

Capacity of healthcare facilities in the implementation of Direct Observed Treatment strategy for tuberculosis in Arumeru and Karatu districts, Tanzania

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Abstract: Directly Observed Treatment Short course strategy (DOTS) has proved to have potential improvement in tuberculosis (TB) control in Tanzania. The objective of this cross sectional study was to assess the capacity of health facilities in implementing DOTS, in Arumeru and Karatu districts, Tanzania. Information sought included the capacity to offer TB service and availability of qualified staff and equipment for TB diagnosis. Information on availability and utilization of TB registers and treatment outcome for the year 2004 were also collected. A total of 111 health facilities were surveyed, 86 (77.5%) in Arumeru and 25 (22.5%) in Karatu. Only 23.4% (26/111) facilities were offering TB treatment services in the two districts. Majority 17/26 (65.38%) of them were government owned. Thirty eight (44.7%) facilities were offering TB laboratory services. All facilities with TB services (TB laboratory investigation and treatment) had TB registers. Seventy two (85.0%) of health facilities which do not provide any TB services had qualified clinical officers and at least a microscopy. Of the 339 cases notified in Arumeru in 2004, 187 (60.7%) had treatment outcome available, 124 (66.3%) were cured and 55 (29.4%) completed treatment. In Karatu 638 cases were notified in 2004, 305 (47.8%) had treatment outcome available, 68 (22.3%) cured and 165 (54.1%) completed treatment. In conclusion, the overall capacity for implementing DOTS among the facilities surveyed is found only in about 20% and 30% for clinical and laboratory components of DOTS, respectively. The capacity to provide TB diagnosis and treatment in Karatu district was relatively lower than Arumeru. It is important that capacity of the facilities is strengthened concurrently with the planned introduction of community-based DOTS in Tanzania.

Key words: tuberculosis, control, community, DOTS strategy, Tanzania

Introduction

Tuberculosis (TB) is one of the leading causes of morbidity and mortality in Tanzania. In 2005 alone, 64,200 cases of tuberculosis were reported in the country (Ministry of Health, unpubl.). In recent years, the estimated number of TB cases has continued to rise (Range *et al.*, 2001), due in large part to the HIV epidemic. For instance, the number of TB cases increased by almost six-fold from 1983 to 2004, with 60% of the increase attributable to HIV/AIDS epidemic (Egwaga, 2003) and widespread poverty. Other constraints to TB control include a lack of local capacity of diagnostic centres and health care workers to diagnose TB as well as fees for patients attending health care clinics. TB is cured if patients receive early and appropriate management.

Directly Observed Treatment Short course (DOTS) strategy is the mainstay of tuberculosis control in Tanzania, where it was first validated during the 1980s (Nkinda *et al.*, 1984). This strategy is now widely used in the country as it ensures that patients complete their treatment course. One of the five elements of DOTS is to detect TB cases as early

as possible. In Tanzania where there is 100% DOTS coverage, the case detection rates has shown a marked decreasing tendency from 53%, 51%, 48%, and 47% in 1998, 1999, 2000, and 2001 respectively (WHO, 2002). DOTS on outpatient basis, requires the patient to regularly visit healthcare facility to take drugs under supervision of a health worker. A number of studies have shown that community based DOTS is as effective as health facility based DOTS (Lwilla *et al.*, 2003; Wandwalo *et al.*, 2005).

A number of constraints have been identified with tuberculosis treatment in Tanzania. These include long travel times, lack of transport opportunities or loss of income among patients. Currently, the government of Tanzania is considering introducing a community based DOT programme which entails utilizing selected community members to serve as treatment supervisors by directly observing the patients at a convenient place and time. However, in parallel with the community approach it is envisaged to optimize TB health facility services. In so doing, patients will be given the opportunity to choose between health facility and community based DOTS. However, to-date, there are a limited information as to the capacity of

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the healthcare facilities in implementing DOTS. This study was therefore, carried out to establish the capacity of healthcare facilities in terms of human resources, laboratory diagnostic services and information management in two districts of northern Tanzania..

