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Acceptability of Voluntary Counselling and Testing (VCT) Among Tuberculosis (TB) Patients in Ghana

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Abstract

Patients should first be counselled and tested for HIV to benefit from available care and treatment options. The aim of this paper was to find out the level of acceptance of HIV testing among patients who visit the Chest Diseases Clinic of the Korle-Bu Teaching Hospital, Ghana. Information about all adult tuberculosis patients who attended the clinic between January and December 2019 in which patients' socio-demographic information and tuberculosis treatment history were taken from the TB register, patients who showed initial willingness were referred to a VCT counsellor for HIV counselling before testing was done. Rapid test methods were used, and the results were disclosed. The logistic regression method was used to assess the factors associated with HIV co-infection, willingness, and acceptability. 250 tuberculosis (TB) patients who were among the total of 485 gave their consent and willingly participated in this study. Their median age was 30 years (range, 13–50+), and 56.8% of them were females. 29 patients had tested previously, including 29 HIV positive. 66.0% (165) were willing to be tested.

Keywords*: Acceptability, HIV, Tuberculosis, Patients, Voluntary counselling.*

Introduction

HIV co-infection with TB increases morbidity and mortality and worsens prognosis considerably [1]. Therefore, all TB patients need to be given an opportunity to do voluntary counseling and Testing (VCT) on the first visit to a health facility [2]. Willingness on the part of patients to undergo VCT helps in early and prompt diagnosis and subsequent treatment of the disease [3, 4].

Tuberculosis infection predisposes the patient to HIV and vice-versa due to weakened immunity. There has been an increase of tuberculosis patients being diagnosed with HIV over the years in Ghana. The world health Organization's recommendations are to ensure that all TB patients undergo VCT and for all TB/HIV co-infection to be started on antiretrovirals as soon as possible [5].

Individual patient reservations and socio-cultural norms have contributed to stigma; hence, patients' willingness to accept the process becomes a hinderance to effectively stemming the tide. This study sought to investigate the extent to which TB patients who attended the Chest Diseases Unit of the Korle Bu Teaching Hospital accepted to do the VC.

Methods

Chest Diseases Clinic of the Korle Bu Teaching Hospital (KBTH) has a catchment population of approximately around 1500-2500

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people. This public hospital is the premier hospital in Ghana and the third largest in Africa. In 2005, KBTH initiated the DOTs program for a patient with tuberculosis. Besides the DOTs, the hospital offered VCT services for TB patients. The diagnosis of pulmonary and extra-pulmonary tuberculosis is made using a combination of factors.

Study Design

We conducted a cross-sectional study with a retrospective analysis of data. Study Population and Participants.

The source population for the study encompassed all of the TB patients attending the Chest Diseases Clinic. All patients registered on the Clinics TB registry from 1st January 2019 to 31st December 2019.

Inclusion Criteria

TB patients whose records contain information, at minimum, regarding HIV test acceptance and the test result and patients aged 13 years or above. Patients who were 13 years and abo were selected for the study.

Exclusion Criteria

All patients below the age of 13 years were excluded.

Measurements

The dependent variable was HIV-positive status. The independent variables were patient age, sex, occupation, religion, educational level, and marital status. The type of TB, medication for TB treatment, extra pulmonary site, GeneXpert, Smear test, source of support and HIV testing result. All of the variables in the TB registry were completely entered. The following operational definitions were used in this study:

Willingness to accept the test is defined as the total number of individuals tested for HIV among the number of TB-diagnosed patients who were offered the test. TB patients were defined as all patients whose diagnostic criteria met the ICD 10 A15.0 (tuberculosis).

Data Collection Instruments Techniques

The study was conducted using secondary data from all patients in the TB patient registry at the Clinic between 1st January 2019 to 31st December 2019. Data were extracted from the TB registry of the unit using a structured data sheet that was specifically designed for this study. Data extraction was performed by a research officer working in the TB clinic. Stringent measures were taken measures were taken to ensure that data was complete and consistent. The collected data were also checked during analysis, through observation of the entered data, and by analyzing simple frequencies for missing variables. The available secondary data were reviewed and corrected.

