Research Article

Barriers Encountered by Patients on TB-DOTS Therapy in Ndola Urban District, Zambia

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Abstract:

Background: According to WHO, directly observed treatment short course (DOTS) therapy is one such strategy recommended in mitigating TB burden. However, according to our knowledge, no study has been conducted on barriers encountered by TB patients in accessing DOTS in Ndola district. We studied barriers encountered by patients on TB-DOTS therapy in Ndola urban district. Methods: A simple random quantitative cross sectional study using random sampling tables was conducted in Ndola urban district on the Copperbelt province of Zambia among 198 TB-DOTS patients in intensive phase of their TB treatment who were mentally sound, registered TB card holding, willing to participate and aged 18 years or more. Data was collected between December, 2008 and January, 2009 using a standardized questionnaire. Descriptive statistics were performed and reported as frequencies and percentages. Results: Out of 198 participants, 42.9% were aged 25-34 years, 52 % were females, 54% resided in highly density populated areas and 54.7% of them earned less than \$ 40 per month. Barriers to TB-DOTS therapy identified were laboured access to TB treatment centres, experiencing TB drugs side effects, experienced and felt stigmatized for being TB patients and poor health workers attitude towards TB patients. Conclusion and recommendations: TB patients with labored access to treatment centres, experience unfriendly health workers support, experience and feel stigmatized for being TB patients defaults their TB-DOTS therapy. Therefore, the relevant district health authorities should devise mechanisms to cab these perceived barriers for TB prevalence to reduce to its lowest. Keywords: Barriers, Directly Observed Treatment Short Course, Tuberculosis, Ndola District.

Background

Tuberculosis (TB) continues to be a major public health concern in Zambia with an incidence of 376 per 100 00 population (Ministry of Health [MoH], 2017). As of 2015, a total 3573 TB patients died in Zambia (WHO, 2017) and as of 2018, the nation of Zambia was ranked 7th among 30 highest TB burdened countries in the whole world, hence a lot of efforts needs to be channeled towards ending the spread of TB (CIDRZ, 2018).

In TB management, directly observed treatment short-course (DOTS, or TB-DOTS) therapy is one such strategy recommended by WHO in mitigating TB burden. TB-DOTS promotes drug compliance thus increasing proportion of patients cured, prevent TB relapses, reduces chances of drug resistance and interrupts TB transmission cycle as a result, the prevalence of TB falls (WHO/CDC/TB 2003). Even in a ten years review paper on TB in Ndola district, DOTS therapy was cited as one such strategy that had helped in reducing the TB prevalence (Monde et al., 2016). Despite many efforts currently being implemented by ministry of Health in Zambia, TB incidence rate in the country was still high. As of year 2018, TB incidence was estimated at 346 per 100 000 which was higher when compared to neighbouring country Botswana with an incidence rate estimated at 275 per 100 000 (WHO, 2018). TB prevalence is equally highest on the Copperbelt province of Zambia where Ndola district is the provincial capital at 41% when compared to Lusaka, the capital city of Zambia which is at 36% (MoH, 2017). However, according to our knowledge, no study has been conducted on barriers encountered by TB patients in accessing TB-DOTS therapy in Ndola district. We therefore studied barriers encountered by patients on TB-DOTS therapy in Ndola urban district.

Methodology

This was a cross sectional survey employing quantitative methods for data collection. Simple random sampling technique using random tables were utilised to select both study centres and participants. The study was conducted in Ndola district on the Copperbelt province of Zambia among patients suffering from pulmonary tuberculosis (PTB) and on TB treatment.

Sample size was calculated using a formula by Yamane (1967) and constituted a total of one hundred and ninety eight (198) PTB patients. The study included only mentally sound registered TB card holding PTB patients in intensive phase of their TB treatment who resided in Ndola urban district who were willing to participate in the study and were aged 18 years or more. Data was collected between December, 2008 and January, 2009 using a standard pre tested questionnaire.

The study protocol was reviewed and approved by the University of Zambia Biomedical Research Ethics Committee IRB 0001131 of IORG 000774 and FWA Number 00000338. Permission to conduct the study was sort and obtained from Ndola District Health Office. Ethical considerations were observed and data collection tools were viewed only by approved study personnel. Data collection tools were initially manually checked for completeness and were number before being entered into Microsoft Excel computer program. Verified excel dataset was then exported to BMI SPSS version 16 for analysis. Descriptive statistics were performed and reported as frequencies and percentages.

