

Assessment of Tuberculosis Infection Control Measures In Primary and Secondary Health Care Facilities in Enugu

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Abstract:

Background: Tuberculosis and HIV are major public health problems in Nigeria and preventing the transmission of TB in health care settings will reduce the burden of the disease in the country. This study assesses the implementation of TB infection control measures in health facilities providing HIV and TB services in Enugu state, Nigeria.

Methodology: A cross-sectional descriptive study was conducted in 54 health facilities providing tuberculosis and HIV services in Enugu state, Nigeria. An interviewer administered semi structured questionnaire and observer checklist were used to assess the administrative/workpolicy and environmental control measures being implemented in the facilities for TB control.

Results: Fifty four health facilities were studied, 30 secondary and 24 primary. Most of the respondents were medical officers and 52% were females. Nine administrative control/workpolicy and four environmental control measures were covered in the assessment. None of the health facilities had all the infection measures in place. Performance was worse with the administrative/ work policy measures as none of the measures were in place in up to 10 % of the facilities. A TB infection control plan was present in 4 (7.4%) of the facilities. Proper seating of patients and provider was in place in 70.4% of facilities and controlled natural ventilation in 37%. No one was assigned in charge of control measures in any of the facilities.

Conclusion: In spite of the availability of national Guidelines for implementation of TB infection control, measures are yet to be in place in most facilities providing care for HIV and tuberculosis patients. Urgent measures are needed to implement the guidelines in the facilities in order to reduce TB transmission in these settings.

Keywords: Assessment, tuberculosis infection control, health facilities.

I. Introduction

Tuberculosis (TB) is a major public health problem in Nigeria and the country ranked 3rd in 2013 among the 22 high burden countries of the world with an incidence of 590/100,000 population and a prevalence of 570/100,000 population.^{[1],[2]} The TB burden is further compounded by the high HIV prevalence of 4.1% (National sero-prevalence survey 2010) and the emergence of MDR TB in the country.^[3] TB is the most common (airborne) opportunistic infection that affects the HIV positive patient.^[4] It is an infectious disease that is spread from person-to-person through the air by droplet nuclei.^[5] The transmission of TB is higher in health care settings providing care for people affected by TB and HIV/AIDS. In such settings, the risk is higher in areas such as the out-patient department, wards, consulting rooms, counseling rooms, laboratories and waiting areas. The transmission can be from suspects or patients with infectious TB to other clients, staff and visitors.

In high TB burden settings like Nigeria, evidence indicate that up to 10% of persons with HIV infection may have previously undiagnosed TB at the time of HIV Counseling and Testing (HCT), half of which may be infectious TB cases. About 40% % of People living with HIV and AIDS (PLWHA) living in high burden TB settings will develop TB in their lifetime in the absence of Isoniazid Preventive Therapy or antiretroviral therapy. The risk of developing TB disease doubles in the first year after becoming HIV-infected and gets progressively higher over time.^[6]

These patients frequent health care facilities to receive care and mix freely with other patients and staff thereby increasing the opportunities for the spread of infectious tuberculosis.

To reduce the possibility and opportunities for the spread of tuberculosis in health care settings, particularly in the face of recent outbreaks of multi drug resistant TB (MDR-TB) and extensively drug resistant TB (XDR-TB) the world Health Organisation recommended in its recent policy on TB infection control a set of measures aimed specifically at addressing TB infection control in health care facilities and other congregate settings.^[7] The Nigerian tuberculosis control agency, the national TB and leprosy control programme (NTBLCP) and stakeholders developed guidelines based on the WHO recommendations, for the control of TB infection in health care settings. However, the level of implementation of these guidelines has not been determined. The

purpose of this study therefore, was to determine the level of implementation of TB infection control measures in primary and secondary health care facilities providing care for TB and HIV in Enugu state.