Statistical Analysis

The data were edited, reviewed, and entered into the MS Excel computer program and then exported to SPSS, version 23.0. Descriptive statistical methods using frequency tables were used to summarize and analyze the data. The logistic Regression method was used to assess potential factors associated with acceptance of HIV testing. Other factors such as age, gender, religion, occupation, marital status, education, employment status, source of support, and funding as possible predictors were also assessed. These variables were selected based on a review of the literature and on our hypothesis. The results have been presented as Odds Ratios (OR) at a 95% confidence interval (95% CI).

Socio-demographic Characteristics of the Participants

Among the 485 patients recorded on the TB registry, the required variables for this study were completed for 250 patients with tuberculosis. HIV testing and counselling were offered to all patients. Of the total sample size of 250, the majority of the respondents 34%, were between 30-39years, and 20.0% were 50 years and above.56.8% (142) of the study participants were female. Among the study participants,

58.4% (146) were found to be single, while 27.6% (69) were married. About 44.8% (112) of the respondent had basic education, 41.2% (103) had secondary education, 2.4% (6) had tertiary education, whiles had no education at all. Among the study subjects identified, they were either unemployed, self-employed, employed and students, respectively. Regarding religion, 60.8% (152) of them were Christian, followed by 34.4% (86) being Muslim. About 83.2% (208) of the respondent were referred. More than half of the participants were diagnosed of pulmonary tuberculosis (PTB) 55.6% (139). for Extra Pulmonary site, 22.4% (56) of them reported with disseminated Koch's. About 88.0% (198) of the patient's chest x-ray was suggestive. A significant number of the patients did not do the GeneXpert and Smear test, 22.8% (57) being positive and 25.6% (64) being negative, respectively.

Almost all, 100% (250) of them were on ISONIAZID (H) 75mg, RIFAPICIN(R)150mg, Pyrazinamide (Z) 400mg+Ethambutol (E)275mg medications for treating pulmonary tuberculosis (PTB), and extra-pulmonary tuberculosis (EPTB).69.2% (173) of the patients had health insurance. The results also show that 82.4% (206) of the patients never smoked, with 4.4% (11) unknown, while 64.4% (161) of the patient never took alcohol with 4.8% (12) unknowns. The study results revealed that 84.4% (211) of them received support from family. The results from the selected registered patients can be found in (Table 1) below.

Table 1. Socio-demographic Characteristics of TB Patient

Variables	**N=250**
Sex	
Male	43.2% (108)
Female	56.8% (142)
Age	
13 – 19	6.4% (16)
20 – 29	7.2% (18)
30 – 39	34.0% (85)
40 – 49	32.4% (81)
50 +	20.0% (50)
Religion	
Christian	60.8% (152)
Muslim	33.6% (84)
Free Thinker	4.8% (12)
Others (traditionalists)	0.8% (2)
Education	
Basic	44.8% (112)
Secondary	41.2% (103)
Tertiary	2.4% (6)
No education	11.6% (29)
Marital status	
Married	27.6% (69)
Single	58.4% (146)
Divorced	10.0% (25)
Separated	4.0% (10)
Occupation	

Employed	23.6% (59)
Unemployed	32.0% (80)
Self Employed	37.2% (93)
Student	7.2% (18)
Source of VCT	
Referral	83.2% (208)
Walk in	16.8% (42)
Chest Xray	
Suggestive	79.2% (198)
Not Suggestive	4.0% (10)
Not Done	16.8% (42)
Gene Xpert	
Positive	22.8% (57)
Negative	25.6% (64)
MTB Not Detected	16.8% (42)
Not Done	34.8% (87)
Source of support	
Family	84.0% (211)
Self	15.6% (39)
Source of Funding	
NHIS	69.2% (173)
Self	30.8% (77)
Willingness to take VCT	
Yes	66.0% (165)
No	34.0% (85)
HIV Coinfection	
Yes	36.0% (90)
No	64.0% (160)

