



Prevalence of HIV-TB Co-Infection among Attendees of University of Port Harcourt Teaching Hospital, Rivers State From 2008-2012

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Abstract

The study was aimed at ascertaining Prevalence of TB- HIV Co-infection among attendees of the TB outpatient clinic of UPTH FROM 2008-2012. Eight (8) objectives, eight (8) research questions and two (2) hypotheses guided the study. The population of the study consisted of four hundred and forty eight (448) cases of HIV-TB Co infection from 2008 - 2012. Related literature was reviewed in line with the objectives of the study. The instrument used for the study was self-developed data collection schedule pro forma (DCSP) which solicited record for prevalence of HIV-TB Co infection. Data collated were analyzed using descriptive statistics of Pie Chart, Bar Chart, Histogram, Frequency and Percentage while inferential statistics of Chi- square (χ^2) was also used for testing the hypothesis at 0.05 level significance. The findings of the study showed that the prevalence of TB- HIV Co infection among attendees of the TB outpatient clinic of UPTH from 2008-2012 was four hundred and forty eight (448). The highest prevalence of 123 (27.46%) was in the year 2008 and the lowest of 61 (13.62%) was in 2012. Females 229 (51.1%) revealed slightly more prevalence than the males 219 (48.9%). Equally, the age group 31-40years had the highest prevalence. There was significant difference between male female prevalence of TB- HIV Co infection in the TB outpatient clinic of UPTH from 2008 -2012. There was significant difference among patients of various ages in the prevalence of TB- HIV Co infection. Based on the findings, the researcher made some recommendations among which is sensitization and re orientation, which would be geared towards prompt reporting, treatment and effective follow up of TB- HIV Co infection cases, using health talks, health education, active sessions; by public and allied Health Officers.

Keywords: HIV/AIDS, HIV-TB Co-infection, WHO

INTRODUCTION

The primary causes of infectious disease burden in developing nations are tuberculosis (TB) and HIV/AIDS (human immunodeficiency virus/acquired immune deficiency syndrome) [1]. Tuberculosis, also referred to as TB or TB, is a bacterial infection that primarily affects the lungs (pulmonary TB) but can affect any part of the body (extrapulmonary TB), with the exception of the hair, nails, and teeth. The coexistence of HIV and either latent or active TB disease in a person is known as TB and HIV co-infection [2].

TB infection affects people of all ages. Patients with immunosuppressed conditions, such as those with diabetes, cancer, and malnutrition, are more likely to experience it. The likelihood of latent TB reactivation is increased twenty (20) fold by HIV infection, which is the most potent known risk factor for mycobacterium tuberculosis infection and progression to active disease [3].

According to the World Health Organization (WHO), around fourteen million people are co-infected globally [4]. Annually, there are close to two (2) million fatalities and over nine (9) million new cases of TB combined [5]. Annually, there are about 1.8 million fatalities attributable to AIDS and 2.6 million new infections of HIV [6].

In the fields of public health, nursing, health education, and related fields, theories and models are crucial tools. Basically because they offer methods for comprehending individual behaviors and the variables that affect them, allowing for the development of programs that offer solutions and serve as the foundation for designing effective treatments [7]. In order for the hypotheses and instruments to be produced to capture the notion being examined, theories and models are typically utilized in studies to explain how the important are linked. The Dorothea Orem hypothesis and the health promotion model were used in this study [8].

According to data from the University of Benin Teaching Hospital (UBTH), Nigeria has the fifth (5th) highest TB burdened country in the world, with an estimated prevalence of close to 300,000 cases of all TB varieties each year [9]. Between 1991 and 2000, the prevalence of HIV among TB patients increased from 2.2% to 17% [10]. According to the sociodemographic data of those who were also affected, respondents between the ages of 31 and 40 had the highest prevalence of co-infections (22.5%), followed by those between the ages of 21 and 30 (20.5%). The frequency was lowest among children under 10 years. The age range of sexually active individuals (15–45 years) had the highest co-infection prevalence of HIV–TB because HIV/AIDS is primarily transmitted through sexual contact [11].

