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Research Paper

Prevalence of HIV-Tb Single and Co-Infection among Attendees of Primary Health Care Centres In Obio/Akpor Local Government Area, Rivers State

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ABSTRACT
The study was aimed at determining the prevalence of TB/HIV single and co-infection among attendees of the TB outpatient clinic of model Primary Health Care Centres in Obio/Akpor Local Government Area of Rivers State from 2014-2018. Three (3) objectives, three (3) research questions and two (2) hypotheses guided the study. The population of the study consisted of two thousand seven hundred and fifty-eight (2758) cases of TB/HIV single and co-infection from 2014-2018. The instrument for data collection was a checklist for TB/HIV single and co-infection among attendees of model primary health care centres which collected data from medical records of the health centres by the Directly Observe Treatment short course focal. Data collected were analyzed using descriptive analytical statistics of frequency and percentage, while inferential statistics of chi-square (X^2) was used for testing the hypotheses at 0.05 alpha levels. The findings of the study showed that the prevalence of TB/HIV and AIDS single and co-infection are 83.8% and 16.2% respectively. Attendees between 21-40 years had the most prevalence of TB/HIV and AIDS single and co-infection with 80.3% and 82.8% respectively. Male attendees had the most prevalence of TB/HIV and AIDS single and co-infection with 50.4% and 51.1% respectively. Meanwhile, 74.6% and 58.2% of the co-infected and single infected patients, respectively, did not comply with treatment. Based on the findings, the researcher made some recommendations among which are sensitization and re-orientation of the general public on how to prevent HIV/TB infection, which would be geared towards prompt reporting, treatment and effective follow up of TB/HIV single and co-infected cases, using health talks, health education, and active sessions; by public and allied health officers.
Key Words: Tuberculosis, HIV/AIDS, co-infection, single infection, Prevalence, Model Primary Health Care Center.

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I. INTRODUCTION

Background to the Study

Tuberculosis (TB) is one of the world's most common causes of death in the era of Human Immunodeficiency Virus (HIV). It is among the leading causes of death for people living with HIV (PLWHIV) which shares about twenty-five percent of all causes of the deaths (World Health Organization, 2010). Tuberculosis is an infectious disease usually caused by *Mycobacterium tuberculosis* (MTB) bacteria. Tuberculosis generally affects the lungs, but can also affect other parts of the body (Corbett, Churchyard & Clayton, 2000). Most infections do not have symptoms, in which case it is known as latent tuberculosis. Tuberculosis and human immunodeficiency virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) constitutes the main burden of infectious diseases in developing countries (Katherine, Peter, Rein, Richard & Elizabeth, 2016). According to WHO (2012), HIV is the first and TB is the second leading cause of death from infectious disease worldwide.

According to World Health Organization (2010), Tuberculosis, abbreviated and commonly known as TB is a bacterial infection caused by acid fact bacilli (a mycobacterium whose primarily affects the lungs

(Pulmonary TB) but can affect any part of the body (extra Pulmonary TB) except the hair, teeth and nail. AIDS (Acquired Immuno Deficiency Syndrome) is a group of diseases caused by a virus called HIV (Human Immunodeficiency Virus) this disease destroys the immune system, making people much more vulnerable to infections and diseases. The classic symptoms of active TB are a chronic cough with blood-containing sputum, fever, night sweats, and weight loss. Prevention of TB involves screening those at high risk, early detection and treatment of cases, and vaccination with the bacillus Calmette-Guérin (BCG) vaccine (Corbett, Churchyard & Clayton, 2000). Presently, one-quarter of the world's population is thought to be infected with TB. New infections occur in about 1% of the population each year. In 2017, there were more than 10 million cases of active TB which resulted in 1.6 million deaths. This makes it the number one cause of death from an infectious disease.

Studies indicated that certain HIV-infected people develop TB, while others do not. This phenomenon iterates that being HIV positive is not the only factor for being infected with TB, and there are various determinant factors that contribute to the TB/HIV co-infection (Taha, Deribew, Tessema, Assegid, Duchateau & Colebunders, 2009).