HIV Diagnosis and Treatment

Of 250 patients, 8.4% (29) were previously tested for HIV and were confirmed to be positive (10 females and 11 males) from the fever's unit. All the HIV-positive patients were registered with the chest diseases unit for clinical follow-up. The results showed that 37.2% were HIV1, 9.0%, were HIV2 and 1.6% were HIV1 & 2.

Eighty-nine percent of patients receiving the first line medications made up of TDF (TENOFOVIR) 300mg + 3TC (Lamivudine) 300mg + EFV (Efavirenz) 600mg and 11.1% (11/99) patients receiving either first- or second-line ART medications.

Willingness to do Voluntary Counselling and Testing (VCT)

Of the 250 patients who were counselled and tested, 66.0% (165) were willing to be counselled and tested. 34.0% (85) declined. Above 36.0% (90) were HIV coinfected.

Logistic regression was used to assessed the effect of factors on the willingness of Tb patients to voluntarily test for HIV. Sex, age, religion, marital status, employment status, source of support, and funding source were not significant. However, educational level was the only significant factor associated with the willingness (Table 3). Those with basic education had a 50%

decreased in odds of voluntarily testing for HIV compared with those with no education. Comparing no education to secondary and tertiary level patients, there was no significant difference.

TB / HIV Co-Infection

Out of the 250 patients, HIV co-infection was 36.0% (90), and those with only Tb were 64.0% (160). In 2017, A baseline study of HIV among TB patients conducted by CCM Ghana revealed a co-infection prevalence of 14.7%, and HIV prevalence among TB patients ranged from 33.4% in the Eastern Region to 9.4% in the Upper East. The report also showed a proportion of TB patients tested for HIV rose from 17% during the first year of the introduction of TB/HIV activities to 77.8% in 2012 [6].

HIV co-infection was assessed as an outcome by using logistic regression to determine any significance between co-infection and the other factors. Sex, age, religion, marital status, employment status, educational level, source of support, and funding source were not significant.

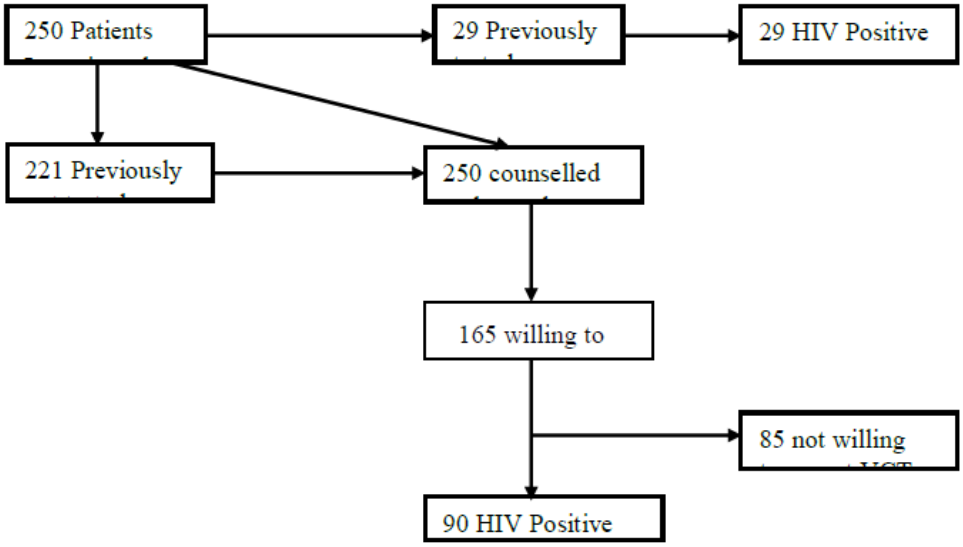

Figure 1. Acceptability of HIV VCT at the Counselling and Testing Process, Chest Diseases Unit, 2019