II. Methodology

2.1 Study Area

The study was carried out in Enugu state south Eastern Nigeria. The state has a population of 3.3 million according to the 2006 census.^[8] Majority of the inhabitants are traders and civil servants although some residents also practice subsistent farming. The state capital is Enugu meaning hill top in Ibo language which is the predominant language in the state. The state operates a District health system and has 7 health Districts each managed by a District Health board. All the seven health boards report to the state Health board which is responsible for health service delivery in the state. Each health District has a District Hospital, a number of cottage hospitals and several health centres and health posts. There are 436 public health facilities in the state including two tertiary Hospitals, 77 secondary health facilities and 357 primary health facilities. The 487 private sector facilities also contribute significantly to the health care delivery of the state.^[9]

2.2 Methods

The study was a descriptive cross sectional study and was facility based. A list of all the public primary and secondary health facilities in the state that were providing HIV and tuberculosis services was obtained from the state Ministry of Health. A health facility was said to be providing HIV and TB services if it provided at least HIV counselling and testing and direct observation of therapy for TB. A total of fifty eight public Health facilities were identified as providing both HIV and TB services at the time of the study. All the fifty eight facilities were invited to participate in the study but only fifty four facilities agreed to participate giving a response rate of 93%. The most senior clinical staff (medical officer, nursing officer, community health officer or community health extension worker) was interviewed in each facility, after an informed consent.

An interviewer administered semi structured questionnaire and observational checklist were used to determine the TB infection control measures being implemented in each of the facilities. Where the respondent's information conflicted with the observation, the observed information was preferred, e.g proper seating of patient and provider in the consulting room. The questionnaire had three sections; socio-demographic variables, administrative control/ work policy measures and environmental control measures. Nine administrative control/ work policy measures listed in the national tuberculosis infection control guidelines and four environmental control measures were assessed. These include: controlled natural ventilation, executed by opening doors and windows, proper seating position of client and provider, combining propeller fans with natural ventilation and the assignment of someone to oversee implementation of the environmental control measures. The personal protection measures were not studied because their high cost and advanced technological requirement make them generally unaffordable to these poorly funded health facilities.

III. Results

Fifty four health facilities were studied, thirtysecondary and 24 primary health care facilities. Most of the respondents (55.5%) were medical officers and fifty two percent were female. Their age group ranged from 18 to 65 with a modal age group of 46 to 55. Table 1.

Administrative control and work policy measures

Nine administrative control/work policy measures were assessed, existence of a TB infection control plan, administrative support for implementation of the plan, staff training, community education and awareness, screening of patients, education of suspects, triaging of symptomatic patients, separation of suspects and prompt diagnosis and treatment. A Tuberculosis infection control plan existed in only 4 (0.07%) of the facilities studied. Administrative support for implementation of the plan was present in one of the facilities with the plan. As a result, most of the activities and procedures outlined in the plan were not being implemented in three of the four facilities with a documented TB infection control plan in place. Staff were trained on TB infection control in a health care setting in 4 (0.07%) of the facilities studied. Education of suspects was being carried out in only 2 of the facilities studied. Although screening of all patients in the registration room (record office) was not taking place in any of the facilities, suspects identified in the course of clinical consultation were given education on respiratory hygiene and cough etiquette. Triaging of symptomatic patients and prompt investigation, diagnosis and treatment were in place in only 1 (0.02%) of the facilities studied. Community education and awareness and separation of suspects were not taking place in any of the facilities at the time of the study. Table 2

Environmental control measures

In 38 (70.37%) of the facilities there was proper seating of patient and provider in the rooms. Controlled natural ventilation (open door and windows) was in place in 20 (37.04%) of the facilities. In 13(24.07%) of the facilities propeller fans were combined with natural ventilation. None of the 54 facilities had someone assigned to oversee the implementation of the environmental control measures. Table 3

IV. Tables

Table 1 General characteristics of facilities

Category	Frequency	Percentage
Primary	24	44
Secondary	30	56
Total	54	100

Table 2 Baseline characteristics of study subjects

Variable	Frequency	Percentage
Sex distribution		
Male	26	48
Female	28	52
Age group of respondents		
18- 25	4	7.4
26 – 35	14	25.9
36 - 45 11 20.4		
46 – 55	18	33.3'
56 – 65	7	13.0
Cadre of respondents		
Medical officer	30	55.5
Nursing officer	5	9.3
Community Health officer (CHO)	9	16.7
Community Health extension worker (CHEW)	10	18.5

