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Assessment of Tuberculosis Treatment Strategies in HIV Patients: A Comparative Study of Two Healthcare Facilities in Oyo State, Nigeria

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Abstract

Introduction: Tuberculosis (TB) and Human Immunodeficiency Virus (HIV) co-infection, particularly prevalent in Sub-Saharan Africa, significantly increases morbidity and mortality rates. The synergistic relationship between TB and HIV, often termed 'the cursed duet,' exacerbates the global health burden by elevating the risk of developing active TB among HIV-infected individuals. This co-infection accelerates disease progression, complicates treatment protocols, and strains healthcare systems. In Nigeria, a country ranking sixth globally in TB burden, the intersection of HIV and TB presents formidable public health and socio-economic challenges. Effective management of HIV/TB co-infection is critical to reducing morbidity and mortality, alleviating healthcare system burdens, and mitigating the economic impact on affected communities.

Objective: This study aims to assess the effectiveness of TB treatment strategies in HIV patients across two healthcare facilities in Oyo State, Nigeria, through a comparative analysis.

Method of Data Analysis: A retrospective analysis was conducted on medical records of newly diagnosed HIV patients and pharmacy prescriptions of HIV-positive individuals diagnosed with TB infection from January 2009 to December 2012. Simple descriptive statistics such as mean, mode, median, and percentage were utilized for data analysis, alongside qualitative data interpretation to develop relevant themes for coding and sorting.

Results: The study revealed a 6.7% prevalence rate of HIV/TB co-infection in the study population. Among co-infected patients, 89.4% who received concurrent treatment achieved successful TB outcomes, compared to 72.0% and 33.3% in those whose ART was delayed or deferred until after TB treatment, respectively. Females constituted 63.6% of HIV patients and 57.0% of co-infected patients. The age group 21-40 accounted for 74.0% of HIV patients and 70.0% of co-infected patients.

Conclusion: The study underscores the importance of timely intervention and integrated management strategies for HIV/TB co-infection. Consistent drug availability and adherence to national treatment guidelines contribute to relatively low prevalence rates. Gender-specific interventions and targeted approaches for young adults are crucial for effective disease management and reducing the socio-economic impact of HIV/TB co-infection.

Keywords: HIV/TB co-infection, tuberculosis treatment, Oyo State, Nigeria, prevalence, integrated management strategies.

Introduction:

Tuberculosis (TB), a global health concern primarily affecting the lungs due to Mycobacterium tuberculosis, is intensified by the coexistence of Human Immunodeficiency Virus (HIV). This synergy, often termed 'the cursed duet,' significantly escalates morbidity and mortality rates, particularly in Sub-Saharan Africa (Adebayo et al ,2020; McShane, 2005; Parks, 2009). HIV weakens the immune system, elevating susceptibility to opportunistic infections such as TB (Matthew, 2010). The impact of HIV on TB pathogenesis is evident in the worldwide rise in TB incidence, with HIV-infected individuals facing a 5% to 15% annual risk of developing active TB (Corbett, 2003). Nigeria ranks sixth among countries heavily burdened by TB, reporting approximately 259,000 cases annually, of which 113,000 are smear positive (FMOH, 2000). This association between HIV and TB poses significant public health and socio-economic threats, particularly in developing nations (Corbett, 2003; Styllblo, 1990). HIV's ability to activate latent TB infections dramatically increases the likelihood of TB development, with co-infected individuals facing a 10% risk annually (WHO, 2004; Griffith, 1996). Meanwhile, 10% of those infected with both TB and HIV develop TB disease annually (IUATLD, 2000).

Despite global efforts, treatment success rates for TB-HIV co-infection remain below targets (FMoH, 2005, Adebayo et al ,2020). Nigeria's National TB Control Program aims to enhance TB-HIV co-infection treatment capacity (McShane, 2005). However, existing strategies primarily address TB treatment determinants, neglecting co-infection challenges (Ige, 2011;Idowu et al 2021). The dual burden of TB and HIV strains healthcare systems, increases resource demand, and heightens social stigma (Godfrey-Fausset & Ayles, 2002; Idowu et al 2021). The economic repercussions extend beyond healthcare expenditure, contributing to income loss and GDP reduction (TBCTA, 2010).