Four hundred and fifty five (455) cases (8.8%) of the five thousand one hundred and two (5172) TB cases investigated in Southern California also had HIV infection. The prevalence of co-infected cases did not significantly alter during the research period [12].

Up to 70% of TB patients in some regions of Sub-Saharan Africa also have HIV co-infection. According to a 2012 estimate by the Interagency Coalition on AIDS and Development, TB is thought to be a factor in around 33% of all AIDS-related deaths globally, with a prevalence of about 50% in Sub-Saharan Africa.

It is generally known that certain subpopulations, such as South African mine workers, have a high prevalence of tuberculosis (TB), in part due to the additive effects of HIV infection and pulmonary silicosis related to mine labor. Urban regions are rapidly becoming more infected with TB, and this is happening against a backdrop of generally worsening economic performance and a substantial influx of low-income residents [13]. According to the United Nations Population Fund, 61% of South Africans live in cities, and 57% of these people do so in slums, where the prevalence of TB and HIV is highest. The findings discussed above highlight the urgent need to identify, prevent, and treat HIV-positive individuals as well as to test for HIV in all TB patients. As a result, a campaign to raise awareness of HIV-TB co-infection will be launched to inform the general public about the synergistic relationship between HIV and TB [14].

According to a study conducted in China by Lei, Feng, Xi, and Qi (2010), the prevalence of TB was 7.2% (4.2%–12.3%) in the HIV/AIDS community, but it was substantially higher when the analysis was limited to AIDS patients (22.8%). Significantly higher incidence was seen in studies conducted in hospitals and among males [15].

This study took place at the University of Port Harcourt Teaching Hospital (UPTH) Choba's tuberculosis outpatient clinic in the Obio-Akpor Local Government Area of Port Harcourt, Rivers State. Although it started operating in 1980, UPTH was officially constituted by law in 1985 with Decree No. 10 of 1985. One of the main tertiary medical centers in Nigeria's oil-rich Niger Delta region is UPTH. It is the premier medical facility in Port Harcourt, Nigeria's second-most industrialized city. As a result, it serves a sizable cosmopolitan community of local and foreign workers in the oil industry. In addition to being Port Harcourt's premier medical facility, this study is regarded as being the most pertinent to the region because it is situated in an industrialized area, which raises the likelihood of HIV-TB co-infection [16].

Prevalence is a term used to describe the overall number of cases of a disease present in a population at any one moment. Age and gender may have an impact on this prevalence. The researcher was driven to determine the prevalence of TB-HIV co-infection among visitors to the TB outpatient clinic of UPTH against the backdrop of healthy living.

The two most prevalent infectious diseases in underdeveloped nations are TB AND HIV/AIDS. A major obstacle to the global fight against tuberculosis is the HIV pandemic, which has a death rate increase of up to 90% or more and much shorter survival times. TB in HIV-positive individuals presents unique diagnostic and treatment issues and places a great deal of strain on health systems, particularly in African and Asian nations with high co-infection rates [17]. The difficult diagnosis is that extra pulmonary TB, smear-negative TB, and non-specific radiological abnormalities are more common in HIV patients with TB. Most patients are left without a diagnosis and without treatment as a result, which raises the death rate as a whole. Additionally, HIV is certainly hastening the spread of MDR-TB (multiple drug resistant TB), particularly in nations where MDR-TB infection rates are high [18]. Additionally, HIV individuals who have previously received TB treatment and been cured for the disease have a significant probability of TB recurrence. Managing toxicities caused by a pharmacological interaction between anti-retroviral therapy and anti-TB medications is also very difficult [19].

Additionally, HIV-TB co-infection places a tremendous financial strain on the affected individuals, their families, their communities, and the overall economic well-being of the entire country. The mean cost of treatment per month was significantly higher in families in the HIV-TB cohort than in the other two cohorts, according to a study conducted at the University of Benin Teaching Hospital (UBTH) in Nigeria using sixty one (61) families with a total of one hundred and twenty eight (128) family members [20].