The human immunodeficiency virus (HIV) pandemic presents a significant challenge to global tuberculosis (TB) control. Verma & Mahajan, (2008), described Human Immunodeficiency Virus infection and Acquired Immune Deficiency Syndrome (HIV/AIDS) as a spectrum of conditions caused by infection with the human immunodeficiency virus. Following initial infection, a person may not notice any symptoms or may experience a brief period of influenza-like illness. Typically, this is followed by a prolonged period with no symptoms. As the infection progresses, it interferes more with the immune system, increasing the risk of developing common infections such as tuberculosis, as well as other opportunistic infections, and tumors that rarely affect people who have working immune systems (Verma & Mahajan, 2008).

These late symptoms of infection are referred to as acquired immunodeficiency syndrome (AIDS). This stage is often also associated with unintended weight loss. HIV is spread primarily by unprotected sex (including anal and oral sex), contaminated blood transfusions, sharing of unsterilized needles and syringes, and from mother to child during pregnancy, delivery, or breastfeeding. Some bodily fluids, such as saliva and tears, do not transmit HIV. Methods of prevention include safe sex, Needle Exchange Programs (NEPs are community-based programs that provide access to sterile needles and syringes free of cost, facilitate safe disposal of used needles and syringes, and offer safer injection) , treating those who are infected, and male circumcision (Verma & Mahajan, 2008).

TB and HIV co-infection is the coexistence of HIV and TB infection at any stage of development. Researchers, policy makers, coordinators and programmers have long recognized that gender plays a role in vulnerability to HIV/AIDS and TB co-infections and impacts on every region in the world. Gender refers to socially defined and learned male and female behaviors that shape the opportunities that one is offered in life, the roles one may play and the kinds of relationships that one has. It is distinct from sex, which is a biologically determined and fixed set of characteristics for men and women. It is also distinct from though closely linked to sexuality, which is the "social construction of a biological drive" that is defined by how, why, and with whom one has sex (Rao, 2000).

Masculinity and femininity, roles, status, norms and values, responsibilities and expectations, sexuality, the division of labour, power and responsibilities, the distribution of resources and rewards, are part of the effects of gender.

Roles dictate how each of the above factors differs between men and women. Since gender is a social construct, the differences between men and women may vary from place to place; but they are almost always present, and ultimately have a significant impact on vulnerability to HIV/AIDS and TB co-infections, the inequalities between men and women that are created and reinforced by gender roles typically leave women especially vulnerable to HIV infection and its impacts, but it is also important to recognize that gender roles affect men's vulnerability as well (Rao, 2000).

The prevalence of TB-HIV co-infection has no age limit to its infections. Tuberculosis mostly affects adults in their most productive years. However, all groups are at risk of developing TB/HIV but the risk of active TB is greater in persons with an impaired immune system such as infant 0-5 years and aged 60 and above years of age (WHO, 2018).

The age of the possible infected patients can be related or equated to the environmental, genetic influences that a patient happens to see himself.

The marital status plays a key role and the risk of being affected in HIV/TB co-infections tends to be very low and minimize since the married couple have more control, discipline and being faithful to each other than the unmarried who may engage in a risky unprotected sexual behavior that may tantamount of being affected.

The prevalence of HIV-TB co-infection among attendees of Model Primary Health Care Centres in Obio/Akpor local government area has been a major problem to the ministry of health. Hence, this attracted the

attention of the researcher to study the high incidence and mortality rate among attendees/ patients (WHO, 2001).

In an ideal state, the level of TB-HIV coinfection in Obio/Akpor local government area is assumed to be relatively low, considering the degree of education that has been provided to the people who are domiciled in Obio/Akpor local government area, through health/social well-being sensitizations, HIV/AIDS prevention campaigns, amongst others.

The present situation is quite critical because even though there are medical facilities, there are only a few health care service providers set aside to attend to infected patients, patients poor adherence to drugs, non-availability of drugs to serve the attendees, there is low awareness among HIV infected patients on how to cope and handle the disease, the recognition of the sign and symptoms of TB, and the later treatment of the disease poses a lot of threat that has resulted to the lost of lives or mortality among such patients (Ikechukwu, 2009).

The need for this study is to ascertain the prevalence of TB/HIV coinfection amongst patients who visit the primary health care facilities in Obio/Akpor local government area, Rivers state.

This research is also relevant to determine the spread of TB/HIV coinfection amongst the patients who visit the primary health care centers in Obio/Akpor local government area in rivers state.

