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Research Article

ADHERENCE TO ANTIRETROVIRAL AND ANTITUBERCULAR REGIMEN IN PATIENTS WITH HIV-TB COINFECTION

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ABSTRACT

Co-infection with tuberculosis (TB) is common in patients infected with human immunodeficiency virus (HIV). Patients who are on drug therapy for HIV-TB co-infection, adherence to both the regimen is low. Low adherence of the patients can lead to spread of resistant strains of tuberculosis and HIV. The Main objective of this study is to identify the factors that lead to low adherence to HIV and TB therapy among co-infected patients. It also helps to find the ways to improve the adherence of anti-tubercular and antiretroviral regimen in patients with HIV-TB co- infection. The study was conducted as a questionnaires survey, involving both quantitative and qualitative methods. The study conducted at the TB-HIV Clinic, Mnazi Mmoja Hospital, Zanzibar, which provides ant-TB and ARV drugs. Triangulated data was collected through Interviews, Observations, Document Reviews, and Survey. Survey conducted through questionnaires which involved health care providers (doctors, nurses, health educator and pharmacy assistant) and patients. The results obtained were tabulated. The results showed that the level of adherence among HIV-TB co-infected patients at Mnazi Mmoja hospital Zanzibar is only 28.6 %, and non-adherence level 71.4 %. All the patients who were non-adherent had educational qualification below primary education. The most contributory factor for non-adherence to the medication is their poor economic status and education. Repeated counseling and extensive follow-up is needed in these patients to make them adherent to the medication. Improving the patient compliance could improve the health status of these patients and prevent the spread of resistant strains of infection. The success of the therapy in HIV-TB co-infection lies on the adherence to the medication.

Keywords: - HIV/TB Co-infection, Adherence, Counseling, Compliance.

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INTRODUCTION

Globally, Human Immunodeficiency Virus (HIV) presents a huge challenge in relation to the control of Tuberculosis (TB). HIV and TB are the leading infectious disease-causing morbidity and mortality with worst outcomes during co-infection. Approximately 10.8 million people have developed tuberculosis in 2023, out of which 1.25 million people died due to TB [1]. Globally, the annual incident cases of HIV-TB co-infection was estimated to be 1.7 million in 2006 and has decreased to 660,000 in 2023. Though there is an approximate 60 % decrease in the incident cases, TB is still the leading cause of death in co-infection [1, 2]. In 2009, 1.1 million people are reported to be living with HIV-TB. 80% - of these live in Sub-Sahara Africa. Approximately 70% (460,000) of global HIV-TB in 2023

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occurred in the African region, with Southern and Eastern Africa alone accounting for 54% (360,000) (UNAIDS - Data 2024). Almost 25% of the deaths among the HIV-infected are caused by TB.

In 2004, WHO recommended that "HIV/AIDS and tuberculosis programs should create a joint body, working at regional, district and local levels" [3]. In other words, the WHO proposed to reduce the burden of HIV-TB through effective collaboration between the National Tuberculosis Program (NTP) and National AIDS Control Program (NACP) (WHO, 2003). Joint programs will improve HIV-TB care and prevention offered by the regional health systems (WHO, 2003). In 2011, the WHO suggested that all patients infected with HIV and diagnosed with TB should receive concomitant services on prevention, treatment, and care as co-infected and also it suggested all infected with HIV should initiate ARV regardless their CD4 count.

Tanzania is among the African countries that have acknowledged the need for NTP and NACP collaboration at district, regional and national levels. In Tanzania, there is marked increase in TB infections, mainly due to HIV/AIDS [4]. As a part of Tanzania, Zanzibar has also adopted the WHO recommendation to offer integrated TB and HIV programmes. The guideline which has been developed under the 2010 strategy on HIV-TB state that "early diagnosis and effective treatment of TB among HIV-infected patients is critical for curing, minimizing the negative effects and interrupting the transmission in the community" (MOH, 2010). Despite increased efforts to improve treatment the 2009 report show that among 426 registered patients with TB 382 (90.1%) were tested for HIV, and 92 (21%) were diagnosed HIV-positive. 387 (90.8%) were new cases of which 39 were under retreatment, 25 (64%) relapses and 14 (36%) were failure and return after absconded from TB treatment [5]

Treating both HIV and TB at the same time leads to a high pill burden. The overlapping drug toxicities can affect treatment adherence of the patient [6]. However many studies explore whether patients have good adherence to TB treatment, but also whether there is insufficient active consideration of the involvement of the patient to inspire adherence of TB and ARV treatment [7]. A study done at Mbarara Hospital Uganda revealed that 25 % of TB-HIV co-infection patients did not adhere to their anti-TB treatment [8].