Table 2. Logistic Regression Analysis of Odds Ratio (OR) for HIV Coinfection in with Regard to Potential Predictors, (n = 250)

Characteristics	OR	95% C. I	P-value
Sex			
Male vs Female	0.9	(0.55 - 1.61)	0.822
Age			
13 - 19 vs 50+	0.5	(0.11 - 2.15)	0.336
20 - 29 vs 50+	0.5	(0.17 -1.70)	0.290
30 - 39 vs 50+	0.9	(0.28 - 2.75)	0.829
40 -49 vs 50+	0.6	(0.17 - 1.90)	0.359
Religion			
Christian vs Free thinker	1.4	(0.81 -2.51)	0.217
Muslim vs Free thinker	1.2	(0.33 - 4.37)	0.779
Education level			

Basic vs No education	1.3	(0.70 - 2.24)	0.445
Secondary vs No education	0.0		0.999
Tertiary vs No education	1.8	(0.73 -4.26)	0.205
Marital Status			
Married vs Separated	1.5	(0.80 - 2.86)	0.202
Single vs Separated	1.4	(0.52 -3.93)	0.483
Divorced vs Separated	0.9	(0.18 -4.01)	0.846
Employment Status			
Employed vs Student	0.8	(0.36 - 1.60)	0.490
Unemployed vs Student	0.7	(0.36 - 1.47)	0.370
Self-employed vs Student	0.7	(0.21 - 2.17)	0.518
Source of support			
Family vs Self	0.9	(0.41 - 1.89)	0.745
Source of Funding			
NHIS vs Self	1.2	(0.68 - 2.16)	0.518

Table 3. Logistic Regression Analysis of Odds Ratio (OR), for Willingness to Accept VCT in Relation to Potential Predictors, (n = 250)

Characteristics	**OR**	**95% C. I**	**P-value**
Sex			
Male vs Female	0.9	(0.48 - 1.50)	0.577
Age			
13 - 19 vs 50+	0.4	(0.07 - 1.90)	0.336
20 - 29 vs 50+	0.4	(0.09 -1.48)	0.159
30 - 39 vs 50+	0.5	(0.12 - 2.01)	0.318
40 -49 vs 50+	0.7	(0.15 - 2.86)	0.573
Religion			
Christian vs Free thinker	0.7	(0.41 -1.30)	0.286
Muslim vs Free thinker	4.4	(0.51 - 37.59)	0.177
Education level			
Basic vs No education	0.5	(0.27 - 0.93)	0.027
Secondary vs No education	0.2	(0.3 - 1.17)	0.073
Tertiary vs No education	1.3	(0.48 - 3.62)	0.591
Marital Status			
Married vs Separated	1.8	(0.98 - 3.49)	0.059
Single vs Separated	1.7	(0.61 - 4.92)	0.304
Divorced vs Separated	2.8	(0.48 - 15.80)	0.253
Employment Status			
Employed vs Student	1	(0.46 - 2.06)	0.939
Unemployed vs Student	1.8	(0.84 - 3.78)	0.132
Self-employed vs Student	1.5	(0.44 - 5.24)	0.507
Source of support			
Family vs Self	1.6	(0.68 - 3.76)	0.279
Source of Funding			
NHIS vs Self	0.9	(0.50 - 1.70)	0.785