In Oyo State, Nigeria, assessing TB treatment strategies in HIV patients across two healthcare facilities is imperative. Understanding their effectiveness through comparative analysis can inform tailored interventions, improve treatment outcomes, and alleviate the burden of TB-HIV co-infection in the region. This study aims to contribute to the knowledge base on TB-HIV co-infection management, guiding policymakers and healthcare providers towards more effective interventions.

MATERIALS AND METHODS

Study Area

This study was conducted at two healthcare institutions in Oyo state; University college Hospital(UCH) in Ibadan and the Adeoyo State Hospital in Ibadan, Oyo state. These hospitals are the major providers of collaborative TB and HIV services in the city.

The University College Hospital (UCH) in Ibadan is a renowned tertiary healthcare institution located in Ibadan, Oyo State, Nigeria. Established in 1957, UCH is one of the largest and oldest teaching hospitals in Nigeria, serving as a major referral center for medical cases from within the country and beyond. The hospital is affiliated with the University of Ibadan, providing clinical training for medical students, resident doctors, and other healthcare professionals. UCH offers a wide range of medical services across various specialties, including internal medicine, surgery, pediatrics, obstetrics and gynecology, psychiatry, and infectious diseases. With state-of-the-art medical facilities and a team of highly skilled medical professionals, UCH is well-equipped to handle complex medical conditions, including tuberculosis (TB) and HIV/AIDS. The hospital's TB and HIV/AIDS clinics provide comprehensive care and treatment for patients diagnosed with these conditions. Services offered include diagnosis, treatment initiation, counseling, adherence support, and monitoring of treatment outcomes. UCH is also actively involved in research and clinical trials aimed at improving TB and HIV/AIDS treatment strategies.

Adeoyo Hospital in Ibadan, Oyo State, Nigeria, stands as a prominent healthcare institution renowned for its dedication to providing comprehensive medical services to the local community. Located strategically within the city of Ibadan, the hospital offers modern facilities equipped with state-of-the-art technology to support various diagnostic, treatment, and therapeutic interventions. Its array of medical services covers a wide spectrum of specialties, including internal medicine, surgery, pediatrics, obstetrics and gynecology, orthopedics, dermatology, ophthalmology, psychiatry, and more. Additionally, Adeoyo Hospital hosts specialized treatment centers or clinics tailored to managing infectious diseases such as tuberculosis (TB) and Human Immunodeficiency Virus (HIV), reflecting its commitment to addressing critical healthcare needs within the community.

Beyond its role as a healthcare provider, Adeoyo Hospital actively engages in community health promotion through various outreach programs, health education initiatives, and collaborations with local organizations and government agencies. This commitment to holistic healthcare and community welfare underscores its significance as a study area for assessing tuberculosis treatment strategies in HIV patients.

Study Design

This study involves a retrospective analysis of the medical records of newly diagnosed HIV patients and the pharmacy prescriptions of HIV-positive individuals diagnosed with TB infection. The analysis encompasses cases seen at the designated healthcare facilities from January 2009 to December 2012.

Data Collection

The case notes of all newly diagnosed HIV patients attended to between January 2009 and December 2012 in the HIV clinics of the two hospitals were collated to determine the demographic distribution of the infected patients. The case notes and pharmacy order forms (prescriptions) of patients that were co-infected with TB were then separately analysed to evaluate the treatment regimen prescribed and treatment options adopted in comparison with the recommendation of the National guidelines on ARV and TB co-infection. The anti- tuberculosis regimens prescribed for the co-infected patients were also evaluated. In addition, key informant interview was also to assess the knowledge and experience of the prescribers in the treatment of TB.

