

ORIGINAL ARTICLE

Status of Health Professionals Awareness about Resistant Tuberculosis.

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ABSTRACT

With the dawn of the era of drug resistance in Tuberculosis the medical sciences have come to realization that not only the available knowledge is incomplete but what ever is known is not well disseminated among the medical professionals. **METHODS:** An awareness survey was conducted with the view to assess the basic knowledge of the various types of the Resistance pattern in tuberculosis amongst the medical professionals. The definitions of the two types of Drug Resistance namely Multi Drug Resistant Tuberculosis (MDR TB) and Extreme (Extensively) Drug Resistant Tuberculosis (XDR TB) were asked and the medical professionals of various levels of experience and seniority were asked to give a spontaneous answer. Two hundred medical doctors were included in this survey. **RESULTS:** One hundred and twenty eight (69%) responses were finally included. Remaining seventy two (31%) responses were classified as regrets or incomplete responses. Fifty one (39.85%) correct responses were recorded for definition of MDR TB while seventy seven (60.15%) incorrect responses were recorded. Only five (3%) correct responses were recorded for definition of XDR TB while 103 (81%) incorrect and 21(16%) partially correct responses were recorded in this category. Subset analysis of experience and postgraduate qualifications was performed which revealed that inadequacy of awareness was uniform in all categories. **CONCLUSION:** It was concluded that there are major gaps of knowledge regarding the drug resistance in Tuberculosis in health care providers highlighting the urgent need to address this issue.

Key words ; Drug Resistant TB, MDR TB, XDR TB, Awareness, TB Advocacy

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INTRODUCTION

Tuberculosis was declared by the WHO as Global Emergency in the last decade of twentieth century. The problem although prevalent all over the world has its greatest impact in the under developed and the developing countries which is greater than two thirds of the globe and its population has many factors to propagate and perpetuate this scourge. Poverty, poor infrastructure, bad governance, resource constraints and improper and inadequate distribution of resources are some of the factors leading to this and many other serious health issues. Additionally, lack of properly trained human resource multiplies the adverse impact in this situation.

Although, great deal of research and development has occurred in the fields of tuberculosis diagnosis and management yet there are some very serious gaps in the scientific knowledge thus far available. Not only these lacunae, but also the lack of dissemination of the existing knowledge has contributed a great deal in the delivery of benefit of this knowledge to the effected community.

During the last two decades, the resistance pattern in tuberculosis has been evaluated and specific definitions have been coined. Two very important categories viz the Multi Drug Resistance (MDR) and Extreme (Extensively) Drug Resistance (XDR) have been coined. This study has been conducted to determine the status of knowledge and awareness amongst the medical doctors about the very basic knowledge about these two types of resistance patterns in tuberculosis. Other health care professionals are being inducted in a separate protocol.

The basic aim of this study was to assess the existing basic knowledge of medical doctors of various levels of training and seniority about the definitions of the resistance patterns in tuberculosis. Secondary aim was to analyze the awareness amongst different sub groups of post graduate (PG) qualified and non PG qualified doctors and to evaluate the differences of experience on the level of awareness.

METHODS

A simple questionnaire was designed and presented to the medical doctors to respond by spontaneous answers to the questions in the questionnaire. They were required to give basic information about their training, seniority and expertise or areas of interest. The participants were asked to define Multi Drug Resistant Tuberculosis (MDR TB) and Extreme (Extremely) Resistant Tuberculosis (XDR TB) (Annex 1). The participants were required to respond spontaneously by completing the questionnaire on presentation without waiting time, delayed participation or peer discussion.

Inclusion criteria were compulsory response to all questions except disclosure of identity. Responses not given spontaneously or after peer consultation were declared void. Also incomplete responses were also declared void and excluded. Post Graduate qualification was defined as Fellowship or equivalent qualification. Three tertiary care hospitals in Rawalpindi (two public and one private hospital) were selected for the study.

