

KNOWLEDGE OF DISEASE AND ADHERENCE TO ANTI-TUBERCULOSIS TREATMENT-A CROSS SECTIONAL STUDY IN RAWALPINDI DISTRICT

Kosar Aziz, Aliya Hisam*, Naila Azam**, Farrah Pervaiz**, Humaira Mehmood**

Pakistan Naval Ship Hafeez Islamabad Pakistan, *Army Medical College/National University of Medical Sciences (NUMS) Rawalpindi Pakistan, **Armed Forces Post Graduate Medical Sciences/National University of Medical Sciences (NUMS) Rawalpindi Pakistan

ABSTRACT

Objective: The objective is to find out the knowledge regarding tuberculosis and patient's adherence to anti-tuberculosis treatment and also to find out the association of adherence to anti-tuberculosis treatment with other social and demographic factors.

Study Design: It was cross sectional study. Non probability convenient sampling technique was used.

Place and Duration of Study: The study was carried out at Pak Emirates Military Hospital Rawalpindi, Tuberculosis Hospital Rawalpindi and Leprosy center Rawalpindi with effect, from Jan 2018 to Jan 2019.

Patients and Methods: A total 366 patients of tuberculosis were included in the study. A structured questionnaire was prepared to assess the knowledge of disease (adequate and inadequate), and socio demographic variables. Morisky questionnaire was used to assess the adherence to treatment (High, Medium and Low).

Results: Adequate knowledge was exhibited by 124 (35.5%) and 222 (65.5%) had inadequate knowledge about the disease. Forty four percent (123) low adherence to medication, 164(33%) medium and only 79 (21.6%) had high adherence to medication. Waiting time in the health care facility was reported <30 minutes by 174 (48%) of the respondents while 192 (52%) of the respondents reported a waiting time of greater than 30 minutes. It took more than 30 minutes to reach healthcare facility to more than 233 (63%) of the respondents and 277 (78%) complained about non availability of medicines.

Conclusion: Adherence to treatment was inadequate in majority of the patients. A statistically significant association was found between knowledge and adherence, Other statistically significant factors included distance from the healthcare facility and between the waiting time at the facility and adherence. Low level of regular education and medicine not being readily available were other contributory factors.

Keywords: Attitude, Knowledge, Non-adherence, Pakistan, Treatment, Tuberculosis.

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INTRODUCTION

Tuberculosis is one of the oldest and deadliest infectious disease still haunting mankind for its control. It is still among top ten killer diseases worldwide. Despite the early promise shown by the advent and use of effective chemotherapy by visible decline in the incidence and number of cases in the later part of twentieth century, the disease alarmingly resurged along with the problem of multi drug resistant tuberculosis targeting particularly the developing and under-developed countries¹. About 9 million new cases every year and 1.5 million unlucky to die of it. World health Organization repeatedly devised

and revised its strategies to involve the member countries and particularly those with heavy burden of disease to take exhaustive measures to control tuberculosis particularly with multi drug resistance cases and increasing incidence of HIV infection posing new challenges²⁻⁴ and pledged to provide funding and all other necessary technical assistance⁵. In its annual assembly in 2018 WHO declared it a global emergency and stressed for adopting a global strategy to end TB by 2030 in its assembly in January 2018 Ending TB in the Sustainable Development Era: A Multi Sectorial Response.

Rationale

Non adherence to tuberculosis treatment is identified as one of major impediment towards its eradication^{6,7}. Rather problems of multi drug

Correspondence: Dr Kosar Aziz, AFNS, PNS Hafeez Naval Complex, Islamabad Pakistan
Email: kosaraziz7@gmail.com

resistant tuberculosis and its further spread due to increasing prevalence of HIV and other immune compromising diseases have started posing new and complicated challenges. Poor knowledge about disease and role of various socio demographic factors is considered significant contributing factors towards non adherence.

Pakistan ranks 5th among the most affected countries and carries the 4th highest burden of multi drug resistant cases⁸. There is an urgent need to identify the contributing factors towards non adherence and the ways and means to deal with those. This study is being conducted to assess non-compliance and its association with knowledge and other socio-demographic factors as there are differences compared to other countries in many aspects such as culture, demography, socio-economic status, knowledge level, drugs used, and tolerance to the side effects of drugs⁹⁻¹¹.

The benefits from this study results include determining possible solutions to the existing treatment default problem, to help reduce the transmission and incidence of TB and to contribute towards the improvement of TB control programs especially in planning intervention measures.

PATIENTS AND METHODS

This was a cross sectional study carried out at PEMH Rawalpindi, Tuberculosis Hospital Rawalpindi and Leprosy Center Rawalpindi. A sample size of 366 patients was calculated using WHO Calculator where population was taken at one million and a confidence interval of 95%. The anticipated frequency of tuberculosis burden was taken as 61% (WHO, 2018). Non probability convenient sampling technique was used. All patients confirmed of tuberculosis either on the basis of clinical or laboratory examination and aged 15 years and above were included in the study. Mentally sick or too ill were excluded from the study.

A three part semi structured questionnaire was prepared to assess the knowledge of the patients about tuberculosis and other socio demo-

graphic factors including Age, Gender, Marital status, Place of living, Education, Monthly income, Employment status, Time to reach healthcare facility, Transport used Waiting time in health care facility and Awareness about DOT. The adherence to treatment was assessed by using Morisky medical adherence scale (MMS-8).

Knowledge was assessed through 9 items. All the knowledge questions were multiple choice questions. A scoring system was used to form two categories for adequate knowledge and inadequate knowledge. One point was given for each correct answer to the knowledge question. Zero points were given for incorrect answers to the knowledge questions. A score of less than the median value was taken as inadequate score for knowledge and a score of greater than or equal to median value was taken as adequate score for knowledge.