Data analysis

Simple descriptive statistics, such as mean, mode, median, and percentage was used. Analysis of qualitative data placed emphasis on the interpretation, description, and recording / writing of what is said. Relevant themes were developed for the coding and sorting of qualitative data.

Ethical consideration

Before the commencement of the work, ethical approvals were obtained from the ethical review committees of both the University College Hospital(UCH), and the State Hospitals Management Board. Permission to conduct the study and to access data was also obtained from the management of Adeoyo Specialist Hospital, Yemetu – Ibadan

Results

Table 1: Sociodemographic Characteristics of the selected Patients

Sociodemographic Characteristics	HIV patients	Co-infected patients
Sex		
Male	546(36.4)	43(43.0)
Female	954(63.6)	57(57.0)
Age group(years)		
1 – 20	55(3.7)	5(5.0)
21 – 40	1110(74.0)	70(70.0)
41 – 60	300(20.0)	20(20.0)
> 60	35(2.3)	5(5.0)
Occupation		
Civil servants	201(13.4)	11(11.0)
Drivers	535(35.7)	34(34.0)
Farmers	311(20.7)	22(22.0)
Students	237(15.8)	14(14.0)
Traders	216(14.4)	19(19.0)
Marital status		
Single	346(23.1)	23(23.0)
Married	437(29.1)	29(29.0)
Separated	38(2.5)	3(3.0)
Widowed	679(45.3)	45(45.0)

The sociodemographic characteristics of the patients in this study reveal notable patterns among HIV patients and those co-infected with HIV and tuberculosis (TB). The data indicate a higher proportion of females among both groups, with 954 (63.6%) females among HIV patients and 57 (57.0%) among co-infected patients, compared to 546 (36.4%) males among HIV patients and 43 (43.0%) among co-infected patients. Age distribution shows a predominant representation in the 21-40 age group, comprising 1110 (74.0%) HIV patients and 70 (70.0%) co-infected patients, followed by those aged 41-60, accounting for 300 (20.0%) HIV patients and 20 (20.0%) co-infected patients. Occupational status reveals diverse occupations among respondents, with notable proportions of drivers and farmers among both groups. Regarding marital status, a significant proportion of respondents are widowed, comprising 679 (45.3%) HIV patients and 45 (45.0%) co-infected patients, while the least represented category is separated individuals, constituting 38 (2.5%) HIV patients and 3 (3.0%) co-infected patients. These

findings provide valuable insights into the demographic composition of HIV patients and co-infected individuals, informing targeted interventions and healthcare strategies tailored to their specific needs.

Table 2 The distribution of HIV treatment options adopted in co-infection based on baseline CD4 count.

Baseline CD4 count	Frequency	Percentage
≤ 200 /mm^3	9	9.0
≥200 – 350 /mm^3	25	25.0
>350 /mm^3	66	66.0

Table 2 provides a detailed breakdown of the distribution of HIV treatment options among co-infected individuals, stratified by baseline CD4 count levels. Among co-infected patients, 9 (9.0%) individuals had a baseline CD4 count of ≤ 200 /mm3, indicative of compromised immune function at treatment onset. These patients underwent a postponement of ART initiation until completion of short-course TB treatment. Subsequently, they were initiated on a regimen comprising Zidovudine, Lamivudine, and Nevirapine (300mg bd, 150mg bd, and 200mg bd respectively).

A larger subset of co-infected patients, accounting for 25 (25.0%), fell within the CD4 count range of ≥200 – 350 /mm3. For this cohort, ART initiation was deferred until completion of the initial TB treatment phase, eliminating the concurrent administration of rifampicin. Following this, they received a combination regimen of Zidovudine, Lamivudine, and Nevirapine (300mg bd, 150mg bd, and 200mg bd respectively).

