Assessing Knowledge about TB-HIV/AIDS Co-infection among Healthcare Workers of a Secondary Healthcare Facility in North-Central Nigeria

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ABSTRACT

Tuberculosis-Human Immunodeficiency Virus (TB-HIV) co-infection, a 'lethal duet', poses a public health challenge to global development due to its-related morbidity and mortality. Healthcare workers (HW) play crucial role in voluntary behaviour modification which is a strategy to prevent the spread of TB-HIV co-infection. However, limited knowledge about the co-infection by HW negates prevention and control measures. This study examined the knowledge about TB-HIV co-infection among HW in Civil Service Hospital, Ilorin, Nigeria. It was a descriptive, cross-sectional study that used structured questionnaire tested for reliability (r = 0.82) to interview 94 eligible HW. The results revealed that only 10.6% of the respondents knew that the laboratory diagnosis of TB-HIV co-infection is more difficult. The knowledge about its curability was 24.5%. No significant difference existed between the level of education of the HW and their knowledge that laboratory diagnosis of TB-HIV co-infection is more difficult ($p>0.05$) but significant difference existed between the level of education of the respondents and their knowledge about the co-infection being curable ($p<0.05$). The HW's poor knowledge about the difficulty of laboratory diagnosis and the curability of TB-HIV co-infection showed the need for capacity building.

Keywords: TB-HIV co-infection, Diagnosis of TB-HIV co-infection, Curability of TB-HIV co-infection, Healthcare workers.

INTRODUCTION

Mycobacterium tuberculosis (TB) and Human Immunodeficiency Virus (HIV) co-infection can be referred to as a "lethal duet" due to the morbidity and mortality. The situation has been likened to a marriage between 100 years TB and 25 years HIV and their honey moon is causing harvoc (Silversides, 2006). It has also been referred to as "cursed duet" (Pennap, *et al*., 2010) and 'a deadly human syndemic' (Kwan and Ernst, 2011). The relationship is not simply a case of co-existence of both infections in the same patient; rather there is reciprocal interaction between the two infections. Both HIV and TB attack the immune system that is supposed to protect the human body. Either infection weakens the immune system such that the susceptibility to HIV or TB in the presence of the other is increased. The interaction is complex. The progression and prognosis of each infection are worsened by the other. HIV infection is the most powerful predisposing risk to TB infection (Pawlowski *et al., 2012*). The likelihood of reactivation, reinfection and progression of latent TB to active disease is increased. In addition the clinical presentation of TB disease is altered (Datiko *et al*., 2008). TB is also the most common cause of AIDS-related death (Pawlowski *et al., 2012*). The effectiveness of the directly observed therapy (DOT) of TB has been reduced by TB-HIV co-infection (Wang, *et al*., 2010). The co-existence of both diseases accentuates the difficulty of laboratory diagnosis due to the decreased sensitivity of the examination of the sputum smear for TB (Friedland et al., 2007). The complex interaction between TB and HIV infections for about 3 decades constitutes a major threat to the international community's effort to achieve the health-related United Nations Millennium Development Goals for TB and HIV infections (Gutahun *et al*., 2010).

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Globally, TB-HIV co-infection is one of the leading causes of morbidity and mortality (Breen *et al*., 2006). According to World Health Organization (WHO, 2012), 1.1 million (13%) of persons who developed TB in 2011, were HIV positive. It is also one of the leading causes of morbidity and mortality in sub-Saharan Africa (Idemyor, 2007).

According to Luetkemeyer, (2013) TB-HIV co-infection can be treated. This involves the use of both anti-TB and antiretroviral (ARV) medicines. With regards to treatment of the HIV component of the co-infection, the treatment guidelines (Federal Ministry of Health, Nigeria [FMOHN], 2010) recommended a combination of medicines from at least two classes of ARV which ensures that these medicines act either on at least two different points in the life cycle of the HIV or by two different mechanisms on one point on the HIV life cycle. Antiretroviral therapy (ART) in Nigeria involves the use of ARV medicines such as zidovudine, lamivudine, abacavir, emtricitabine, nevirapine, efavirenz, tenofovir, lopinavir, atazanavir and ritonavir. Currently, there is no cure for HIV. Thus, the antiretroviral therapy (ART) is life-long. Anti-TB medicines used in the treatment of the TB component of the co-infections include rifampicin or rifabutin, isoniazid, pyrizanamide, ethambutol and streptomycin. The use of anti-TB medicines involves Directly Observed Treatment Short course (DOTS) a WHO-recommended strategy to combat TB.