Another significant public health issue that requires a multidisciplinary approach is the poor level of awareness among HIV-infected patients on their propensity to TB. Due to a lack of knowledge about the symptoms and signs of TB, the majority of patients seek treatment fairly late, which increases their mortality rate. TB continues to be a problem for global public health. It is a significant cause of mortality and has shown to be particularly challenging to control in areas where HIV infection is highly prevalent. According to estimates, 1.3 million people with HIV die each year from TB [21]. 1.37 million (14.8%) of the projected 9.3 million new TB infections worldwide in 2007 were linked to HIV infection and accounted for over 25% of all deaths from AIDS. Despite efforts by international TB control organizations to stop the pandemic, the prevalence of TB is rising because of HIV. Due to the prevalence of HIV, Sub-Saharan Africa has a higher burden of HIV-TB co-infection. For instance, in Nigeria, the prevalence of HIV-TB co-infection rose from roughly 2.2% in 1991 to 19.8% in 2012 [22].

The researcher was driven to determine TB-HIV co-infection among patients at the TB outpatient clinic of the university of Port Harcourt teaching hospital (UPTH) by the aforementioned findings and background information.

MATERIALS AND METHOD

Research Design

The researcher used ex-post facto research design i.e. casual comparative research design was used for this study. The researcher adopted the research design because it investigates the factors which are associated with certain occurrences as well as the conditions and outcomes of such occurrences

Area of the study

The study was conducted in the Directly Observed Therapy Short Course (DOTS) outpatient clinic of the University of Port Harcourt Teaching Hospital (UPTH) Choba, located in Obio-Akpor Local Government Area Port Harcourt, Rivers State. The University of Port Harcourt Teaching Hospital is a tertiary healthcare facility that caters for patients in Rivers State and neighbouring states like Abia, Bayelsa, Imo, Akwa-lbom state among others.

Population of the study

The target population for the study comprises the four hundred and forty eight (448) patients who reported of TB-HIV co infection in the TB outpatient clinic of UPTH.

Sample/ sampling technique

The entire population of four hundred and forty-eight (448) who reported of TB-HIV co infection in the outpatient clinic of UPTH was used therefore.

Method of data analysis

Data collected were analyzed using descriptive statistics of percentages and frequency distribution tables. This solicited record for prevalence of HIV-TB co-infection among patients in TB outpatient clinic of UPTH. The data indicated cases TB-HIV co infection from 2008-2012 by age and gender. Inferential statistics of chi-square (X^2) was used to test the null hypothesis at 0.05 level of significance.

RESULTS AND ANALYSIS

Table 1

Frequency distribution of HIV-TB co-infection among attendees of the TB out -patient clinic of UPTH from January 2008 - December 2012.

Year	f	%	°C
2008	123	27.46	98.8
2009	101	22.55	81.2
2010	93	20.76	74.7
2011	70	15.63	56.3
2012	61	13.62	49
	448	100%	360°C

Table 1: shows the prevalence of HIV-TB Co Infection among attendees of the TB out - patient clinic of UPTH from January 2008 - December 2012. It revealed that in 2008 123 (27.46%) cases of HIV-TB Co infection were reported, 101 (22.55%) were reported in 2009, 93 (20.76%) were reported in 2010, 70 (15.63%) were reported in 2011 and 61 (13.62%) were reported in 2012. The highest prevalence of 27.46% was represented in 2008.