The majority of co-infected individuals, comprising 66 (66.0%), exhibited a baseline CD4 count exceeding 350 /mm3, indicating a relatively healthier immune status prior to treatment initiation. For these patients, a concurrent treatment approach addressing both TB and HIV was implemented, incorporating rifampicin alongside Zidovudine, Lamivudine, and Efavirenz (300mg bd, 150mg bd, and 600mg daily respectively).

This comprehensive breakdown underscores the importance of considering baseline CD4 count levels in tailoring appropriate HIV treatment strategies for co-infected patients, facilitating optimal management outcomes in such complex clinical scenarios.

Table 3: Treatment outcome of the treatment options

Treatment options	Number of Patients	No of patients successfully treated	Percentage
Treat TB and HIV concurrently	66	59	89.4
Delay ART until completion of initial phase of TB	25	18	72.0
Delay ART until completion of TB treatment	9	3	33.3

Table 3 provides a comprehensive overview of treatment outcomes among co-infected patients across different HIV treatment options, measured by the proportion of patients successfully treated for TB relative to the total number of patients who initiated TB treatment under each option. Successful treatment was determined by a negative microscopic examination of the patient's sputum at the conclusion of short-course TB treatment, indicating resolution of the TB infection. The findings reveal

notable differences in treatment outcomes based on the timing of ART initiation in relation to TB treatment phases. Among patients undergoing concurrent treatment for both TB and HIV (66 patients), a substantial majority of 59 (89.4%) achieved successful TB treatment outcomes. In contrast, among those whose ART initiation was deferred until completion of the initial TB treatment phase (25 patients), 18 (72.0%) attained successful treatment outcomes. However, for patients whose ART initiation was delayed until after completion of TB treatment (9 patients), the success rate was markedly lower, with only 3 (33.3%) experiencing successful TB treatment outcomes. These results underscore the varying treatment efficacies associated with different treatment approaches, emphasizing the critical role of timely intervention and integrated management strategies in optimizing treatment outcomes for co-infected individuals.

Table 4: Treatment Regimens for Co-Infected Patients Based on Disease Categories

Category	Description	Initial phase treatment	Continuation phase treatment
I	92(92.0)	Isoniazid 5mg/kg daily, Rifampicin 10mg/kg daily, Pyrazinamide 25mg/kg daily, Ethambutol 15mg/kg daily	Isoniazid 5mg/kg daily, Ethambutol 15mg/kg daily for 6 months
II	8(8.0)	Isoniazid 5mg/kg daily, Rifampicin 10mg/kg daily, Pyrazinamide 25mg/kg daily, Ethambutol 15mg/kg daily, Streptomycin injection 15mg/kg daily (initial phase only)	Isoniazid 5mg/kg daily, Rifampicin 10mg/kg daily, Ethambutol 15mg/kg daily for 6 months

Table 4 presents the treatment regimens administered to co-infected patients based on their disease categories. Category I comprised 92% of the patients and received a standard regimen during both the initial and continuation phases, consisting of Isoniazid, Rifampicin, Pyrazinamide, and Ethambutol. Category II, representing 8% of the patients, received the same regimen as Category I during the continuation phase, but during the initial phase, Streptomycin injection was added alongside the standard medications. These findings illustrate the tailored treatment approaches adopted for co-infected patients based on disease severity and highlight the variations in medication administration between the two categories.

Table 5: Results of the Key Informant Interview/Characteristics of the respondents

Variable	Frequency	Percentage
Respondents Profession		
Medicine(Dr.)	10	66.7
Nursing	5	33.3
Years of experience at TB Unit		
1-5	0	0.0
6-10	7	46.7
11-15	8	53.3
What guides your pattern of prescription?		
National guidelines	15	15.0
Local guidelines	0	0.0
Have you attended any workshop on Tuberculosis(TB)?		
Yes	15	15.0

No	0	0.0
When did you attend the workshop?		
Recently	13	86.7
Long ago	1	6.7
Cant remember	1	6.7
Who organized the workshop?		
Damien foundation	7	46.7
National Tuberculosis and Leprosy control Programme	8	53.3
Were the workshops beneficial to you?		
Yes	15	15.0
No	0	0.0
Do you comply with the National guidelines?		
Yes	15	15.0
No	0	0.0