There is no single factor that can explain non-adherence for this reason, it is difficult to come up with a single strategy to increase adherence among this group of patients. More research is needed on non-adherence among patients who are in ARV therapy but who live far from the clinic dispensing the treatment [9]. There is significant variation in medication adherence between educated and non-educated patients, this is according to the study done at Illorin teaching Hospital Nigeria revealed that 60 % of the patients participated to the study were educated associated with adherence to their medication compare with 40% illiterates with lower level of education. Furthermore the side effects from anti-TB treatment can cause poor adherence, while effective counseling, free laboratory diagnosis of TB, and directly observed treatment (DOT's) contribute to medication adherence [10].

To improve the health and survival rates among HIV-TB patients, this study aims to identify the common causes of low-adherence among HIV-TB co-infected patients in Mnazi mmoja HIV-TB Clinic Zanzibar and suggest ways to overcome them. Mnazi mmoja Hospital in Zanzibar situated at urban west district. In Mnazi mmoja Hospital there are several programs which deal with community to promote, to prevent and to treat infection disease such as TB and HIV program. Currently TB and HIV programs integrate their planning to produce comprehensive care to HIV-TB- patients. The TB and HIV/AID programmes require combine strategic planning to work together effectively and systematically [3]. Zanzibar AIDS Commission (ZAC) and Tanzania Tuberculosis and Leprosy programme (TLP) collaborate to provide quality health care service to TB patient and people affected with HIV as well as to any people need to know his/her HIV status and TB screen.

Despite a good provision of health services there is a gradually increase in the number of low adherence to treatment among HIV-TB co-infected patients. This study was conducted to identify the factors causing low adherence, pattern of medication, in TB and HIV therapy among co-infected patients, at the Mnazi Mmoja Hospital HIV-TB Clinic

MATERIAL AND METHODS

The study was conducted at the TB-HIV Clinic, Mnazi Mmoja Hospital, Zanzibar, which provides anti-TB and ARV drugs all under one roof.

Study design

The descriptive study conducted, was survey research design which involved both quantitative and qualitative methods. The study was triangulate since the data collected from interviews, observations, document reviews, and survey. Review of documents was done through HIV-TB registered book and Pharmacy recorded book which identified number of HIV–TB patients registered at the clinic, patient receiving ARV and TB treatment, percentage of patients attending the clinic on the appointment day, HIV-TB patients who do not attended the clinic frequently to collect their drugs and percentage of patients attended to the clinic on the appointment day.

Data collection

Survey conducted through questionnaires which involved health care providers (doctors, nurses, health educator and pharmacy assistant) to assess the medication procedure, and also survey done to HIV-TB patient's to identified patient profiles and to determine their level of knowledge on HIV-TB therapy. Furthermore qualitative design method used which were interview and observation. In which interviews performed to the key informants at the HIV-TB clinic (the District Coordinator of Urban and West District, the pharmacist and the clinic in-charge) which identified the co-infected patients who received care and treatment at the TB-HIV clinic, the type of medication that is available at HIV-TB clinics and way in which medication is administered to co-infected patients at the HIV-TB clinic. Additionally in depth interview performed to HIV -TB patients through interview guidelines which determined association of low adherence when they were on HIV-TB treatment. Data was collected by observation method through observation checklist which observed medication services provided by the health care providers at the HIV-TB clinic.

Purposive sampling used to select the study population. The study selected 14 HIV-TB patients and 8 health care providers from the HIV-TB clinic which included HIV-TB patient registered in HIV-TB clinic who are on both treatment (ARV and Anti-TB) and excluded all HIV-TB patient who were not on both treatment (ARV and anti-TB), such as HIV-TB patients who are only on anti-TB without ARV therapy or vice versa.

RESULTS

There were 14 patients enrolled during the study period who were taking medication for HIV-TB co-infection. Out of total 14 patients 9 (64.3%) were female and 5 (35.7%) male. The maximum number of people with HIV/TB co-infection was in the age group between 18-45 years and 2 people each in age group below 18 years and above 45 years. The patient's literacy status was also recorded for analysis of the result (Table 1).