Aim and Objectives of the Study

The purpose of this study is to ascertain the prevalence of TB/HIV single and co-infection among attendees of Model Primary Health Care Center in Obio/Akpor Local Government Area of Rivers State by determining the following:

1. To determine the prevalence of TB/HIV co-infection among attendees of the TB out patients clinic in MPHCC in Obio/Akpor local government area of Rivers State.
2. The relationship between gender and TB/HIV and AIDS co-infection and single-infection among attendees of Model Primary Health Care Centres in Obio/Akpor local government area of Rivers State based on gender
3. The relationship between age and TB/HIV and AIDS co-infection and single-infection among attendees of Model Primary Health Care Centres in Obio/Akpor local government area of Rivers State

Research Questions

The following research questions were formulated to guide the study:

1. What is the prevalence of TB/HIV co-infection and single-infection among the attendees of MPHCC in Obio/Akpor local government area of Rivers State?
2. What is the Relationship between Gender and TB/HIV and AIDS Co-infection and single-infection among Attendees of Model Primary Health Care Centres in Obio/Akpor local government area of Rivers State?

3. What is the Relationship between Age and TB/HIV and AIDS Co-infection and single-infection among Attendees of Model Primary Health Care Centres in Obio/Akpor local government area of Rivers State.

Hypotheses

The following null hypotheses were tested at 0.05 level of significance, guided the study

1. There is no significant difference between gender and TB/HIV co-infection and single-infection among attendees of MPHCC in Obio/Akpor local government area of Rivers State.
2. There is no significant difference between age and TB/HIV co-infection and single-infection among attendees of MPHCC in Obio/Akpor local government area of Rivers State.

Conceptual Review

The conceptual framework for this study was discussed under the following sub-headings:

Prevalence

Ashby (2008) defined prevalence as the total number of cases of a disease in a population at a specific time. Such prevalence may be influenced by gender, age and marital status. According to Baldassarini, Ross, Finklestein and Arana (2011), prevalence is the proportion of the population found to have a condition typically a disease or a risk factor as smoking it arrived at by comparing the number of people found to have a condition with the total number of people studied and it is usually expressed as a fraction, as a percentage or as the number of cases per 10,000 or 100,000 people.

Tuberculosis (TB)

Tuberculosis is a chronic infectious disease caused by a bacterium, the mycobacterium tuberculosis primary from human and mycobacterium bovis primarily from cattle. Tuberculosis is one of the leading causes of death in many parts of the world. It is a serious chronic disease that is caused by bacteria that attacks the lungs and other parts of the body (Achalu, 2010). There are many types of TB that affects different parts of the

body such as bones, kidney, brain, abdomen and sex organs. But pulmonary tuberculosis is the most common. This TB attacks the lungs where it grows and multiplies forming a nodule or lump called tubercle (Achalu, 2010). The signs and symptoms of TB include: chronic fatigue, loss of weight, and coughing of blood in the later stages. The incubation period may range from 4 to 6 weeks from infection to the appearance of primary lesions. Progressive TB take years, from the time of the infection to primary lesion is about 4-12 weeks, but may be years before a progressive pulmonary or extra-pulmonary tuberculosis may manifest (Achalu, 2010).

Human Immunodeficiency Virus

Human immunodeficiency virus (HIV) is a lentil virus, a member of retrovirus family. HIV causes AIDS (Acquired immunodeficiency syndrome) a condition in human in which progressive failure of the immune system allows life threatening opportunistic functions to thrive. HIV – 1 and HIV – 2 are subtypes of HIV in human being originated from cross-species infection by Simian Viruses (SIV) in rural Africa. HIV infection causes immune suppression in individuals enhancing opportunistic infections due to the fact the activities of the retroviral deplete the CD_4 cell numbers.

TB-HIV co-infection

TB and HIV co-infection is when people have both HIV infection and also either latent or active TB disease. When someone has both HIV and TB each disease speeds up the progress of the other. In addition to HIV infection speeding up the progression from latent to active TB, TB bacteria also accelerate the progress of HIV infection, (WHO, 2010).

Tuberculosis is a frequently diagnosed disease in Human Immunodeficiency Virus (HIV) infected patients World-wide. The beginning of tuberculosis in HIV-infected patients causes marked release of pro-inflammatory cytokines that activate lymphocytes and macrophages as introduced above which can result to an increased HIV viral load (United Nation & AIDS, 2010).