Table 5 summarizes the results of key informant interviews regarding the characteristics of respondents and their practices related to tuberculosis (TB) management. The majority of respondents were from the medical profession (66.7%), with a significant representation from nursing as well (33.3%). Regarding years of experience at TB units, 46.7% reported having 6-10 years of experience, while 53.3% had 11-15 years of experience. In terms of prescription practices, all respondents (100%) indicated that their pattern of prescription is guided by national guidelines, with none following solely local guidelines. Additionally, all respondents (100%) had attended workshops on TB, primarily organized by the National Tuberculosis and Leprosy Control Programme (53.3%) and the Damien Foundation (46.7%). The workshops were reported to be beneficial by all respondents (100%), and all (100%) indicated compliance with national guidelines in their practice. These findings underscore the importance of adherence to national guidelines and continuous education through workshops in shaping clinical practices related to TB management among healthcare professionals.

DISCUSSION

The study showed a prevalence rate of 6.7% for HIV/TB co infection in the study population. This is in consistence with findings from some research conducted in some other parts of the country, Ejikeme and Godwin (2010) reported a prevalence rate of 6.4% in Umuahia, Abia State. FMOH in 2010 reported a prevalence rate of 4.0% in Oyo State; In Edo and Kano state, a prevalence rate of 9.6% and 10.5% were reported by Okodua *et al* (2004), and Zubairu and Musa (2009) respectively. However, some other states of the country like Kano, Enugu, Borno, Plateau, and Benue recorded higher prevalence rates of 12%, 14%, 27%, 30%, and 35% respectively (FMOH, 2000). Higher prevalence rates `of 13.9% and 12.6% were reported in Ile- Ife, Osun State, and Ilorin, Kwara State (Olaniran *et al*, 2011; Salami and Olunloyo, 2000). In Lagos, Idigbe *et al* (1994) reported a prevalence rate of 5.3%. The relatively low prevalence rate observed in this study may be attributed to the consistent availability of medications, as there were no instances of drug stockouts throughout the study duration at the healthcare facilities. Various factors have been proposed as contributors to the variability in tuberculosis (TB) prevalence among individuals living with HIV. Among these factors are the demographic characteristics and socioeconomic status of the patients (Harris, 1990). Onipede et al. (1999) and Idowu et al (2021) also noted that TB tends to thrive in communities characterized by poverty and destitution. These factors, combined with the elevated risk of HIV exposure among drivers, traders, and farmers, who frequently travel and may engage in extramarital and unprotected sexual activities, could account for the higher incidence of HIV-TB coinfection observed among these occupational groups (drivers 34.0%, traders 19.0%, and farmers

22.0%) in this study. Additionally, it is plausible that the heightened prevalence of HIV infection within these demographics may have triggered the reactivation of latent Mycobacterium tuberculosis infections previously dormant in these individuals.

The data indicate a higher proportion of females among both groups, with 954 (63.6%) females among HIV patients and 57 (57.0%) among co-infected patients, compared to 546 (36.4%) males among HIV patients and 43 (43.0%) among co-infected patients. This is consistent with a study in Edo state and Nassarawa states where females had a higher co infection of HIV/TB than their male counterpart, however this contradict similar studies in Lagos, Ile Ife, Abia and Kano state where it was found that the males had a higher prevalence of HIV/TB co infection than their female counterparts.(Idigbe *et al*, 1994; Zubairu and Musa, 2011; Ejikeme and Godwin, 2010; Idowu et al 2021, Olaniran et al 2021). It has been observed that a majority of HIV infections are acquired through unprotected sexual relations, with studies indicating that the transmission rate from male to female is approximately 0.08%, while that from female to male is around 0.04% (Silvero et al., 2009). Research conducted in various African countries, including South Africa, Kenya, and Uganda, has demonstrated that male circumcision significantly reduces the risk of female-to-male sexual transmission of HIV (Rothenberg et al., 1998; Halkitis et al., 2008). Furthermore, a joint expert panel convened by the World Health Organization (WHO) and the Joint United Nations Programme on HIV/AIDS (UNAIDS) has endorsed male circumcision as an important intervention for reducing the risk of heterosexual HIV transmission in men (Halkitis et al., 2008).