RESULTS

Two hundred participants were included in this study. One hundred and twenty eight (64%) participants completed the questionnaire according to the inclusion criteria while remaining seventy two (36%) participants did not answer the questions completely. Out of 128 responders 42 responders had more than 15 years experience after graduation, 42 responders were of the seniority between 5 years to 15 years and 44 responders were of seniority less than 5 years (Table 1 & Graph 1). Thirty eight (29.7%) responders possessed a post graduate degree while remaining ninety (70.3%) responders were post graduate trainees, general medical officers and house officers (Table 2 & Graph 2). Out of 38 postgraduate degree holders nine (23.6%) had a seniority of more than 15 years after post graduation while seventeen (44.7%) had more than 5 years but less than 15 years of experience after post graduation. Twelve (31.5%) responders were of less than 5 years seniority after post graduation. Post graduate qualified responders belonged to disciplines of Medicine and Allied subjects (Table 3 & Graph 3).

Out of total 128 responders fifty one (39.2%) could define Multi Drug Resistant Tuberculosis (MDR) correctly while seventy seven (59.8%) could not define MDR TB correctly (Table 4 & Graph 4). Subset analysis revealed that out of ninety responders without post graduate qualification, only 31 (34.4%) could give a correct response. Out of 38 post graduate responders, 20 (52.6%) gave correct responses. Further analysis of seniority revealed that 5 out of total 9 responders of the post graduates with more than 15 years seniority gave correct responses. Eight out of 17 responders with post graduate seniority between 5 to 15 years gave correct responses. Seven out of 12 responders with less than 5 year seniority gave correct responses (Table 5 & Graph 5).

Out of the total 128 responders, five (3.9%) responders could define XDR correctly while one hundred and two (79.6%) responses were incorrect. Twenty one (16.4%) responders could correctly define two out of the three components of the XDR definition and were classified as partially correct (Table 6 & Graph 6). Subset analysis of responses revealed that two (2.2%) correct responses were recorded in the group without PG Qualification while three (7.8%) correct responses were recorded in the PG qualified group of 38. One (11.1%) correct response was recorded in the PG qualified group of total of 9 with more than 15 years experience. No correct answer was recorded in group of 17 PG qualified responders with experience between 5 to 15 years experience after post graduate qualification. Two correct answers were recorded in the group of 12 responders with less than 5 years experience after post graduate qualification. Four out of five correct responses were recorded from the department of Pulmonary Medicine. Both non PG qualified responders were FCPS part II trainees in Pulmonary Medicine. One correct responder was from department of Pediatrics as both PG qualified correct responders were from department of Pulmonary Medicine (Table 7 & Graph 7). Out of the twenty one partially correct responders two (9.5%) correct responses were recorded in the non PG qualified group. Out of 21 partially correct responses 19 (90.4%) responders belonged to PG qualified group. Subset analysis in this group revealed that out of nineteen partially correct responses nine (47.3%) correct responses were given by PG qualified group with

less than 5 years experience after post graduation. Two (10.5%) partially correct responses were recorded in the sub group with more than 15 years experience after post graduation while eight (42.1%) correct responses were recorded in the sub group of responders with experience between 5 to 15 years after PG qualification (Table 8 & Graph 8).

DISCUSSION

Tuberculosis is the most common cause of death in adults due to single infectious agent¹. Tuberculosis was considered controlled in the last century after the discovery and widespread availability of potent anti-tuberculosis drugs. It was only during the last two decades of the twentieth century that the medical community started to realize that tuberculosis has staged a comeback with deadlier and drug resistant potency. Additionally, its association with AIDS and drug abuse opened newer frontiers. Difficulty in treating tuberculosis in other immune incompetent states like post organ transplant situations became another challenge. WHO declared tuberculosis as Global Emergency in 1993 and established a subsidiary organization by the name STOPTB¹⁻³.