II. METHODOLOGY

This study was a descriptive survey research an ex-post facto research design technique, also known as casual comparative research design was adopted and utilized for this study. The target population for this study comprised of patients who reported for TB-HIV co-infection in the TB outpatient clinic of model primary health care centres in Obio/Akpor Local Government Area, Rivers State. There are about four hundred and forty-eight (448) patients who reported for TB-HIV co-infection in model primary health care centres in Obio/Akpor Local Government Area, Rivers State which was chosen as the population for the study. The purposive/judgmental sampling technique was utilized for this study was employed to select the sample.

The instrument for data collection was a checklist titled prevalence of HIV/TB co-infection among Attendees of Primary Health Care Centres. The checklist contained the following sub-titles; Name of facility, number of persons infected, sex, age, number of patients on treatment, number of patients who have completed treatment and marital status. Information was derived from thirteen health care facilities in Obio/Akpor Local Government Area of Rivers State.

To ensure validity of the instrument, the face and content validity of the instrument was established by showing the results obtained from the checklist experts in the Department of Human Kinetics, Health and Safety Education, Ignatius Ajuru University of Education, Port Harcourt. The reliability of the instrument was determined through a pilot study. The reliability co-efficient of the instrument was calculated to be 0.0023 The descriptive statistics of percentage, frequency count and mean were used for demographic characteristics of the participants and research questions. While inferential statistics of chi-square set at 0.05 alpha level was used to test the hypotheses.

III. RESULTS AND DISCUSSION OF FINDINGS

Research Question 1: What is the prevalence of TB/HIV co-infection and single infection among the attendees of MPHCC in Obio/Akpor local government area of Rivers State?

Table 1: Prevalence of TB/HIV and AIDS co-infection and single-infection among attendees of Model Primary Health Care Centres in Obio/Akpor local government area of Rivers State.

INFECTIONS	FREQUENCY	PERCENTAGE
SINGLE INFECTION	2310	83.8
CO-INFECTION	448	16.2
TOTAL	**2758**	**100.0**

Table 1 shows the prevalence of TB/HIV and AIDS co-infection and single-infection among total number of tested attendees of Model Primary Health Care Centres in Obio/Akpor Local Government Area. The result of the study shows that the prevalence of TB/HIV and AIDS single and co-infection are 83.8% and 16.2%

respectively. It shows a high level prevalence of TB/HIV single infection among the attendees MPHCC in Obio/Akpor local government area of Rivers State 2310(83.8%).

$$\text{Prevalence } \% = \frac{\text{Number of people infected}}{\text{Number of people tested}} * 100$$

$$\text{Prevalence } = \frac{2758}{2758} * 100$$

$$\text{Prevalence } = 100\ \%$$

Research Question 2: What is the relationship between gender and TB/HIV and AIDS co-infection among attendees of Model Primary Health Care Centres in Obio/Akpor local government area of Rivers State based on gender?

Table 2: Relationship between gender and TB/HIV and AIDS co-infection and single-infection among attendees of Model Primary Health Care Centres in Obio/Akpor local government area of Rivers State based on gender

GENDER	INFECTION	
	CO-INFECTIONS	**SINGLE INFECTION**
MALES	229(51.1%)	1163(50.4%)
FEMALES	219(48.9%)	1147(49.6%)
TOTAL	**448(100.0%)**	**2310(100.0%)**

Table 2 shows the relationship between Gender and TB/HIV and AIDS co-infection and single-infection among attendees of Model Primary Health Care Centres in Obio/Akpor Local Government Area. The result of the study shows that the male attendees had the most prevalence of TB/HIV and AIDS single and co-infection with 50.4% and 51.1% respectively.

Research Question 3: What is the relationship between age and TB/HIV and AIDS co-infection and single-infection among attendees of Model Primary Health Care Centres in Obio/Akpor local government area of Rivers State based on age?

Table 3: **Relationship between age and TB/HIV and AIDS co-infection and single-infection among Attendees of Model Primary Health Care Centres in Obio/Akpor local government area of Rivers State**

AGE	INFECTION	
	CO-INFECTIONS	**SINGLE INFECTION**
0-20years	77(17.2%)	454(19.7%)
21-40years	371(82.8%)	1856(80.3%)
TOTAL	**448(100.0%)**	**2310(100.0%)**

Table 3 shows the relationship between age and TB/HIV and AIDS co-infection and single-infection among attendees of Model Primary Health Care Centres in Obio/Akpor Local Government Area. The result of the study indicated that the attendees between 21-40 years had the most prevalence of TB/HIV and AIDS single and co-infection with 80.3% and 82.8% respectively.

