

Levels of TB Knowledge among Primary Healthcare Workers in Ntcheu District, Malawi

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Abstract

Background: Lack of knowledge may contribute to ineffective Tuberculosis Control at Peripheral health service level. It is therefore important for policy makers to know whether health care workers at this level have adequate knowledge on TB Control. We aimed to measure the level of knowledge among health care workers who participated in a one week refresher tuberculosis training programme.

Methods: A cross sectional study design assessing knowledge of Tuberculosis among peripheral health care workers was done. A pre-test was administered at the beginning of the course followed by a training course. A post-test was then administered at the end of the training course and we used exactly the same questions as the pre-test so as to measure the level of knowledge.

Results: Clinicians scored significantly higher than environmental health workers. Environmental Health workers with tertiary level of education scored higher than those with primary and secondary level education (62.9% versus 26%) $p=0.0017$ while as for Medical Assistants the difference between tertiary and secondary level was significant only in the pre-test score (62.9% versus 26%) $p=0.0017$ with no significant difference on the post-test results (78% versus 80%) $p=0.55$.

Conclusion: TB knowledge among medical assistants and environmental health officers was comparatively low. This call for the need to closely supervise and provide on the job training for this cadre of health care workers by the head of the District Health Office. Adequate knowledge will enhance effective TB management and control.

Keywords: Tuberculosis; Health worker; Primary health care; Knowledge

Introduction

Tuberculosis (TB) continues to savage the population of Malawi. It remains one of the communicable diseases of major public health importance and is included in the Essential Health Package as defined in the Government's Health Sector Strategic Plan 2011-2016 [1]. The burden of TB has been compounded by the Human Immunodeficiency Virus (HIV) co-infection which has led to a fivefold increase of TB cases estimated from 5,000 notified cases in 1985 to a peak of 28,000 notified cases in 2003 then slowly declining to 21,000 cases in 2012 reporting year. An increase in the number of people affected by TB infection among the reproductive age group impacts negatively on the socio-economic development of the country [2]. However, WHO global TB report shows an estimated number of

48,000 new cases annually which is 50% less than the number of notified cases [2].

The TB/HIV co-infection rate is estimated to be 68%, a remarkable reduction from 77% in 2000 [3]. Efforts to curb the dual infections are continually being enhanced with expansion of TB/HIV collaborative activities at all levels of health care provision. Such efforts have improved the uptake of HIV testing and counseling and Anti-retroviral Therapy (ART) for the HIV positive cases as well as HIV positive Tuberculosis patients. Currently, over 90% of TB cases have access to HIV testing and counseling [3], 95% of them are provided with cotrimoxazole prophylaxis and 56% of TB patients with HIV are on ART. The treatment success rate for TB is estimated to be 88% exceeding WHO target of 85%. The proportion of patients dying of tuberculosis is estimated to be 8%, a significant reduction from 20% in 2006 [1]. The decrease in death rates and the increase in treatment success rates are mainly attributed to effective HIV interventions [4].

Recently, the country has witnessed the emergence of Multidrug Resistant TB (MDR-TB) cases which has notably affected progress made in TB control in Malawi over the years. An MDR-TB survey conducted in 2010 aimed at assessing the prevalence of MDR-TB from both retreatment and new smear positive cases. The study showed that there was a prevalence of 4.8% among previously retreated cases and 0.4% among new cases [1].

The National Tuberculosis Control Program (NTP) has implemented Directly Observed Treatment Short-Course (DOTS) strategy as a method of effective TB control since 1984 and has maintained 100% facility DOTS coverage in both public and private sectors. Despite significant progress and investment during the past two decades, much still remains to be done. The TB programme has followed the Stop TB Strategy, building on the successes of the DOTS strategy to address the other challenges jeopardising the success achieved with the initial strategy so as to sustain the goal to reduce the global burden of TB by 2015 and reinforcing development of new and effective strategies to prevent, detect and treat TB [5].

The National Tuberculosis Control Programme continues to work towards intensifying and sustaining its efforts to bring the TB epidemic under control. It is therefore important to balance the knowledge of health workers on tuberculosis with the expectations for effective TB control. This coupled with treatment adherence in TB patients put on TB treatment will further curb an emerging challenge of MDR-TB in the country. Johnson et al. [6] rightly note that sustainability requires knowledge of models to ensure that innovations do not only focus on a successful implementation. Active task shifting of more roles to the peripheral health facilities and communities require enhancement of TB knowledge to maintain quality TB Control activities that meet international standards.

Previous studies have reported that periodic training and supervision can increase knowledge in health workers but is often hampered by the dependence on external resources and support where if not available may result into lack of sustainable capacity building and lack of knowledge and skills [7,8]. This calls for vigilance on the use of existing systems and resources to ensure that there is both quantity and quality of the staff at all levels for sustainable and comprehensive TB control. In view of the need to continuously impart knowledge for effective TB Control, a study was conducted to assess the level of knowledge on TB control among health care workers in peripheral health centres and community health centres in Malawi. The training of community health workers was a preparatory phase for the health care workers who provided clinical and preventive patient management for TB suspects who visited the health facilities during the duration of the Find TB project aimed at assessing the effectiveness of the health education intervention model on early Tuberculosis diagnosis in this rural resource limited setting.