Additionally, TB-HIV co-infection can be cured. It is no longer a case of TB-HIV co-infection once the TB has been cured. According to Civil Society Perspective on TB/HIV (2006), strict adherence to TB treatment regimen can result in a cure of the TB. There are also recommended TB-HIV co-infection preventive measures such as provision of isoniazid preventive therapy (IPT) for HIV positive people without active TB, co-trimoxazole preventive therapy (CPT), HIV testing among all TB patients and intensified case finding for TB among people living with HIV/AIDS (FMOHN, 2010).

Implementation of the treatment, preventive and care strategies require a lot of Health Care workers. For these health workers to be functional, they must be equipped with the knowledge, skills and support needed to succeed. The knowledge of these health workers affect their behaviour (Hochbaum, 1970) which can either positively or negatively impact on the prevention, treatment and care services to TB-HIV co-infected patients.

An earlier study conducted in Kabarole district in Western Uganda revealed fair knowledge about TB-HIV co-infection. The mean knowledge score was 48% (Wynne, 2012). Another study conducted in Nepal (Pant, 2012) showed poor knowledge about TB-HIV co-infection (33.4%).

This study was aimed at assessing the knowledge of the healthcare workers (HW) about TB-HIV co-infection. The research questions that guided the study were: what is the knowledge of the HW about TB-HIV and is there any difference between the educational levels and the knowledge of the HW?

The following Null hypotheses were postulated:

a. There is no significant difference between the educational level of the healthcare workers of Civil Service Hospital, Ilorin and their knowledge about reciprocal interaction between TB and HIV.
b. There is no significant difference between the level of education of the healthcare workers of Civil Service Hospital, Ilorin and their knowledge about the difficulty of laboratory diagnosis of TB-HIV co-infection.
c. There is no significant difference between the level of education of healthcare workers of Civil Service Hospital, Ilorin and their knowledge about TB-HIV being treatable.
d. There is no significant difference between the level of education of healthcare workers of Civil Service Hospital, Ilorin and their knowledge about TB-HIV being curable.

MATERIALS AND METHODS

Research design

It was a descriptive, cross-sectional and non-interventional study. The study population comprised of 94 healthcare workers who met inclusion criteria.

Inclusion criteria

a. Health workers who were on duty during the period of the research who consented to participate in the research.
b. Health workers who had more than 2 months' work experience in the health facility.

c. Exclusion criteria

a. Health workers who were on leave during the period of the research.

b. Health workers who have less than 2 months' work experience in the health facility

Research instrument

The research instrument used was structured questionnaire which consisted of two sections: section A had questions related to the socio-demographic characteristics of the respondents while section B contained questions related to their knowledge about TB-HIV. The pre-test of the research instrument was at Children Specialist Hospital, Ilorin using sample size representing 10% of the study sample. The reliability of the test instrument was ensured at the pretest stage using the test-retest method with an interval of 2 weeks between the first and second tests. A correlation coefficient (r) value of 0.82 was obtained when both scores were subjected to Pearson's Product Moment correlation analysis indicating the suitability of the research instrument for the study. On this basis, the instrument was considered reliable. The questionnaires were administered to the eligible respondents by one of the researchers and two research assistants.

Data analysis

The questionnaires were checked for accuracy and completeness. Statistical Package for Social Sciences (SPSS) version 17.00 was used for data entry and analysis. Frequency distributions were generated for quantitative variables and there were cross-tabulations of relevant variables. The results were presented in tables and charts. The test statistic used was Chi-square while 5% was the significance level.

Ethical considerations

Permission for the use of the health workers in the research was granted by the Management of Civil Service Hospital. Consent of the health workers was sought and obtained. Research ethics such as anonymity of respondents and confidentiality of the responses were ensured.

RESULTS

The socio-demographic characteristics of respondents are as shown in Table 1. The results of the respondents' knowledge of TB-HIV co-infection are shown in charts 1 – 6. The results of the association between educational level of respondents and their knowledge about TB-HIV co-infection is shown in Table 2.

Table 1: Socio-demographic characteristics of respondents

CHARACTERISTICS	FREQUENCY	PERCENTAGE
< 30 years	24	25.5
30 - 39	15	16.0
40 - 49	33	35.1
50 - 59	21	22.3
> 60	1	1.1
Female	71	75.5
Male	23	24.5
Married	70	74.5
Single	21	22.3
Widowed	3	3.2
Monogamy	56	80.0
Polygamy	14	20.0
Christianity	47	50
Islam	46	48.9
Traditional religion	1	1.1
Secondary education	9	9.6
Tertiary education	51	53.2
Postgraduate education	34	36.2

DISCUSSION

Majority of the respondents were of the age range 40-49 years (35.1%), females (75.5%) and married (74.5%). Most of the married respondents practiced monogamous type of union (80.0%) and either Islam (50%) or Christianity (48.9%) religions. The minimum educational background of respondents was secondary level of education while the maximum was postgraduate education. This made it easy for the questionnaires to be self-administered and contributed to the usability of the research instrument. TB-HIV co-infection is one of the life threatening infections of public health concern. Majority of the respondents knew about the existence of TB-HIV co-infection (90.4%) and that many persons have died due to the co-infections (89.4%). Their knowledge about the signs and symptoms of TB-HIV co-infection is also very good. The detailed knowledge about interaction between HIV/AIDS and TB is very high (above 84%).