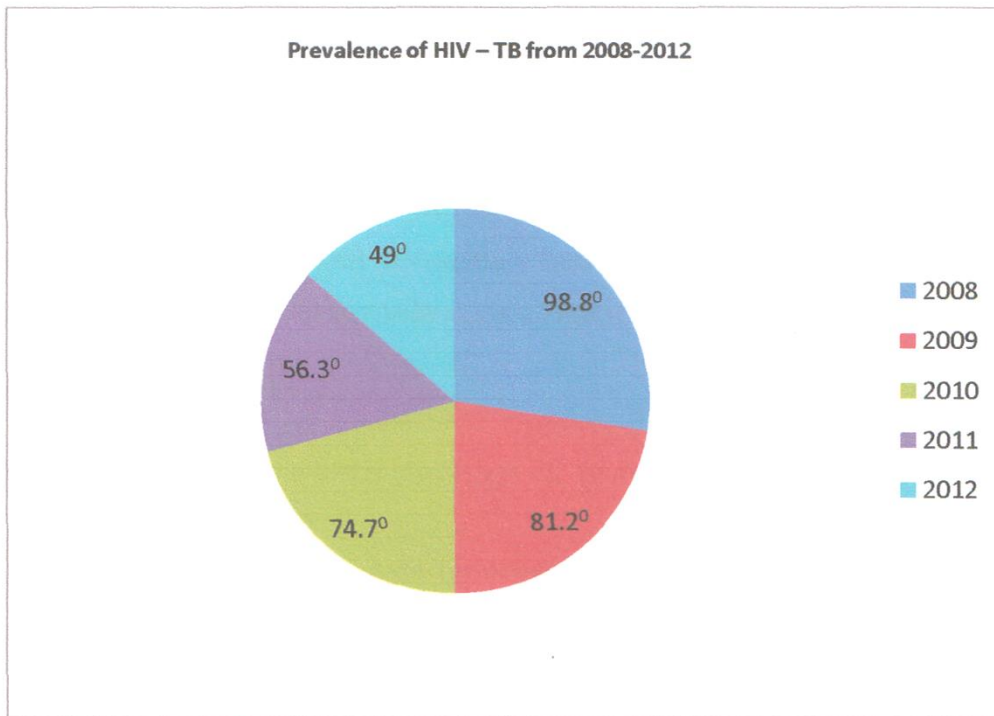


Fig 4: Pie Chart showing year with the highest prevalence of HIV - TB Co infection among the attendees of TB - outpatient clinic of UPTH from prevalence of HIV-TB Co infection. This shows that in 2008, 123 reported cases representing (98.8°C). 2009, (81.2°C) were reported, 2010, (74.7°C) were reported, 2011 were (56.3°C) and 2012 was (49.0°C). Meanwhile the year 2008 was seen as the highest in the cases of HIV-TB Co infection reported.

Table 2: Frequency distribution of prevalence of HIV -TB Co infection by their gender

Year /Gender	Male	Female	Total
2008	59 (13.2%)	64 (14.3%)	123 (27.5%)
2009	50 (11.1%)	51 (11.4%)	101 (22.5%)
2010	46 (10.3%)	47 (10.5%)	93 (20.8%)
2011	34 (7.6%)	36 (8%)	70 (15.6%)
2012	30 (6.7%)	31 (6.9%)	61 (13.6%)
Total	219 (48.9%)	229 (51.1%)	448 (100%)

It showed that in 2008, 59 (13.2%) males and 64 (14.3%) females reported of HIV - TB Co - infection. In 2009, 50 (11.9%) males and 51 (11.4%) female prevalence were revealed. In 2010 and 2011, 46 (10.3%) males, 47 (10.5%) females and 34 (7.6%) males, 36 (8%) females reported respectively; while in 2012, 30 (6.7%) males and 31 (6.9%) female cases reported.

What is the gender with the highest prevalence of HIV - TB Co infection?