Methodology

Study design

A cross sectional study design assessing knowledge of TB among health care workers. A pre-test was administered at the beginning of the course to check the knowledge gap in TB control. Training was conducted using power point presentations and group discussions

with a focus on TB diagnosis and management. Training modules for this training course were developed from the TB Control Operational Manual. Question and answer sessions were held after completion of each topic. A post-test was administered on exactly the same questions as the ones for the pre-test, and this was done at the end of the two-day course. The study involved health workers (n=52) in Ntcheu district in the central region of Malawi, comprising of Medical Assistants, and Environmental Health Officers, the latter of which also included Health Surveillance Assistants. The cadres are described as follows:-

Medical assistants: Individuals who undergo a minimum of 2 years clinical training at an accredited College of Health Sciences in Malawi

Environmental health Officers/ assistants: Individuals who undergo a minimum of 2 years training in Environmental Health at an accredited Health Sciences Training College (Diploma or Certificate) or University (Degree). Over 90% of these cadres are District TB Managers.

Health surveillance assistants: Individuals with a Primary School Certificate (Standard 8), Malawi Junior Certificate of Education (Form 2) or Malawi School Certificate (Form 4, Ordinary level) who undergo a 6 week initiation course in disease control. This cadre is used for peripheral level disease control and prevention including tuberculosis.

Ethical approval: Ethical approval was obtained from the National Health Sciences Research Council for the larger Find TB project and this study was done as part of this larger project. No individual identifier was used in the data base. Self-administered questionnaire was used. The questionnaire was given prior to and at the end of the two-day course on basics of TB control. These were marked and then scored.

Statistical analysis: Data were analysed using STATA version 12. Descriptive analysis was done and results presented as percentages, means and standard deviations. Inferential analysis (ANOVA) was done to identify association between knowledge and other factors and $p < 0.05$ was considered significant.

Results

There were 10 medical assistants who participated in the training; all of these were males. The median duration of service was 4 years with an interquartile range (IQR) of 3 years. Those with tertiary educational level had a higher pre-test score compared with those who had secondary education (62.9% versus 26%) $p = 0.002$. However, there was no difference in post training scores between those with tertiary education and secondary educational level ($p = 0.550$) (Table 1).

A total of 42 environmental health officers (including health surveillance assistants) took part in the training; 29 (69%) of these were male officers. No differences were observed in the scores between males and females in both the pre-test ($p = 0.730$) and posttest scores ($p = 0.190$). However a significant difference in test scores was observed with higher scores obtained among those who had tertiary education ($p < 0.001$) (Table 2).

Factors/ Covariate	Measurement Category	Unit/ N (%)	Pre- test Scores			Post-test Scores		
			Total Number	Pretest Score Mean (±SD)	p-value	Total Number	Pre-test Mean (±SD)	p-value
						N (%)	Score	
Sex	Male	10 (100)	59.2 (± 13.7)	0.001	10 (100)	80.4 (± 3.9)	<0.000	
	Female	-	-		-	-		
Education level	Primary	-	-	0.002	-	-	0.55	
	Secondary	1 (10)	26		1 (10)	78		
	Tertiary	9 (90)	62.9 (±7.6)		9 (90)	80.7 (± 4.0)		
Years of service	Median (IQR) in years	4 (3,6)			4 (3,6)			

Table 1: Distribution of Characteristics and Pre- test and Post- test scores of Medical Assistants in the Ntcheu Care Giver TB Training course

Factors/ Covariate	Measurement Category	Unit/ N (%)	Pre- Test Scores			Post-Test Scores		
			Total Number	Mean (±SD)	p-value	Total Number	Mean (±SD)	p-value
						N (%)		
Sex	Male	29 (69.1)	45.5 (±7.5)	0.740*	29 (69.1)	68.0 (±7.8)	0.190*	
	Female	13 (30.9)	46.7 (±11.3)		13 (30.9)	62.4 (±14.1)		
Educational level	Primary	4 (9.5)	40.0 (±11.6)	<0.000**	4 (9.5)	49.0 (±18.6)	<0.001	
	Secondary	35 (83.3)	45.1 (±7.7)		35 (83.3)	64.0 (±9.9)		
	Tertiary	3 (7.2)	67.7 (±7.0)		3 (7.2)	84.0 (±9.2)		
Years of service	Median (IQR) in years	13.5 (7, 18)			13.5 (7, 18)			

*ANOVA analysis of mean scores in the three education categories *Pooled t-test; ANOVA analysis of mean scores in the three education categories

Table 2: Distribution of Characteristics and Pre- test and Post-Test scores of Environmental Health Officers in the Ntcheu Care Giver TB Training course

The overall paired t-test for TB knowledge for medical assistants and environmental health officers showed a significant difference from pre- test and post- test scores of 21% (±13.8) (p=0.001) for medical assistants and 17.8% (11.3) (p<0.000) for environmental health officers. The training significantly improved health workers knowledge of TB. No difference was found between the sexes regarding TB knowledge while having a tertiary education showed to provide an added advantage over primary and secondary education regarding knowledge of TB.