Test of Hypotheses

Hypothesis 1: There is no significant difference between gender and TB/HIV co-infection and single-infection among attendees of MPHCC in Obio/Akpor local government area of Rivers State

Table 4: Logistic Regression Analysis showing relationship between infections and gender

Gender	INFECTION		DF	X-2	P-Value	Odds ratio	95%Confidence Interval	
	CO-INFECTIONS	SINGLE INFECTION					LOWER	UPPER
Males	229(51.1%)	1163(50.4%)	1	0.0889	0.765	1.0313	0.8423	1.2626
Females	219(48.9%)	1147(49.6%)						

Table 4 shows logistic regression analysis showing the relationship between gender and TB/HIV and AIDS co-infection and single-infection among attendees of Model Primary Health Care Centres in Obio/Akpor Local Government Area. The result of the study demonstrated that males are 1.03 times (OR=1.0313, 95% CI:

0.8423-1.2626) more likely to be co-infected with TB/HIV and AIDS compared to those who are females (p=0.765)

Hypothesis 2: There is no significant difference between age and TB/HIV co-infection and single-infection among attendees of MPHCC in Obio/Akpor local government area of Rivers State

Table 5: Logistic Regression Analysis showing relationship between age infections

AGE	INFECTION		DF	X-2	P-Value	Odds ratio	95% Confidence Interval	
	CO-INFECTION	SINGLE INFECTION					LOWER	UPPER
0-20years	77(17.2%)	454(19.7%)	1	1.4680	0.22	0.8485	0.6503	1.1071
21-40years	371(82.8%)	1856(80.3%)						

Table 5 shows logistic regression analysis showing the relationship between age and TB/HIV and AIDS co-infection and single-infection among attendees of Model Primary Health Care Centres in Obio/Akpor Local Government Area. The result of the study showed that attendees age 0-20years are 1.17 times (OR=0.8485, 95%CI: 0.6503-1.1071) less likely to be co-infected with TB/HIV and AIDS (p=0.22)

IV. DISCUSSION OF FINDINGS

The result of this study, in relation to question one shows that the prevalence of TB/HIV single and co-infection are 83.8% and 16.2% respectively. It shows a high level prevalence of TB/HIV single infection among the attendees MPHCC in Obio/Akpor local government area of Rivers State 2310(83.8%). Hence, it indicates that TB or HIV single-infection is prevalent among the populace. The result of this study corresponds with findings of study by Ramadhani (2017), who investigated the Factors influencing non-adherence to tuberculosis treatment in TB/HIV coinfected adults at the University Teaching Hospital, Lusaka, and reported 18.9% and 81.1% prevalence levels of TB/HIV coinfection and single-infection among patients. Similarly, studies by Parker & Onukwugba (2010), on HIV/AIDS over four (4) million infected in Rivers of Nigeria, revealed that the prevalence of HIV/TB coinfection was 7.3% while HIV/TB single-infection accounted for 92.7%. Divergently, it contrasts with the research findings by Lemos, Finze, Reis, Gir, Ferrer, & Galvado (2016) who studied the Adherence to antiretrovirals in people coinfected with the Human Immunodeficiency Virus and Tuberculosis, and discovered a 97.5% level of prevalence of HIV and Pulmonary Tuberculosis among coinfected patients. Studies of Parker & Onukwugba in 2010, affirmed that the highest number of TB/HIV cases increased by 92.7% from 2001-2005.