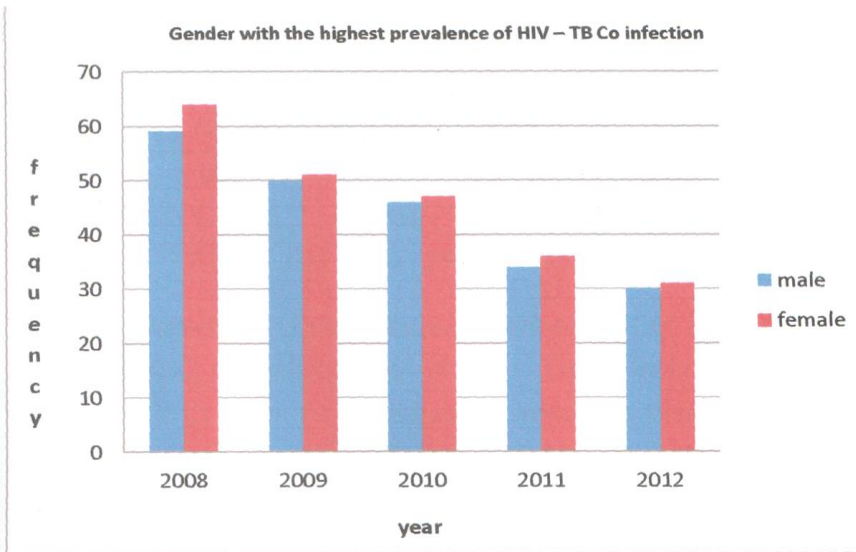


Fig 5: Bar chart showing gender with the highest prevalence of HIV - TB Co infection.

This shows that out of 448 reported cases of HIV - TB Co - infection, 229 (184.1%) reported cases of HIV - TB Co infection were females and 219 (175.9%) reported cases of HIV - TB Co infection in the TB out patients clinic were only males, meanwhile, females were seen as the highest in the cases of HIV - TB Co infection reported.

Table 3: Distribution of prevalence of HIV - TB Co infection by age

Year/ Age	Less than 21	21-30	31-40	41-50	50yrs & above	Total
2008	25 (5.6%)	32 (7.2%)	37 (8.3%)	18 (4%)	11 (2.5%)	123 (27.5%)
2009	16 (3.6%)	28 (6.2%)	34 (7.6%)	14 (3.1%)	9 (2%)	101 (22.5%)
2010	16 (3.6%)	29 (6.5%)	28 (6.3%)	13 (2.9%)	7 (1.6%)	93 (20.8%)
2011	10 (2.2%)	22 (4.9%)	23 (5.1%)	10 (2.2%)	5 (1.1%)	70 (15.6%)
2012	10 (2.2%)	19 (4.2%)	20 (4.5%)	7 (2%)	5 (0.7%)	61 (13.6%)
Total	77 (17.2%)	130 (29.0%)	142 (31.7%)	64 (14.3%)	35 (7.8%)	48(100%)

Table 3: Shows the distribution of prevalence of HIV-TB Co Infection among, out of 448 (100%) reported cases of HIV - TB Co infection from 2008 - 2012 used for the study, 77(17.2%) reported cases were less than 21years. 130 (29.0%) reported cases were between 21 – 30 years, 142 (31.7%) were between 31 - 40 years, 64 (14.3) reported cases were 41 - 50 years and 35 (7.8%) were between the age bracket 50 and above.

What age group has the highest prevalence of HIV-TB Co Infection?

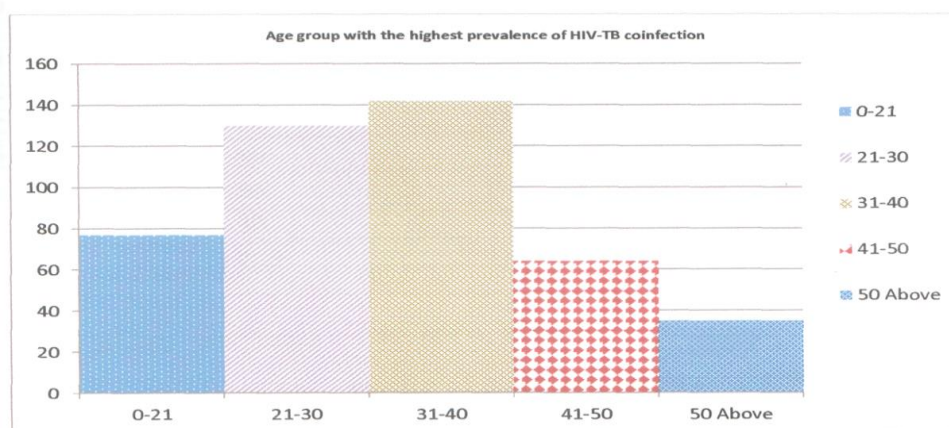


Fig 6. Histogram showing the age group with the highest prevalence of HIV-TB

The result above shows that the age bracket of 31 to 40 has the highest prevalence of 142 (31.7%).