According to several estimates 1.86 to 1.88 billion people are infected with Mycobacterium Tuberculosis worldwide⁴. TB is a disease of poverty, malnutrition and poor housing with 95 percent cases and 98 percent death occurring in under developed and the developing countries. Of these more than half the cases were recorded in the Asian countries⁴. Another recent report by WHO declares global population weighted proportion of resistance among new cases: any resistance 17% (95% confidence limits), and MDR TB 2.9% (95% confidence limits⁵. Our close neighbors China and India carry approximately 50% of the global burden of MDR TB while Russian Federation a further 7%⁵. Pakistan ranks eighth on the list of 22 Global High burden countries while it has the largest registered population of MDR TB cases in the EMRO region of WHO⁶. Pakistan is also 6th on the list of 27 Global high burden countries⁶. WHO estimates annual incidence of around 13200 culture positive cases in Pakistan⁶. WHO estimates 3.2% incidence of MDR TB in new cases while 35% in treated cases in Pakistan⁶. Other studies in Pakistan show MDR TB as 1.8% in new cases⁷. Another study from Armed Forces Institute of Pathology in retrospective study from November 2005 to 2006 showed MDR in 31% culture positive cases in both unspecified treated and untreated cases while a previous study of the same institute in 2004 showed this to be 28%⁸. Agha Khan University (hand out teams) –January to July 2007 tested 1240 strains out of which 410 were declared MDR TB⁹. WHO estimates that DR in treated cases may be higher up to 36.5%¹⁰.

While the above epidemiology is really alarming the response to this threat by government and the medical community is far from satisfactory. WHO mission in 2006 for need assessment in provinces of Sindh and Punjab highlighted five major deficiencies. One of the areas highlighted was poor human resource availability, its distribution, training and advocacy¹⁰. Lack of active and effective advocacy initiative in this field is another factor leading to poor Tuberculosis control. The review of under graduate and post graduate syllabi of Pakistan Medical Dental Council and College of

Physicians and Surgeons of Pakistan shows an outdated rather redundant curriculum of training.

In the light of above facts this study primarily aimed to determine the level of basic understanding about the drug resistance patterns in the medical fraternity of Pakistan. Secondary aim was to find out if there were significant effects of training and seniority on this level of awareness amongst the doctors about these types of DR TB. No similar published data on the subject is available in the National and the International Medical literature (Pub med, Pak Medinet, Medline, and Cochrane).

This study though small in sample size shows a significant trend in knowledge database amongst the medical community in general. Out of two hundred participants only 128 participants completed the questionnaire. The remaining did not respond primarily due to lack of knowledge on the subject or unwillingness to respond spontaneously. Lack of spontaneous response again can be largely attributed to lack of confidence about their knowledge. However, non availability of time to respond and lack of interest in participation cannot be excluded. This very large number of 72 participants has created a hidden bias in this statistical analysis. Based on this fact exclusion criteria was applied to all these cases to finally address the statistical results only on the included sample of 128 participants.

The results showed that the participants were almost evenly distributed as far as seniority after medical graduation with all three groups having 42 to 44 participants (Table 1). Only 51 (39.2%) participants out the 128 correctly defined Multi Drug Resistant Tuberculosis (MDR TB) while only five (3.9%) could give correct and complete definition of Extreme/Extensively Drug Resistant Tuberculosis (XDR TB) (Tables 4 &6). Twenty one (16.4%) responders could define up to two components of XDR TB definition and were classified as partially correct answers. This is very significant as only the basic definitions of these types of resistance were asked which translates that only 60% doctor of all seniorities and experience could define MDR TB (Table 4) while 96% doctors could not correctly or completely define XDR TB (Table 6). While one can expect low result outcome in case of XDR TB which is rather a new entity defined in 2006 officially but the definition of MDR TB has been there for over one decade. This can largely be attributed to poor curriculum and non existent continuous medical education programmes. Matter for greater concern was that the sample consisted of specialists, PG trainees, general duty medical officers and house officers employed in the departments of Medicine and Allied subjects and all were working in tertiary care settings attached with teaching institutions.

Further differentiation of data between PG qualified and non PG qualified groups showed the significant and expected difference in the level of knowledge between the two groups. Thirty four percent non PG qualified participants gave correct answers about MDR TB while 52 percent of PG qualified participants responded correctly. This level of response from PG qualified participants is far below the desired level. The subset analysis of seniority and experience amongst PG qualified group did not reveal a significant difference although junior specialist seemed more informed than the two senior groups (Table 5).