In relation to question two, the results from this study showed that male attendees had the most co-infection and single-infection prevalence, 229 (51.1%) and 1163 (50.4%) respectively; while the females had a prevalence of 219 (48.9%) and 1147 (49.6%) respectively. The prevalence of TB/HIV coinfection and single-infection based on gender is high among males and females but the male counterpart had the most prevalent cases. This result is in consonance with studies conducted by Maria, Firmino, Fransisco, Recard, Rubia & Andirade, (2011) on the Areas of Vulnerability to HIV-TB co-infection in southeastern Brazil, and discovered that reproductive age group (20-59 years) had the highest percentage of TB-HIV coinfection with 7.401, out of which male patients accounted for 68.8% and female (31.32%). It supports the findings of Giri, Deshpande & Phalke (2016), on the Prevalence of pulmonary tuberculosis among HIV positive patients attending antiretroviral therapy clinic, and disclosed that prevalence based on gender accounted for 87 (50.58%) males and 85 (48.42%) females had both TB/HIV coinfection. This research is also in concordance with the research by Narmela, Esmaeil, Mohammad, Jamaloddin & Seyyedeh, (2009) who studied the prevalence of TB in HIV patients and Risk factor with frequent referrals, and reported that 65 (91%) males and 6 (9%) females were infected by either TB or HIV, and 20 (66.67%) of males and 10 (33.33%) of females were coinfected by TB/HIV. Moreover, there were no other studies that were against the findings of the present study. But the increase in prevalence rate has differed due to the sampled population, duration of study, design adopted for the study.

In this study, the maximum respondents occurred in the age group of 21-40 years, they had the highest prevalence of single and co-infection 1856 (80.3%) and 371 (82.8%), respectively. In regard to question three, the study reveals that attendees between 21-40 years who had the most prevalence of single and co-infection are considered to be sexually more active, hence are more vulnerable to infection by HIV/AIDS. This research is in concordance with the research by Narmela, Esmaeil, Mohammad, Jamaloddin & Seyyedeh, (2009) who studied the prevalence of TB in HIV patients and Risk factor with frequent referrals, and reported that patients within the age bracket of 24.1-34 and 34.1-44 were infected with single infection of either HIV or TB at 53.5% and 65% respectively. The study is in consonance with the studies of Ogoboi, Idris, Olayinka, & Llyas (2010) who researched for the Socio demographic characteristics of patients presenting pulmonary tuberculosis in a primary health centre, Zaria Nigeria, and reported that the age group 20-39 years with mean age of 32.78 had 56.5% of

HIV/TB coinfection. It is also in agreement with studies of conducted by Liza, Shama & Sonal (2006) that showed 97% of HIV/TB cases were between 19-65 years of age. It also concords with the study of Chuks, Ae, Martin, Kalu, Onwunzo & Chukwuka (2013), who researched for the Prevalence of HIV infection in pulmonary TB suspects in Nnamdi Azikiwe University Teaching Hospital, Nnewi, Nigeria, and discovered that age group of 31.40 and 41-50 years had the highest prevalence of HIV/TB infection. Sube, Seriano, Jajaa, Gore, Loro & Oryem (2014) agreed that the majority of patients (39%) of patients with HIV/TB belong to the age group of 25-34 years, which is in reproductive age. In contrast, there were no similar or relevant studies that do not agree with age differences of patients in coinfection of HIV/TB.

V. CONCLUSION

Based on the findings, it has become essential that, patients should be properly educated on the danger associated with the noncompliance to the treatment of TB/HIV co-infection it may lead to the lost of lives of affected patient if not properly handled and taken care of as when due. It was concluded that attendees between 21-40 years had the most prevalence; as such this tends to be the effective and active period of productivity which could be adversely affected by the prevalence of TB/HIV co-infection. It concluded that the female had less prevalence of TB/HIV co-infection. Further conclusion was made base on the findings that governments should ensure that health facilities should be made available and accessible for use by the attendees in all the model primary health care centres in Obio/Akpor local government area of Rivers State and trained health personnel should also be sent to these health centres.

VI. RECOMMENDATIONS

Based on the findings of the study, the following recommendations were made:

1. The government should organize routine enlightenment programs for the general public to understand the relationship between TB and HIV infections, especially in the young and reproductive age group.
2. Government should create more DOTs centres and also ensure that they work optimally to help reduce the complications that follow poor treatment of TB.
3. Government should ensure that drugs are always available at the various DOTs centres in the local government in order not to break the continuous chain of treatment which can result to drug resistance.
4. The government should also make adequate and qualitative scheme for training of health care providers on the proper management of TB/HIV co-infection and updates on new management techniques.
5. Health care providers should ensure that TB/HIV co-infected. Patients always take their drugs in the presence of the healthcare gives as recommended by the DOTs scheme.
6. Patients should be encouraged to adhere strictly to the taking of their drugs and completion of treatment, and ensure that they go on regular check up to ascertain their true state of health.

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