Results

A total of 198 participants were recruited in the study at 100% response rate. The participants were aged between 18 to 70 years with mean age of 35 years (SD \pm 10.6) with most (49%) of them being in the age group 25 to 34 years.

The majority (52%) participants were females, 60% were married, more than half (54%) resided in high density populated area and 97.5% were Christians. Nearly half (51%) had only primary education and unemployed with most (54.7%) of them earning less than Zambian Kwacha 500 (less than US \$ 40) per month. Participant's responses to barriers encountered by TB patients in accessing DOTS therapy in Ndola urban district are summarized in table 1. Notably, 42%, 41.4% and 18/198 patients who reported labored

access to TB treatment, experienced and felt stigmatized for being a TB patient and never received adequate support from health workers respectively, also reported missing taking their anti TB drug doses.

Table 1. Barriers encountered by TB patients in accessing DOTS therapy in Ndola urban district (n=198)

Barrier	Frequency (%)	
How easy is accessibility to DOTS?		
Easily accessible	115 (58)	
Labored access	83 (42)	
Total	198 (100)	
Do you receive adequate support from health workers?		
Yes	180 (90.9)	
No	18 (9.1)	
Total	198 (100)	
How is health workers attitude towards PTB patients on DOTS?		
Welcoming	170 (85.9)	
Unwelcoming	28 (14.1)	
Total	198 (100)	
For how long do have to wait as PTB on DOTS before you are attended to?		
Less than 30 minutes	65 (32.8)	
More than 30 minutes	133 (67.2)	
Total	198 (100)	
Are readily available are TB drugs?		
Always	139 (70.2)	
Sometimes	58 (29.3)	
Never	1 (0.5)	
Total	198 (100)	
Is there any discomfort as a result of taking TB drugs?		
Yes	167 (84.3)	
No	31 (15.7)	
Total	198 (100)	
What are the actual problems experienced while taking TB drugs?		
Joint pains	84 (42.4)	
Red urine	41 (20.7)	
Body rash	45 (27.7)	
Yellow eyes	1 (0.5)	
Others (not specified)	27 (13.6)	
Total	198 (100)	
Do you experience and felt stigmatized for being a PTB patient?		
Yes	82 (41.4)	
No	116 (58.6)	
Total	198 (100)	

Discussion

Tuberculosis (TB) is a chronic infectious disease that requires chronic anti TB medication. TB medication is divided into intensive and continuation phase. Intensive phase requires strict drug adherence for conversion to occur. Challenges encountered by TB-DOTS patients

are important to explore so that when addressed, the incidences and prevalence of TB would drastically reduce. This is because non adherence to TB-DOTS causes non conversion of sputum samples, delay healing, frequent readmission in the hospital, cause genetic mutations in the mycobacterium tubercle (MTB) and ultimately multidrug resistant TB. One such strategy employed to ensure adequate adherence to anti TB dugs by TB patients in intensive phase is DOTS therapy (MoH, 2017; Monde *et al.*, 2016). This study assessed barriers encountered by TB patients in accessing TB-DOTS therapy in Ndola urban district. The main barriers to TB-DOTS therapy identified by TB patents in our study that led to non-adherence to their TB treatment in intensive phase could summarily be seen as being socio-economic, therapy and healthcare system related.