The subset analysis in case of XDR TB showed that only PG trainees and PG qualified participants from the department of pulmonary medicine were aware of this rather new type of resistance in tuberculosis.

The above analysis brings to fore the glaring fact that there are major gaps in the knowledge of doctors involved in patient care about resistance and its patterns of tuberculosis to available anti tuberculosis drugs.

RECOMMENDATIONS

The inference drawn from this data points to the fact that human resource component in the programmatic management programme for control of DR Tuberculosis, lacks the requisite knowledge. Therefore, following recommendations are presented for the policy makers and managers of Medical Education and Tuberculosis programme in Pakistan.

1. Under graduate and post graduate curriculum should be urgently revised and implemented.
2. Continuous medical education (CME) programmes should be initiated at all levels including hospitals, teaching institutions. Regional and national conferences should have special workshops and symposia in this regard.
3. Mandatory workshops should be started for PG trainees as pre requisite to take the PG Diploma/Degree programmes. Similarly, National Tuberculosis programme should run workshops which should be mandatory for all doctors involved in Tuberculosis management.
4. A national assessment study on similar lines should be conducted under the auspices of Pakistan Chest Society and National Tuberculosis Programme considering this as pilot study to assess the real magnitude of this problem on large and widely distributed representative data of participants.

Conflict of Interest: None declared

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ANNEX 1

Serial No. _____

**MDR/XDR Awareness Study 2009
(Professional)**

Name (Optional) _____

Rank/Appointment/Position _____

Age _____

(Experience)

a) Yrs after Graduate _____

b) Post Graduate (if any)/ subject/ area of interest _____

c) Years Since Post Graduate _____

Please define the following

a) Multi drug Resistance Tuberculosis (MDR)

(For Official Use)

Correct – A

Incorrect – B

b) Extreme(Extensively) Drug Resistance Tuberculosis (XDR)

(For Official Use)

Correct – A

Incorrect – B

Partially correct - C

TABLE 1**Table 1 (Experience Data)**

	Frequency	Percent	Valid Percent	Cumulative Percent
more than 15 years	42	32.5	32.5	32.5
5-15 years	42	32.5	32.5	66.
less than 5 years	44	34	34	100
Total	128	100.0	100.0	

TABLE 2**Table 2 post graduation status**

	Frequency	Percent	Valid Percent	Cumulative Percent
With Post graduate Degree	38	29.7	29.7	29.7
Without post graduate degree	90	70.3	70.3	100
Total	128	100.0	100.0	

TABLE 3**Table 3 Seniority after Post Graduation**

	Frequency	Percent	Valid Percent	Cumulative Percent
more than 10 years	9	23.6	23.6	23.6
less than 10 years	17	44.7	44.7	68.3
Less than 5 years	12	31.5	31.5	100.0
Total	38	100.0	100.0	

TABLE 4**Table 4 MDR Definition**

Response	frequency	percentage	Valid percentage	Cumulative percentage
Correct	51	39.2	39.2	40.0
Incorrect	77	59.8	59.8	100
Total	128	100.0	100.0	

TABLE 5**Table 5 MDR Results Subset Analysis Seniority and Post Graduation**

	Total Frequency	Correct	Incorrect	Percentage
Without PG Qualification	90	31	59	34.4
Total PG qualified responders	38	20	18	52.6
more than 10 years	9	5	4	52.6
less than 10 years	17	8	9	47.05
Less than 5 years	12	7	5	58.3
Total	38	100.0	100.0	

TABLE 6**Table 6 XDR TB Definition**

Response	Frequency	Percent	Valid Percent	Cumulative Percent
correct	5	3.9	3.9	3.9
incorrect	102	79.6	79.7	83.6
partially correct	21	16.4	16.4	100
Total	130	100.0	100.0	

TABLE 7

Table 7 XDR Results Subset Analysis Seniority and Post Graduation

	Total Frequency	Correct	Incorrect	Percentage
Without PG Qualification	90	2	88	2.2
Total PG qualified responders	38	3	35	7.8
more than 10 years	9	1	8	11.1
less than 10 years	17	0	17	0
Less than 5 years	12	2	10	16.6
Total	38	100.0	100.0	

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