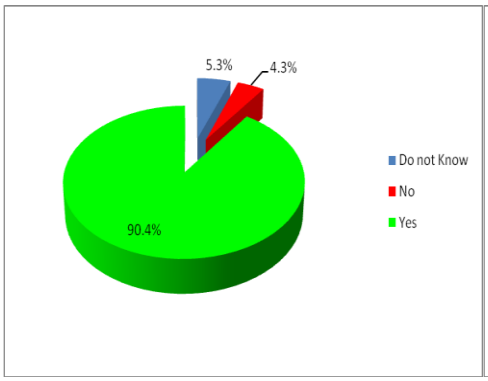

Figure 1: knowledge of respondents about existence TB-HIV co-infection.

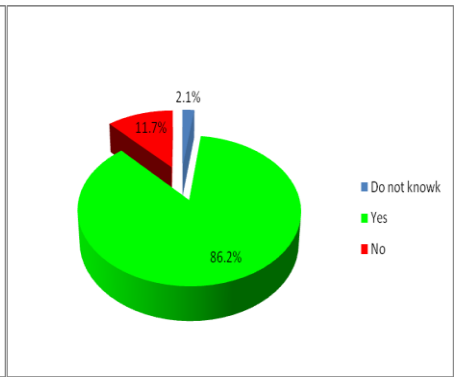

Figure 2: Knowledge of Respondents about mortality due to TB-HIV co-infections

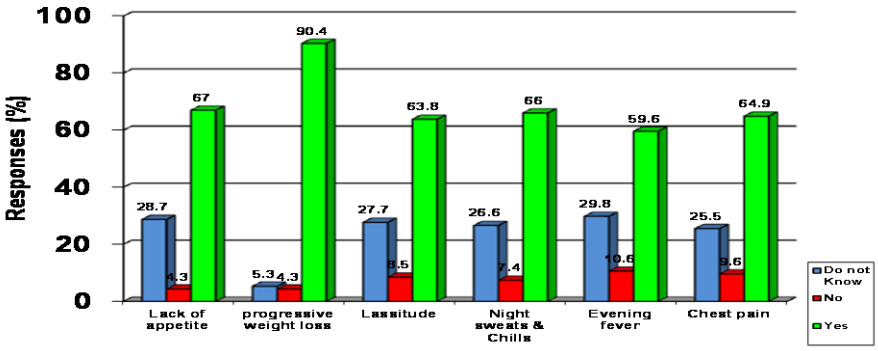

Figure 3: Knowledge of Respondents about the signs of TB-HIV co-infections

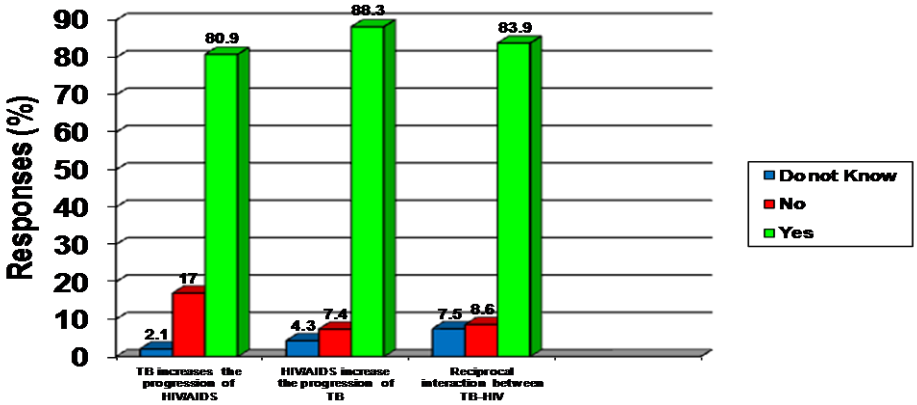

Figure 4: Knowledge of respondents about interactions between TB- HIV co-infection

However, the knowledge of the respondents about the difficulty of laboratory diagnosis of TB-HIV co-infection is very low (10.6%). According to Friendland et al (2007), the co-existence of both diseases accentuates the difficulty of laboratory diagnosis due to the decreased sensitivity of the examination-of the sputum smear for TB. The sputum smears are negative and positive smears tend to contain fewer acid fast Bacilli. Tuberculin tests for TB are often falsely negative. This low knowledge about the difficulty of laboratory diagnosis of TB-HIV co-infection is an indication for health information, communication and education for health workers.