Materials and Methods

Study areas

This study was conducted in Arumeru and Karatu districts in northern Tanzania. Karatu district (3°20' S, 35°40' E) lying in the Great Rift Valley, is administratively divided into 13 wards and has a population of 178,434. The inhabitants are mainly pastoralists; however, small and large scale coffee, wheat, and maize production are common in some areas. Arumeru district (3°15' S, 36°45' E) lying on slopes of Mount Meru, is administratively divided into 37 wards and occupied by about 516,814 people, mostly engaged in small-scale farming of coffee and banana. The two districts were purposefully selected because the National Tuberculosis and Leprosy Programme (NTLP) intended to introduce the community based DOTS for management of TB in these districts.

Study design and data collection

This was a cross-sectional health facility study. Health facilities were categorized as having TB services or not. Facilities which did not provide TB services were also categorized as having laboratory services with or

without microscopy. All 111 health facilities in the two districts were surveyed. Three types of data collection tools were used: structured and unstructured interview questionnaires, observation checklist, and record review sheet. Presence or absences of qualified staff and equipment which can be used for TB diagnosis were among the data collected. Record review tools were used to collect information on availability and utilization of TB registers. The tools also captured data on annual case notification rate, new acid fast bacilli (AFB) positive patients and treatment outcome for the year 2004 cohort.

Results

Of 111 facilities surveyed, 86 (77.47%) were in Arumeru and 25 (32.5%) in Karatu. Fifty three (61.62%) and nine (36%) of the facilities in Arumeru and Karatu, respectively, were government owned. Overall, only 23.4% (26/111) of the healthcare facilities were offering TB treatment services of which 17 (65.38%) were in Arumeru and the rest were in Karatu. Thirty-four (34.2%) facilities had TB laboratory services (smear microscopy), the majority of which were in Arumeru (Table 1).

Almost 30 (79.0%) of the TB laboratory services were provided by facilities owned by non-governmental organization, including private and faith based organizations. Out of 34 facilities with TB laboratory

Table 1: Profile of the health facilities in Arumeru and Karatu Arusha

Characteristics of facility	Arumeru	Karatu	Total
Type			
Hospitals	4 (4.65%)	1(4%)	5 (4.5%)
Health Centres	6 (6.97%)	8 (32%)	14 (12.61%)
Dispensaries	76 (88.37%)	16 (64%)	92 (82.88)
Total	86 (77.47%)	25 (32.53%)	111 (100%)
Owner			
Government/Parastatal	53 (61.62%)	9 (36%)	62 (55.85%)
Non-Government/private	33 (38.38%)	16 (64%)	49 (44.15%)
Total	86 (77.47%)	25 (22.53%)	111 (100%)
Facilities with TB treatment services			
Government/ Parastatal	14 (82.35%)	3 (33.33%)	17 (65.38%)
Non-government/private	3 (0.0%)	6 (66.67%)	10 (38.46%)
Total	17 (65.38%)	9 (34.62%)	26 (100%)
Facilities with TB laboratory services			
Yes	26 (86.7%)	8 (100%)	34 (89.5%)
No	4 (13.3%)	0	4 (10.5%)
Total	30 (78.9%)	8 (21.1%)	38 (100%)

services, only four (11.76%) were government owned. Most of the health facilities (85%) that did not offer TB services had qualified clinical officers and at least one microscope. Seventy percent of health facilities with microscope had no qualified clinicians. TB treatment services were mainly offered by government facilities while TB diagnostic services were mainly offered by private health laboratories. Only a few private facilities offered DOTS services, especially on treatment of TB patients.