Table 1: Distribution of age, gender, and educational status of patients with HIV/TB Co-infection

VARIABLES	No. of Patients	%
GENDER		
MALE	5	35.7
FEMALE	9	64.3
Total	14	100
AGE GROUP		
<18 YEARS	2	14.3
18-45 YEARS	10	71.4
>45YEARS	2	14.3
Total	14	100
EDUCATIONAL STATUS		
ILLITERATE	2	14.3
PRIMARY EDUCATION	7	50.0
SECONDARY EDUCATION	5	35.7
Total	14	100

Out of which only 4 patients were adherent to the medication and 10 patients were non-adherent to medication. Only 5 patients were remembering the refilling schedule and remaining 9 patients do no remember the refilling schedule (Table 2). It was also identified from the study that all the 4 patients who were adherent to the medication have educational level of secondary education and above, 7 patients stopped their education at primary education level and 2 patients were illiterate.

Table2: Knowledge, Awareness and Adherence of medication in patients with HIV/TB Co-infection

	Pts awareness about medication given for HIV/TB coinfection	Provision of education about the adherence to drugs	No. of Pts remembering their medication refilling schedule	Pts adherence to their medication
YES	14 (100 %)	14 (100 %)	5 (35.7 %)	4 (28.6 %)
NO	0	0	9 (64.3 %)	10 (71.4 %)

DISCUSSION

According to the 2020 Global TB Report [13], people living with HIV are 18 (15–21) times more likely

to develop active TB disease than people without HIV. In 2019, of the estimated 10 million (range, 8.9–11.0 million) people who developed TB worldwide, 8.2% were PLHIV. Even when on antiretroviral therapy (ART), PLHIV are 3 times more likely to die during TB treatment, and continue to suffer disproportionately from this preventable and curable disease. In addition to early access to ART, high quality TB screening and expanded use of TB preventive treatment are critical interventions to ensure that people with HIV receive timely treatment for TB disease or TB infection. The main purpose of this study was to investigate the level of adherence among HIV-TB co-infected patients. It also examined the factors that contributing existing level of adherence. The research was conducted on a sample of 14 people living with HIV-TB and 8 health workers in Mnazi Mmoja Hospital, Zanzibar- Tanzania.

Africa recorded over 2 million, 500,000 individuals that become sick due to TB, accounting for 25% of the global TB incidence, and its death rate exceeded 424,000 out of a global death toll of 1.3 million [14]. WHO reported that the TB and HIV-TB statistics in Africa are based on incidence cases for every 1 million population. On the other hand, 2,017 TB cases were reported among children for every 100, 000 population. The TB-HIV co-infected children are 4 persons in every 100 population [15].

The treatment of HIV-associated drug-susceptible TB disease mirrors that of HIV-negative patients with TB but with certain nuances. A 6-month regimen, including daily rifampicin, isoniazid, pyrazinamide, and ethambutol for 2 months, followed by 4 months of daily rifampicin and isoniazid is recommended [16]. An alternative regimen of 8 weeks of rifapentine, isoniazid, moxifloxacin, and pyrazinamide followed by 9 weeks of rifapentine, isoniazid, and moxifloxacin is non-inferior to the standard 6 month regimen and can be considered – however, this alternative regimen is not recommended in certain PWH, i.e., those with CD4 counts <100 cells/µl, with certain forms of extrapulmonary TB (such as disseminated TB or TB meningitis) or those weighing less than 40 kg [17]. For rifampicin-resistant forms of TB, 6–9 month all-oral regimens are currently recommended by WHO irrespective of HIV status, if all other eligibility criteria are met [18]. Drug-resistant TB outcomes are not worse, and are possibly better, in PWH compared to those who are HIV-negative, provided that the PWH receives ART [19, 20].

Our study observed that only 28.6 % of the study population were adherent to the medication, which is very low. It was also observed that poor socio-economic status and educational qualification were the major cause of non-adherence to the medication. These results were similar to the study done by Wakibi, Ng'ang'a and Mbugua, 2011 [21]. A number of other factors like drug abuse, drug side effects and poor economic status which could contribute to non-adherence in these patients. In conclusion, repeated counseling and extensive follow-up is needed in these patients to make them adherent to the medication. Improving the patient compliance could improve the health status of these patients and prevent the spread of resistant strains of infection.

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