Discussion

Knowledge on Tuberculosis Control in health workers is essential for effective TB management at the primary care level. The TB Programme in Malawi utilizes non-formally trained health workers referred to as Health Surveillance Assistance (HSA) under the formally trained Environmental Health workers to enhance coverage of primary health care delivery at community level. The study focused at look at the association between the following characteristics of the participants (gender, educational status and years of service) and knowledge about TB control. Our analysis therefore focused on these factors. Although the study showed a significant change in knowledge

level at all levels, there is clear indication that the change in knowledge was directly linked to the level of formal education. It should also be noted that among the medical assistants only men participated in the training, there were no women medical assistants.

The target group in this training had a few participants with primary level of education for the HSAs that might have been employed at a period that allowed primary level of education for community health work. Four of these showed consistent below average performance of scores below 50% in both the pre and post-test and 2 participants within the low marks scored higher in the pretest and lower in the pre-test from 48% to 40% and from 54% to 50% respectively in which case knowledge decreased from the time of a pre-test to the post test. In general the mean scores for the HSAs with a basic formal education of Primary and Secondary level changed from 40 to 49% and 45 to 64% respectively while for those who had attained tertiary education knowledge levels changed from 86 to 84%. All health workers assigned TB activities undergo a similar TB Management Course and it is envisaged that they get similar basic information. However from the results we can clearly infer that basic level of education determines the level of knowledge on TB. The

results therefore indicated a significant association between knowledge of TB and level of education ($p < 0.0001$ and < 0.0005 respectively).

A similar study on knowledge of TB amongst Health Workers in Iraq [9] found that 98% of health care workers (98.4%) had 'good' scores for knowledge about TB and they attributed these high scores to the fact that most of the health workers had high qualification (Diploma level) which resulted to a significant association to their knowledge on TB ($P = 0.02$). However, in Malawi over 90% of the core primary health care workers that also provide TB services at peripheral health facility are HSAs with mostly secondary school basic education. It is imperative therefore to periodically carry out knowledge improvement activities to strengthen their weak base.

An interesting observation was made amongst the Medical Assistant group where those with tertiary educational level had a higher pre-test score compared with those who had secondary education (62.9% versus 26%) $p = 0.0017$. However there was no difference in post training scores between those with tertiary education and secondary educational level $p = 0.55$. In this group we could conclude that the training directly impacted on the knowledge level especially in the group with basic secondary level education rendering the post-test score difference between the two groups insignificant.

Apart from a clear difference in the knowledge at the beginning and the end of the course across the whole group with an absolute result of highest score of 68% in the pre-test results and highest score of 92% in the post test, there was a general variation between the clinically trained medical assistants and the environmental health officers 96% ($n = 40$). In a similar study differences in TB Knowledge post-training was noted between doctors, nurses and TB Managers, with the doctors scoring higher than the nurses. The study found that although nurses were frontline TB service providers in South Africa over 70% of whom were also previously trained in TB Management using WHO TB Management modules, they still scored lower [8]. This clearly indicates that factors such as level of formal education and nature of professional education can determine TB knowledge acquisition and effective implementation of TB services. In the study in Malawi, it was clear that the medical assistants who had a clinical background in their training demonstrated higher knowledge on TB Control issues both in the pre-test and the post-test.

The performance of the pre and post -test clearly showed a gap in TB knowledge among health care workers, and thereafter gaining of knowledge in TB management on the health workers. A bigger gap was observed amongst Health Surveillance Assistants who mostly scored very low marks during the pre-test compared to the Medical Assistants whose marks were higher during the pre-test. All this cadres undergo TB training at their various professional training. It was however clear that apart from the initial TB training, they still require in-service training to enhance the knowledge they have on TB. Studies that reviewed the effectiveness of clinical supervision for nurses concluded that it provides skills and knowledge development besides provision of peer support and professional accountability. The studies point out on the need to explore all strategies that provide support and coping for optimal health care services [10,11]. Although these studies were conducted on Nurses, we can relate the work situation of the

cadres involved in this study. The results clearly show that there is a need for the District Health Office to closely supervise medical assistant and environmental health officers and provide on the job regular supervision on effective TB management.

Limitations of the Study

The study lacked power as the sample size used was small and may not be representative of the population of health workers in the country. However data collected provides evidence of lack of knowledge among these health workers groups. The study also failed to measure direct association of knowledge and duration of service of the health workers. These findings need to be tested in further larger studies.

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