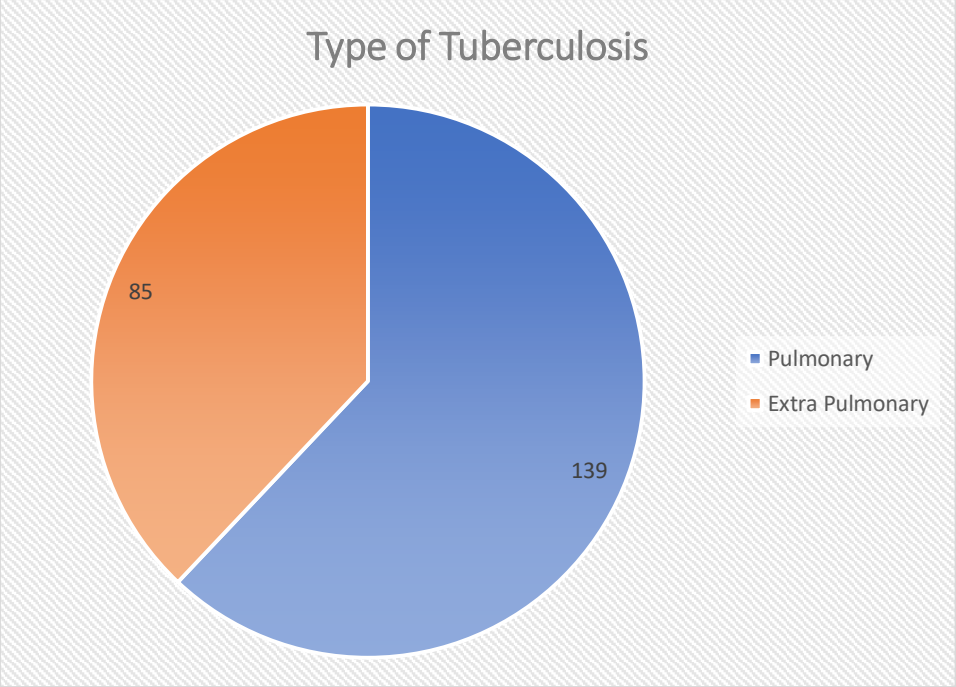

Figure 2. Type of Tuberculosis among Participants

The pie chart above (Figure 2) shows the number of patients and type of tuberculosis recorded. 62.1% (139) recorded Pulmonary TB whiles 37.9% (85) recorded Extra Pulmonary TB.