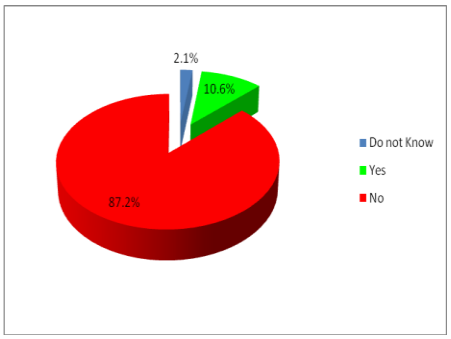

Figure 5: Knowledge of Respondents about difficulty of laboratory diagnosis of TB-HIV co-infection

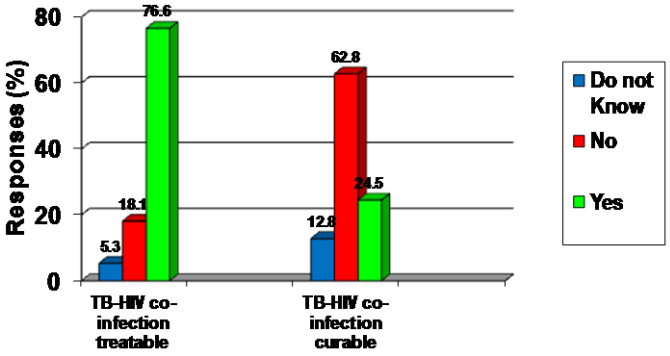

Figure 6: Knowledge of Respondents about TB-HIV co-infection's Management

Table 2: Association between educational level of respondents and their knowledge about TB-HIV co-infection

Variables	Knowledge about TB-HIV co-infection		
	Yes (%)	No (%)	p-value
Reciprocal interaction between TB-HIV co-infection			
Secondary education	8 (100)	0 (0.0)	
Tertiary education	41 (89.1)	5 (10.9)	
Postgraduate education	29 (90.6)	3 (9.4)	0.62
Difficulty of laboratory diagnosis of TB-HIV co-infection			
Secondary education	0 (0.0)	9 (100)	
Tertiary education	5 (9.8)	46 (90.2)	
Postgraduate education	5 (15.6)	27 (84.4)	0.386
TB-HIV co-infection being treatable			
Secondary education	6 (75.0)	2 (25.0)	
Tertiary education	40 (83.3)	8 (16.7)	
Postgraduate education	26 (78.8)	7 (21.2)	0.795
TB-HIV co-infection being curable			
Secondary education	1 (17.7)	5 (83.3)	
Tertiary education	8 (18.2)	36 (81.8)	
Postgraduate education	14 (43.8)	18 (56.3)	0.04

This is important for precautionary purpose on the part of the health workers and in order to prevent further spread of the co-infections.

Majority of the respondents also know that HIV/AIDS and TB co-infections are treatable (76.6%). However, the knowledge about the curability of TB-HIV co-infection was very low (24.5%). TB-HIV co-infection can be cured. According to Civil Society Perspective on TB/HIV (2006), TB can be cured if there is strict adherence to the anti-TB treatment regimen. It is no longer a case of TB-HIV co-infection once the TB is cured. This is an indication for health information, communication and education for health workers that could impact positively on their attitude and behaviour. This could lead to a ripple effect if the health workers engage in information, communication and education of the patients that use the health facility. This knowledge would influence the health seeking behaviour of co-infected patients with consequent reduction in the disease burden.

The mean score for knowledge about TB-HIV co-infection was 68.1%. This is higher than the knowledge about TB-HIV co-infection obtained in earlier studies (Wynne, 2012; Pant, 2012) in Uganda (48%) and Nepal (33.4%) respectively. The difference could be due to the settings of the study.

The setting for the previous studies was community based while this study was hospital- based.

There were no significant differences between the educational level of the respondents and their knowledge about reciprocal interaction between TB-HIV co-infection, difficulty of laboratory diagnosis of TB-HIV co-infection and TB-HIV co-infection being treatable ($p > 0.05$). However, there was significant difference between the educational level and the respondents' knowledge about TB-HIV being curable. The higher the education level, the better the knowledge about the co-infection being curable.

CONCLUSION

The healthcare workers' mean score for knowledge about TB-HIV co-infection was above average. However, the HW had poor knowledge about the difficulty of laboratory diagnosis and the curability of the co-infection. This is an indication for capacity building of the HW.

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