Table_4
Analysis of hypothesis 1

Year/ Age	Male	Female	Total
2008	59	64	123
2009	50	51	101
2010	46	47	93
2011	34	36	70
2012	30	31	61
TOTAL	219	229	448

X^2 cat = 30.39, $> X^2$ table = 9.49, df= 4, p<0.05

Since the calculated Chi - square of 30.39 is more than (>) table value of 9.49 at 4 df. The null is rejected. Hence the conclusion is that there is significant difference among prevalence of HIV - TB Co infection between male and female from 2008-2012.

Table_5
Analysis of Hypothesis 2

Year / Age	Less than 21	21-30	31-40	41-50	50 above	Total
2008	25	32	37	18	11	123
2009	16	28	34	14	9	101
2010	16	29	28	13	7	93
2011	10	22	13	10	5	70
2012	10	19	20	9	3	61
Total	77	130	142	64	35	448

77 (17.2%), 130 (29.0%), 142 (31.7%), 64 (14.3%), 35 (7.8%), 526×2 calc = 452.40, $\times 2$ table = 31.40, df 20, p< 0.05

This shows that since the calculated chi-square of 44.48 is greater than the table chi - square of 31.41. The null hypothesis was rejected. Hence the conclusion is that there is significant difference among prevalence of HIV - TB Co infection among patients of various ages.

DISCUSSION

These findings have been discussed based on the research questions and hypothesis that guided the study.

Research Question 1: Sought to determine the prevalence of HIV - TB Co infection among prevalence of HIV-TB Co infection. Results revealed that from 2008-2012, four hundred and forty eight (448) HIV - TB Co infection cases were reported. In 2008, 123 (27.46%) were reported, in 2009, 101 (22.55%) were reported, 93 (20.76) were reported in 2010, and 70 (15.63%) and 61 (13.62%) were reported in 2011 and 2012 respectively. This result revealed decreasing prevalence from 2008-2012. The result is similar to the studies carried out [23]. The result of these studies revealed decreasing prevalence. This result is expected. Measures have been taken to control this menace. In Rivers State, primary health care centres have been equipped to manage this disease. People are becoming enlightened on issues that pertain to this disease.

Research Question 2: Sought to ascertain the year with the highest prevalence of HIV-TB Co infection among prevalence of HIV-TB Co infection. The above result shows that the highest prevalence of 123 (27.5%) was reported in the year 2008. Now there is increased awareness on the mode of transmission of TB/HIV co infection unlike in years gone by. With this awareness, people are more careful hence the high prevalence in 2008. This also, could be due to the increased industrialization of the city of Port Harcourt and prostitution increased industrialization increases the rate of prostitution [24]. These authors are of the view that industrialization "invites" prostitutes thereby increasing the spread of TB/HIV co infection.

Research Question 3: Sought to ascertain the prevalence of HIV - TB Co infection by gender. In 2008, 59 (13.2%) males and 64 (14.3%) females reported of HIV - TB Co infection. In 2009, 50 (11.1%) males and 51 (11.4%) females reported of HIV -TB Co infection. In 2010, 46 (10.3%) males and 47 (10.5%) females prevalence was revealed. In 2011, 34 (7.6%) males and 36 (8%) females were reported while in 2012 30 (6.7%) males and 31 (6.9%) female cases were reported. Here, females have a higher prevalence. This contradicts the study carried out in some areas , where of all cases studied, 68.8% were males while 31.2% were females [25]. Women in this part of the world are at risk, women care for the sick, even if it is a communicable disease therefore, more exposed to diseases.