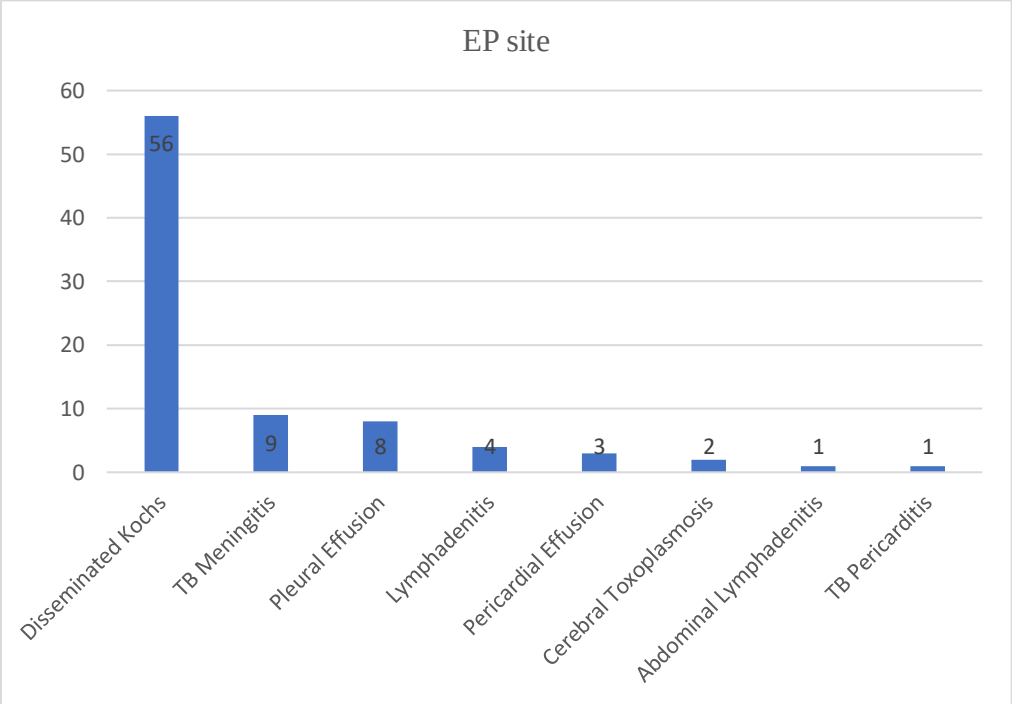

Figure 3. EP site of Participants

This bar chart (Figure 3) also illustrates the various site of EP of the participants. Disseminated kochs represent a total of 66.7% (59) participants out of the 99 that were recorded.

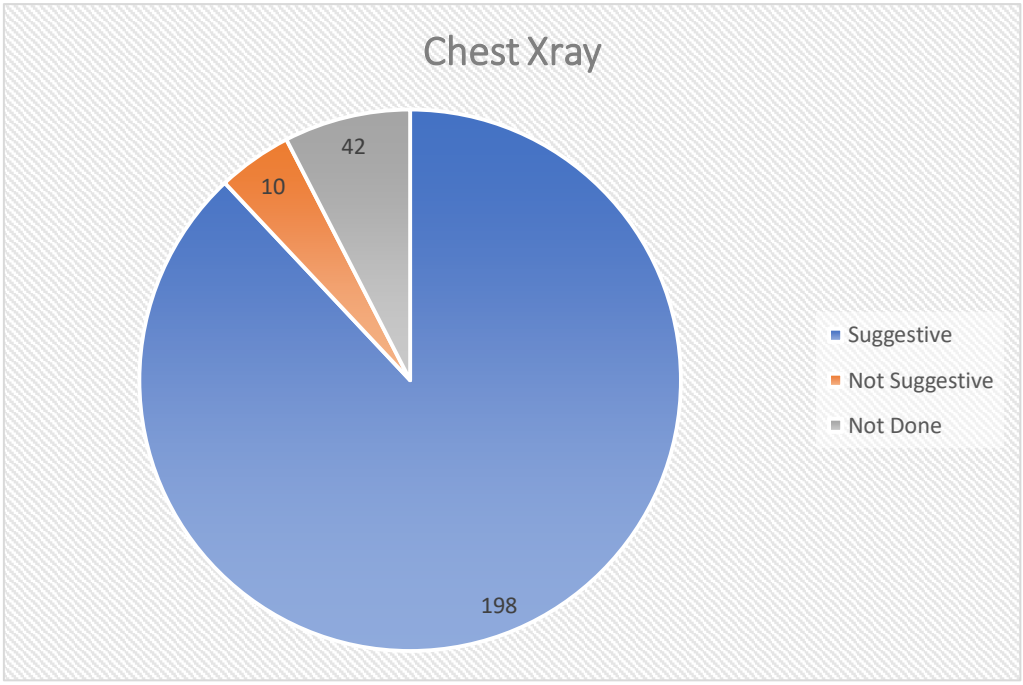

Figure 4. Chest Xray of Participants

This pie chart (Figure 4) shows the number of patients that were able to have their chest Xray done. The majority, 79.2% (198) of them had Suggestive, while 16.8% (42) were not suggestive, and 4.0% (10) done.