The higher prevalence rate of HIV infection among women in this study may be attributed to a decrease in heterosexual transmission to males due to male circumcision, as studies have indicated that approximately 90% of males over the age of fifteen in Nigeria are circumcised (WHO, 2007). Additionally, research on HIV among women who have undergone female genital cutting (FGC) has yielded varied findings, with some evidence suggesting an increased risk of transmission. This could potentially contribute to the elevated occurrence of HIV infection among women in this study, particularly considering that the study area, like many traditional African settings, has a high incidence of illegal female genital mutilation (WHO, 2007).

The age distribution analysis reveals a notable concentration within the 21-40 age bracket, with 1110 (74.0%) HIV patients and 70 (70.0%) co-infected patients falling into this category. This observation aligns with expectations, as it is widely recognized that individuals in the 20-40 age range, often considered young adults, are typically at their peak sexually. This trend mirrors findings from previous studies conducted in various regions, including Edo state (Okodua et al., 2004), Kano (Zubairu and Musa, 2009), Umuahia (Ejikame and Godwin, 2010), and Ile-Ife (Olaniran et al., 2011). Additionally, research conducted in states such as Kano, Enugu, Borno, Plateau, and Benue has consistently indicated that a majority of HIV and HIV/TB co-infected patients belong to the adolescent and young adult age groups (FMOH, 2000). This demographic trend carries significant socioeconomic implications, as the 21-40 age group typically represents the most productive segment of any community. Consequently, the disproportionate burden of HIV and HIV/TB co-infection among individuals in this age range is likely to have adverse effects on socio-economic activities within affected communities.

The majority of co-infected patients underwent concurrent treatment for both TB and HIV, while a smaller subset had their HIV treatment postponed until after the initial phase of TB treatment. A minority had their treatment deferred until after completing TB treatment. Prescribers attributed this delay to their adherence to the 2010 recommendations outlined in the National Guidelines on HIV and AIDS treatment and care for adolescents and adults. It's worth noting that patients whose ART treatment was deferred until TB treatment completion were attended to in 2009. Despite these variations, prescribers strictly

followed the recommendations outlined in the National Guidelines on HIV and AIDS treatment and care for adolescents and adults (2010) and the Guidelines for the clinical management of TB and HIV/AIDS related conditions in Nigeria (2008). This study's findings on treatment options in co-infection couldn't be compared with local studies, as most local studies focused primarily on the prevalence of TB/HIV co-infection. Knoll et al. (2007) concluded that withholding treatment at any stage of HIV infection lacked empirical evidence, noting that death rates were nearly twice as high when therapy was delayed (until the CD4 count fell below 500) compared to initiating therapy when the CD4 count was above 500. The WHO panel on antiretroviral guidelines for adults and adolescents in 2009 recommended initiating ART in all patients with a CD4 count below 350, with treatment also advised for patients with a CD4 count between 350 and 500. Early treatment of HIV-infected individuals is suggested to provide protection for 96% of partners from infection (Knoll et al., 2007).

Among patients undergoing concurrent treatment for both TB and HIV (66 patients), a substantial majority of 59 (89.4%) achieved successful TB treatment outcomes. In contrast, among those whose ART initiation was deferred until completion of the initial TB treatment phase (25 patients), 18 (72.0%) attained successful treatment outcomes. However, for patients whose ART initiation was delayed until after completion of TB treatment (9 patients), the success rate was markedly lower, with only 3 (33.3%) experiencing successful TB treatment outcomes. The result emphasized the need to commence ART at every stage of TB/HIV co infection irrespective of the CD4 count as recommended by National Guidelines on HIV and AIDS treatment and care in Adolescents and Adults (WHO 2010). Furthermore, these results underscore the varying treatment efficacies associated with different treatment approaches, emphasizing the critical role of timely intervention and integrated management strategies in optimizing treatment outcomes for co-infected individuals.

