This finding is in tandem with previous authors' findings on perceptions of community members on tuberculosis and its effect on health-seeking behavior in Nigeria and Uganda [24-26].

CONCLUSION

The prevalence of TB among HIV- infected clients at Itojo Hospital was at 7.14%. The findings suggested that TB is still a common problem among patients receiving ART and TB was identified to be one of the leading causes of death among HIV patients. A timely health education on the control of TB could prevent TB; the hospital also had IPT (anti-TB drug) which helped the clients control TB; Itojo Hospital had a Gene expert machine for testing TB suspects as one way of identifying TB patients and isolating them from the TB free clients.

Recommendation

Based on the study findings, the researcher recommended that health workers should put more effort into the health education of the clients to bring down the prevalence of TB with its associated risks. The researcher recommended that IPT should be availed in all facilities for easy access of all HIV-positive clients to enhance its uptake and reduce the prevalence of TB. The researcher also recommended that more counseling sessions on taking anti-TB should be extended to all HIV-infected patients and conducted as one of the ways to give themmore knowledge on TB and its control thus reducing the mortality rate of HIV-infected clients.

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