Most of the participants with TB were in a youthful age and of these, women were the majority. This finding was similar to the 2018 to 2019 Zambia Demographic and Health Survey (ZDHS) key indicator report findings which showed that the most of the Zambian population are aged between 25 to 34 years (ZDHS, 2018). Equally, this finding is similar to the finding by Saidu and colleagues in their systematic review paper on social determinants of tuberculosis in sub-Saharan Africa that found young age (25-34 years) as being a determinant for developing TB (Saidu et al., 2014). However, contrary to more recent TB trends in Zambia that have shown the majority of TB patients being males, this study found majority women as TB patients on TB-DOTS therapy. For instant Coffman and others in their study on Tuberculosis among older adults in Zambia, burden and characteristics among a neglected group found that 55.6% TB patients were males (Coffman et al., 2017). In Zambia, youthful people and females are mainly affected by poverty and HIV and are therefore disproportionally more affected by TB, the disease common among the poor and an opportunistic disease among people living with HIV due to their weakened immune system. HIV patients are 10% at risk of contracting TB per year compared to 10% risk per lifetime in immunocompetent (Kapata et al., 2016; MoH, 2017; AIDS info, 2019). Being poor and on ATT posess a big challenge because the patients fails to buy adequate nutritious food which are required while taking medication as food intake minimizes drug side effects because it facilitates transportation of drugs across the GIT mucosa. Equally poor patients fail to pay for their transportation to and from the health facilities as a result, they begin defaulting from ATT drugs (Saidu et al., 2014). As regards stigma, TB-DOTS patients who experienced and felt stigmatised for having TB could not adhere well to their TB-DOTS therapies, a finding also found by Amened and Martin (2018) in their study on Barriers leading to treatment default among tuberculosis patients in Khartoum State, Sudan: a qualitative study and also by Park and colleagues on Predictors of Default from Treatment for Tuberculosis: a Single Center Case-Control Study in Korea (Park et al., 2016). This is because a TB-DOTS patient who experience higher and feel TB stigma increasingly misses their appointments and doses (Kipp et al., 2011).

Similarly, TB-DOTS patients who experienced more side effects equally reported poor adherence to TB-DOTS therapy when compared to those who had experienced minimal or no side effects. Additionally, long waiting time before the TB-DOTS patients are attended to and poor attitude of the health staff towards patients were found to cause TB-DOTS defaulting. These findings are similar to what was reported in a study conducted in Arba Minch Governmental Health Institutions Southern Ethiopia and by Park and colleagues where it was found that TB patients who experienced side effects and waited longer before being attended to were 13.3 and 14.3 times more likely to default from their TB drugs respectively (Gube *et al.*, 2018; Park *et al.*, 2018) and were also similar to more recent findings in Ethiopia by Zegeye *et al.*, (2019) in their review paper on prevalence and determinants of anti-

tuberculosis treatment non-adherence in Ethiopia: A systematic review and meta-analysis found that TB patients who feared the side effects of the drugs were 1.9. This could be so because such patients would shun away from taking the drug or deliberately vomit out the drug as a way of minimizing the drug's side effects. Equally it was found that those who waited longer than1 hour during service delivery were 4.9 more likely not to adhere to their TB treatment. Furthermore, poor attitude of the health staff towards TB-DOTS patients causes non adherent to TB-DOTS. This finding was similar to what was found by Ruru *et al.*, (2018) in Indonesia.

Poor attitude of health workers towards patients promotes unfriendliness hence acts as the major barriers towards patients' adherence to treatment. Unfriendly health workers attitude towards patients hinders transmission of important information to patients about the phenomenon like its predisposing factors, mode of transmission, its treatment among others. Similarly, Patients who feel that they are not treated with the due respect they deserve, who feel the health workers are rude and not empathetic to them are unlikely to complete their treatment. This view is in tandem with the findings in similar studies conducted in Nigeria by Ibrahim and colleagues and in Khartoum State, Sudan by Ahmed and Martin (Ibrahim *et al.*, 2014; Ahmed and Martin, 2018).

Limitation of the study

The main limitation to our study is the time that has elapsed between the time data was collected and the time of publication. Over the period, many changes could have occurred. However, to still minimise this, we have reviewed up to date information on the phenomenon to support our findings.

Conclusion and recommendations

Although TB-DOTS is being implemented in all the health centres in Ndola urban district and the prevalence of TB seem to be reducing, patients who have labored access to treatment centres, experience unfriendly health workers support, experience and feel stigmatized for being TB patients poorly adhere to their TB-DOTS therapy. It is therefore time for relevant district health authorities to devise policies to cab these perceived barriers in the district in order to reduce TB prevalence to their lowest.

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EMM conceptualized the study, participated in the protocol preparations, data collection. EK conceptualized the study, analysed and interpreted data, drafted and revised manuscript. SS and SHN conceptualized the study, participated in the protocol preparations and interpreted data.

Conflict of interest

None

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