Category I encompassed the majority, constituting 92% of the patient population, and adhered to a standardized treatment regimen throughout both the initial and continuation phases, which included Isoniazid, Rifampicin, Pyrazinamide, and Ethambutol. In contrast, Category II, representing 8% of patients, followed the same regimen as Category I during the continuation phase but incorporated Streptomycin injection alongside standard medications during the initial phase. The World Health Organization (WHO) and the National TB Programme recommend the use of specific medications tailored to each category. For Category I patients, the recommended regimen comprises isoniazid, rifampicin, pyrazinamide, and ethambutol/streptomycin in the initial phase for two months, followed by either a combination of isoniazid and rifampicin for four months or isoniazid and ethambutol for six months in the continuation phase. Conversely, Category II patients receive isoniazid, rifampicin, pyrazinamide, ethambutol, and streptomycin for two months during the initial phase, followed by isoniazid, rifampicin, and ethambutol for five months during the continuation phase. This treatment guideline was strictly adhered to in both selected healthcare facilities, attributed to the prescribers' attendance at various workshops and seminars and their accumulated experience, as all medical staff in the clinics have over six years of experience in the chest clinic. These findings underscore the tailored treatment strategies employed for co-infected patients based on disease severity and underscore the differences in medication administration between the two categories.

The outcomes of key informant interviews regarding respondents' characteristics and practices related to tuberculosis (TB) management revealed that the majority of respondents were from the medical profession (66.7%), with a notable representation from nursing (33.3%). Concerning experience levels at TB units, 46.7% reported 6-10 years of experience, while 53.3% had 11-15 years of experience. Regarding prescription practices, all respondents (100%) indicated adherence to national guidelines, with none solely following local guidelines. Additionally, all respondents (100%) had participated in TB

workshops, primarily organized by the National Tuberculosis and Leprosy Control Programme (53.3%) and the Damien Foundation (46.7%). The workshops were reported to be beneficial by all respondents (100%), and all (100%) indicated compliance with national guidelines in their practice. These findings underscore the importance of adherence to national guidelines and continuous education through workshops in shaping clinical practices related to TB management among healthcare professionals.

CONCLUSION

This study provides valuable insights into the management of HIV/TB co-infection within the study population in Oyo state. The prevalence rate of 6.7% observed aligns with previous research findings in Nigeria, highlighting the persistent challenge posed by HIV/TB co-infection. Factors such as consistent drug availability and adherence to national treatment guidelines may have contributed to the relatively low prevalence rate observed. However, regional variations in prevalence rates underscore the need for tailored interventions based on specific demographic and geographic contexts.

The higher burden of HIV/TB co-infection among females emphasizes the importance of addressing gender-specific factors in disease prevention and management. Strategies like promoting male circumcision for HIV prevention should be explored as part of comprehensive prevention programs. The concentration of co-infected patients in the 21-40 age group underscores the importance of targeted interventions among young adults, who are pivotal for community development. Addressing HIV/TB co-infection in this demographic is crucial for mitigating its adverse socioeconomic impact. The findings regarding treatment outcomes highlight the significance of timely intervention and integrated management strategies for optimizing treatment efficacy. Adherence to treatment guidelines, especially regarding early initiation of ART, regardless of CD4 count, is essential for improving outcomes.

In light of these findings, it is recommended that efforts be made to strengthen drug availability, integrate gender-specific interventions into HIV prevention programs, develop targeted interventions for young adults, and enhance healthcare provider education on TB management practices. These measures are essential for reducing the burden of HIV/TB co-infection and improving overall health outcomes in affected populations.

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