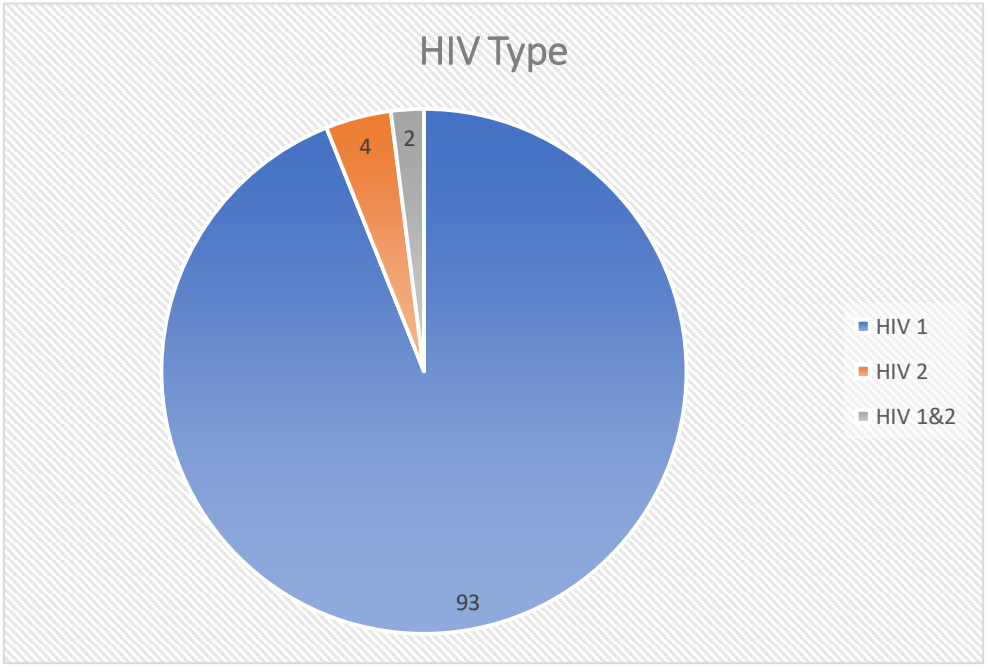

Figure 5. HIV Type among Participants

In this pie, (Figure 5) HIV 1 recorded the highest number, 93.9% (93) of the total of 99 patients. HIV 2 and HIV 1 & 2 saw only 4.0% and 2.1% participants.

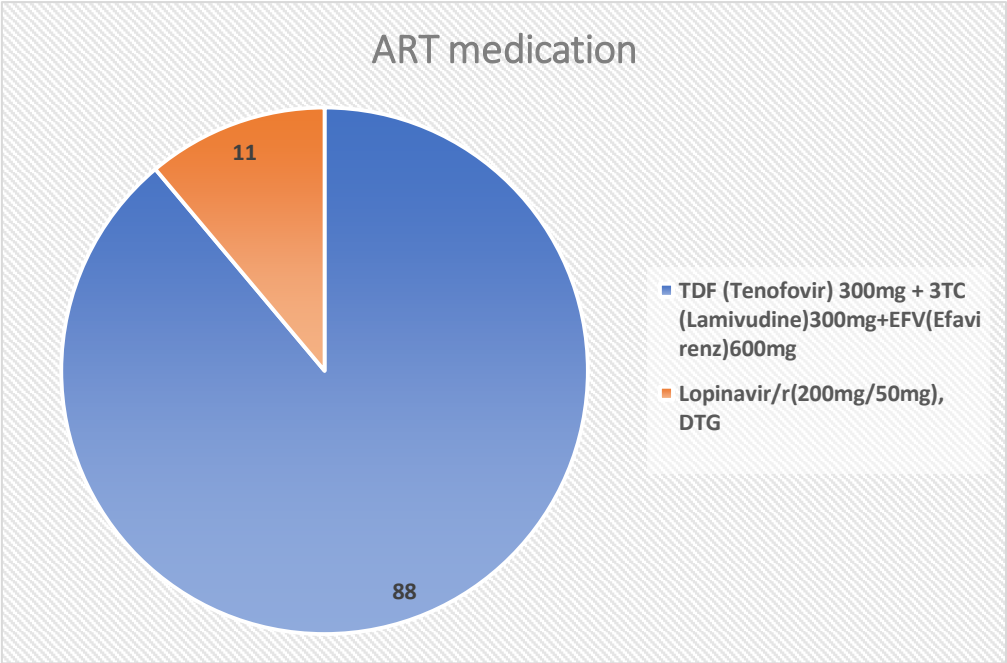

Figure 6. ART Medication Distribution

In the above pie chart, (Figure 6) 88.9% (88) out of the 99 participants that were put on drugs were taken TDF (Tenofovir) 300mg + 3Tc (Lamivudine) 300mg + EFV (Efavirenz) 600mg as against 11.1% (11) for Lopinavir/r(200mg/50mg), DTG.