Research Question 4: Sought to ascertain the gender with the highest of HIV - TB Co infection. Out of the 448 reported 219 (48.9%) were males while 229 (51.1%) were females. Both males and females stand an equal chance of having HIV-TB Co infection [26]. There is not much difference in prevalence between the male and female gender. The result of the study in terms of prevalence between males and females was almost in the ratio 1:1 with male prevalence of 49.3% and female prevalence of 50.7%, But in my own opinion, as explained in research question 3, female gender stands a higher chance of having HIV-TB co infection [27].

Research Question 5: Sought to ascertain the prevalence of HIV - TB Co infection among by age. Out of the 448 reported cases of HIV - TB Co infection from 2008 -2012, used for the study, 77 (17.2%) reported cases were less than 21years, 130 (29.0) reported cases were between 21 - 30 years. 142 (31.7%) reported cases were between the age brackets of 31 - 40 years, 64 (14.3%) reported cases were age 41 - 50 while 35 (7.8%) were between the age brackets 50 and above. This agrees with the study conducted by other scholars [28]. Generally, the young are full of life and migrate easily to industrialized areas which exposes them the risk of engaging in activities such as prostitution. This is a risk factor.

Research Question 6: Sought to ascertain the age with the highest prevalence of HIV-TB Co infection. The result above shows that the age bracket of 31 to 40 has the highest prevalence of 142 (31.7%). This strongly agrees with results of several studies found in literatures. One of such is the result of a study done in New York City in which 97% of the HIV - TB Co infection in patients aged 21 - 40 years. Another such literature is the result of the study done in Nepal. In this study, it was stated that the result showed 91.3% prevalence of HIV - TB Co infection in patients aged 21 - 40 years [29].

Research Question 7: Sought to ascertain the influence of gender in the prevalence of HIV - TB Co infection among attendees of the TB outpatient clinic of UPTH. χ^2 cal = 30.39, $> \chi^2$ table = 9.49, df = 4, $p < 0.05$. Since the calculated chi-square of 30.39 is greater than ($>$) table value of 9.49 at 4 df, it shows that there is significant difference in the prevalence of HIV - TB Co infection by gender. This proves that sex (gender) influences the spread of HIV-TB Co infection as seen in the study carried out [30].

Research Question 8: Sought to ascertain the influence of various ages in the prevalence of HIV - TB Co infection, χ^2 cal = 452.40 $> \chi^2$ table = 31.40 $d_f = 20$, $p < 0.05$. This shows that since the calculated chi - square of 452.40 is greater than the test chi square of 31.40 at 20 d_f , the null hypothesis was rejected. Hence the conclusion is that there is significant difference in the prevalence of HIV - TB Co infection among patients of various ages. This study showed an HIV - TB prevalence of 70.5% in people aged 20 - 49 years.

CONCLUSIONS

Ease on the results and findings, the following conclusions were drawn;

1. Prevalence of HIV-TB Co infection among attendees of TB outpatient clinic of the UPTH from 2008-2012 was four hundred and forty eight (448).
2. The highest prevalence of 123(27.5%) was in the year 2008 and the lowest of 61(13.62%) was in 2012.
3. Female prevalence was 229(51.1%) while male prevalence was 219(48.9%).
4. The age bracket 31-40 years 142(31.7%) showed the highest prevalence and the lowest age bracket was 50years and above 35(7.8%).
5. Since the calculated chi - square of 30.39 is greater than ($>$) table value of 9.49 at 4 df, it shows that there is significant difference in the prevalence of HIV - TB Co infection by gender therefore: There was significant difference between male and female prevalence of HIV-TB co infection among attendees of TB outpatient clinic of UPTH.
6. This shows that since the calculated chi - square of 452.40 is greater than the test chi square of 31.40 at 20 df, the null hypothesis was rejected. Hence the conclusion is that there is significant difference in the prevalence of HIV - TB Co infection among patients of various ages.

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