A total of 339 cases of tuberculosis were notified in Arumeru in 2004. Of 339 notified cases, 308 (90.9%) were new cases and 31 (9.1%) were re-treatment cases (all forms). Most (85%) of these cases were reported from hospitals. Eight health facilities in Arumeru districts did not notify any case for the whole period. On the other hand, 733 cases were notified in Karatu district. Of these, 638 (87.0%) were new cases and 95 (13.0%) were re-treatment cases (all forms). Most (75%) of the cases notified in the district were reported from the district hospital and the two health centres.

In 2004, 308 new smear positive cases were notified in Arumeru District, treatment outcome were available for 187 (60.7%) cases. Of these, 124 (66.3%) were cured, 55 (29.4%) completed treatment, making a treatment success rate of 95.7%. Two (1.1%) patients died during treatment, while three (1.6%) were transferred out and three (1.6%) were defaulters. No treatment failures were reported. Of the 31 (10.06%) cases that were put on re-treatment regimen, results were available for four cases, whereby three were relapse and one was a failure for treatment. No case was re-treated as a result of return for treatment or others. Of the four, one got cured, two completed treatment while one was a defaulter.

Of the 638 new smear positive cases notified in 2004 in Karatu, treatment outcome were available for 305 (47.8%) cases. Of these, 68 (22.3%) were cured and 165 (54.1%) completed treatment, making a treatment success rate of 76.4%. Eleven cases (3.6%) died during treatment, while 20 (6.6%) were transferred out and 41 (13.4%) were defaulters. Likewise, there was no treatment failures reported in Karatu. Of the 95 cases that were put on re-treatment regimen, results were available for only 13 cases. Of the 13 cases, relapses were 12 and one was from the group of others. Out of 13 cases, 9 were cured, 2 completed treatment and 2 defaulted. No case was re-treated because of return for treatment or others.

Discussion

Effective TB control requires a properly functioning health service, with good management, diagnostic

facilities, trained staff, and reliable drug supply. Similarly strengthening health services by establishing public-private partnership services, community involvement will ensure that TB patients have access to diagnosis, effective treatment, and care. These are important aspects in achieving Millennium Developmental Goals of halving prevalence of TB, mortality rate, increasing case detection rate to 70% and treatment success rates to 85% by 2015 (WHO, 2002).

The current study has shown that most health facilities in Arumeru were government owned while in Karatu were private owned. TB treatment services were mainly offered by government facilities while TB diagnostic service were mainly offered by private health laboratories due to availability of staff and equipment. This key finding shows the need for emphasis on public-private partnership in TB control activities. If private facilities could be empowered to offer TB services (diagnosis and treatment), they could become DOTS centres and facilitate implementation of Health Facility or Community Based DOTS. Consequently, this would increase access of communities to TB services which is critical for achieving goals for case finding, and treatment outcomes.

Despite the finding that Karatu has fewer health facilities than Arumeru, they notified twice as many TB cases. This could be due to variation in the treatment seeking behaviour or epidemiological profile of the disease. The prevalence of tuberculosis is higher among the pastoralists in Karatu than in Arumeru district (Ministry of Health, unpubl.). Livestock keeping and pastoralism have been associated with the higher TB prevalence (Mfinanga *et al.*, 2003).

Information on treatment outcomes was available to a small proportion of notified TB cases in both districts. This is an indication of poor recording and reporting on TB services in the districts. This was worse in Karatu where most cases were notified. Poor recording and reporting is likely to be attributed to a poor surveillance system which is common in most districts of Tanzania (Rumisha *et al.*, 2007). From the few treatment outcome available, the study noted high default and mortality rate in Karatu district. This is likely to be due to the nomadic behaviour of the people in the district.

In conclusion, the capacity of healthcare to provide appropriate DOTS in northern Tanzania is limited. Only, about one third of facilities offer TB laboratory services while about one-fifth offer TB treatment services. Although qualified clinical officers were available in non-governmental owned facilities, most of them were not offering TB services. These findings emphasize the need for strengthening the

capacity (in terms of equipment, human and financial resources) of the healthcare facility and laboratories while the government is planning to introduce and scale-up community-based DOTS strategy.

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