Results and Discussions

In this study, it is encouraging to note that the most important variables in the TB registry were properly entered for almost all of the TB patients (250/485) at the Chest Diseases Unit of the Hospital. The results showed that more female patients were registered as TB cases. A quarter of the patients were between the age range of 30-39 years. Almost half of the study participants were female and single. Many of the respondents had basic education and were unemployed. The results showed most of them to be Christians followed by Muslims, and most were referred from other clinics and hospitals. More than half of the participants were diagnosed with pulmonary tuberculosis and disseminated Kochs as extra-pulmonary TB sites. More than a quarter of the patient's chest x-ray was suggestive of TB. Almost all of the patients were on antikocks of categories I and III, namely; ISONIAZID (H) 75mg, RIFAPICIN(R)150mg, Pyrazinamide (Z)400mg+Ethambutol (E)275mg medications for the treatment of both pulmonary tuberculosis (PTB) and extra-pulmonary tuberculosis (EPTB). 69.2% (173) patients were insured, while 83.6% (209) of patients (received support from family members. All the patients willingly accepted to undertake the VCT and were all offered HIV counseling and testing services. Among these, the study revealed that HIV counseling and testing acceptance were universal, in which 250 out of 250 patients willingly accepted and were tested for HIV. A similar study was conducted in 2010 [7], which evaluated 123 TB and HIV co-infected patients with almost a hundred percent (100%) acceptance rate [7]. Our study revealed a rapid increase in the number of people offering to undertake VCT. Another study conducted in Kampala city in 2010 of 112(8) patients resulted in 55% (61) acceptability HIV testing even though the overall acceptance for VCT was 40% [8]. It was also realized that (36.0%) of our patients in the Chest clinic were HIV co-infected. We found out that those with no education are more likely to do voluntary HIV testing compared to those with education. This

result in comparison is higher than the findings of a similar study conducted in 2016 in South Ethiopia, revealing that the percentage of HIV-positive patients among TB patients was 21.2% [9]. In this study, the HIV/TB co-infection rate was found to be 36.0% and was higher among females than males. In addition, the HIV prevalence was also found to be higher among females than males [9] In a randomized control study of Efficacy of voluntary HIV-1 counseling and testing among individuals and couples in 2000 involving patients from Kenya, Tanzania, and Trinidad also showed similar findings [10].

Limitations of the Study

The limitations of the study were that some secondary data variables from the study unit were incomplete, including the recording of the information in the TB registry, which made it difficult to obtain the values of some important variables. Since we did not assess reasons related to co-morbidity, lab test, infrastructure or personnel-related factors.

Conclusion

The acceptance rate (100%) for HIV counseling and testing services among TB patients was very high. The prevalence of HIV among Tb patients was very high, and the infection was more prevalent among, females, young people and pulmonary TB patients. Patient's age, marital status and religion were major factors affecting willingness to accept VCT. Concerns about confidentiality, convenient timingof the service and place of the testing site have been described as determinants of acceptability. This study has a policy implication in that the study area had a very high offering and acceptance rates and can be used as a model that can be expanded to other TB sites.

Recommendations

1. Further studies on co-morbidity, lab tests, infrastructure, and personnel-related factors using a larger sample size could provide complementary information.
2. Policymakers should intensify education about Voluntary counselling And Testing (VCT).
3. Institutions must encourage their staff to willingly take VCT especially, in TB-coinfection.

Conflict of Interest

Author has no conflict of interest.

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