Table 3: TB infection control measures implemented by surveyed health facilities

Measure/ Activities in place	Frequency	Percentage
Administrative control and work policy measures		
Existence of TB infection control plan	4	7.4
Admin support for plan implementation	11.9	
Staff training	35.6	
Community education and awareness	0	0.0
Screening	0	0.0
Education of suspects	23.7	
Triaging symptomatic patients	11.9	
Separation of suspects	0	0.0
Prompt (express) diagnosis and treatment	11.9	
Environmental control measures		
Controlled natural ventilation (open doors & windows)	20	37.0
Proper seating position of patient and provider	38	70.4
Combining propeller fans with natural ventilation	13	24.1
Someone assigned to oversee environmental measures	0	0.0

Table 4: Reasons given by respondents for the non-implementation of TB infection control measures in their facilities*

Reason	Percentage
Lack of training	50
92.6	
Poor funding	36
66.7	
Lack of awareness of the increased risk of TB to health workers and HIV patients	28
51.9	
Unavailability of national guidelines	42
77.8	
Inadequate space	25
46.3	
Inadequate manpower	31
57.4	

- Multiple responses were allowed.

V. Discussion

Most of the health facilities studied were not implementing administrative / work policy measures. This has serious implications for TB infection control in the region because it has been established that administrative and work policy measures are the first line of defense, the most important, the least expensive and the easiest to implement in the hierarchy of tuberculosis infection control measures.^[10] It is even suggested that other levels of control might not be effective if these are inadequately implemented. This near absence of implementation of the measures could be because of ignorance of the measures. It could also be because of the general attitude of health care workers in the state who are very dissatisfied with their conditions of work. A similar low implementation of administrative and work policy measures was found by Ogbonnaya et al^[11] in their assessment of TB infection control measures in facilities rendering joint TB and HIV services in Eastern Nigeria.^[11] The reasons given by the health workers in their study were excessive patient load and ignorance about the measures. The same reasons may have contributed to the low implementation of the measures in our study but other factors may also be at play such as poor staff attitude to work because even the facilities that had training for all their staff were not implementing most of the measures. The finding of very low implementation of administrative control measures in Enugu state is surprising for two reasons: First it's been more than two years since the Ogbonnaya et al^[11] study and it is expected that their findings would have sensitized the health facilities in Enugu as well as the TB control officials in the state about the urgency of the TB infection control situation since Enugu state is part of the South East where their study was carried out. Secondly, the national TB infection control guidelines have been finalized and disseminated and state TB control agencies are expected to have worked with the facilities in their state to commence the implementation of these measures which are not just the easiest and least expensive but also the most important.

Four of the facilities had documented tuberculosis infection control plans in place and three of them trained all their staff. This is an improvement over the findings in the Ogbonnaya et al^[11] study which found only one facility with documented TB infection control policy.^[11] It is surprising however that none of the facilities took the further step to implement all the remaining administrative and work practice measures. This could be because the trainings were supported by donors who were supporting HIV and tuberculosis services in the facilities at the time.

Environmental control measures were in place in many more facilities than the administrative/ work policy measures: proper seating of patient and provider (70.37%), controlled natural ventilation (37.04%) and combination of propeller fans and natural ventilation (24.07%). This could be because the measures in question do not require a deliberate effort or policy from management and may have been put in place by individual clinicians since the establishment of the facility based on their understanding of infection control principles. It could also have been a response to the very hot weather since all the measures evaluated improve aeration in a consulting room and thus reduce discomfort. Environmental control measures covered in this assessment are cost free, easy to implement and also effective so they should be in place in all the facilities. A 2007 study in Lima, Peru showed that natural ventilation was more effective than costly mechanical ventilation in preventing the transmission of tuberculosis and other air borne contagions where climate permits.^[12]

Several reasons were given by our respondents for the non-implementation of tuberculosis infection control measures in their facilities. The commonest reasons were lack of training and unavailability of guidelines. This is noteworthy since the guidelines have been available in the country for about two years and suggests that they are yet to get to the end users who are the health workers in the facilities.

Alimitation of this study is that all personal protection and some environmental control measures were not covered in the assessment. This is due to the cost of the measures, a situation that places them beyond the reach of the facilities studied in their limited resource situation.

VI. Conclusion

Tuberculosis infection control measures are not being implemented in most health facilities providing care for HIV and tuberculosis in Enugu state and the national guidelines developed to guide implementation are not available at the facilities. Efforts should therefore be made to distribute the guidelines to the facilities and train the health workers so that these measures will be implemented to help reduce the burden of tuberculosis in the country.

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