Morisky medical adherence scale consisted of 8 items. Scoring was done on the criteria that never were scored as Zero, while all other options were scored as 1. Scores >2 were categorized into low adherence, 1 or 2 into medium adherence and 0 was categorized as high adherence¹².

The questionnaire was pretested in a pilot study.

Data were collected and compiled according to the date of the visit to the health care facility. Questionnaires were checked for missing information, on the same day. For missing information the concerned participants were contacted prior to the next data collection day.

Data was entered anonymously into SPSS version 22.0. The coding of the variables was done and it was cross checked by the records as well. Qualitative variables like gender, education, monthly income etc. were reported as frequencies and percentages. Quantitative variables like age were reported as mean \pm standard deviation. Tables and bar charts were generated according to the nature of the variables. A chi-square test was performed to find out the association between adherence to tuberculosis treatment and

knowledge of participants about tuberculosis. A p -value <0.05 was taken as statistically significant.

RESULTS

In our study 336 (91.8%) were males 30 (8.2%) females. A total of 141 (39.6%) were between 20 to 40 years of age, 135 (35.7%) 40 to 60 and 90 (24.5%) were more than 60 years of age. Seventy nine percent (289) were married and 286 (78%) were from rural areas. Only 71 (19%) had intermediate level or beyond formal education. Regarding education level 175 (47%) was matriculate. Fifty percent were earning more than

concerning their disease, its various aspects and its association with adherence to treatment and other socio demographic factors.

Out of the 366 participants; 236 (84.5%) were not aware of all the symptoms of the disease. Most of the respondents knew only about cough and loss of weight; other symptoms of the disease were unknown to them. While 130 (35.5%) out of a total 366 respondents were aware of all the symptoms of the disease.

Regarding the disease severity; 188 (51.4%) of the respondents were of the view that it is a

Table-1: Knowledge about Tuberculosis.

S. No.	Variables	Incorrect Response		Correct Response	
		n	%	N	%
1.	Symptoms of Tuberculosis	236	64.5	130	35.5
2.	Transmission of Tuberculosis	64	17.5	302	82.5
3.	Preventable Disease	57	15.6	309	84.4
4.	Disease Severity	178	48.6	188	51.4
5.	Proper medication	68	18.6	298	81.4
6.	Duration of Treatment	83	22.7	282	77.3
7.	Curable Disease	79	21.6	287	78.4
8.	Co morbidities associated with Tuberculosis	313	85.5	53	14.5

20000/- PRs per month and 287 (78%) were employed. It took more than 30 minutes to reach healthcare facility to more than 233 (63%) of the respondents and 277 (78%) complained about availability of medicines. Adequate knowledge was exhibited by 124 (35.5%) and 222 (65.5%) had inadequate knowledge about the disease (table-I, fig-1). Forty four percent (123) had low adherence to medication, 164 (33%) medium and only 79 (21.6%) had high adherence to medication (table-III, fig-2). A statistically significant association was found between knowledge and adherence (table-II), other statistically significant factors included distance from the healthcare facility and between the waiting time at the facility and adherence. Low level of regular education and medicine not being readily available were other contributory factors.

DISCUSSION

The primary objective of this study was to know the knowledge of the TB patients

very dangerous disease while 178 (48.65) respondents reported that it is not a very dangerous disease and less importance should be given to it.

The overall knowledge about disease was

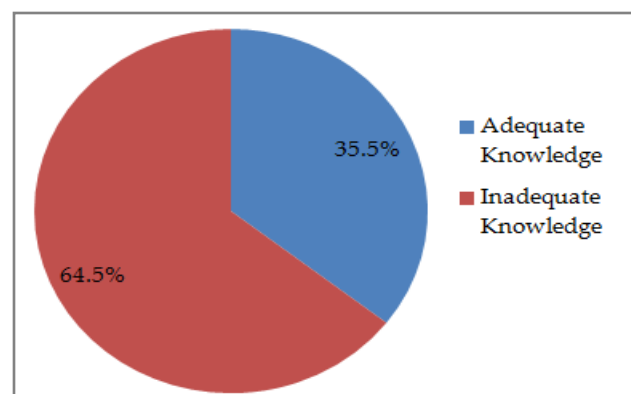


Figure-1: Knowledge about Tuberculosis.

found to be adequate in our study 124 (35.5%) and 222 (65.5%) having inadequate knowledge.

The study was conducted at the dedicated facilities for tuberculosis and generally the

patients were expected to be more knowledgeable regarding their disease. However the awareness and knowledge was still found to be inadequate and sketchy. The knowledge about disease was found to be adequate in our study only in 124 (35.5%) and 222 (65.5%) having inadequate knowledge. The study was conducted at the dedicated facilities for tuberculosis and generally the patients were expected to be more knowledgeable regarding their disease. Still the awareness and knowledge was found to be sketchy¹³⁻¹⁵.

Studies from Pakistan, Tanzania, South

In their research article about knowledge about tuberculosis in Nigeria Hassan *et al* observed that there is significant improvement in knowledge as compared with similar study in 2008 from baseline (19%) to (26%) in 2012 (<0.001). They observed that males (62.4%) had better knowledge. Also 60% were between 21 to 40 years of age. Only 50% had secondary level education and the knowledge about disease was better among more educated¹⁶.

Wandwalo and Mørkve in their study regarding knowledge of tuberculosis and treatment in

Table-II: Association between compliance to tuberculosis treatment and knowledge about disease.

Compliance/Adherence to Tuberculosis Treatment	Knowledge about Tuberculosis		X ² Results
	Inadequate Knowledge	Adequate Knowledge	
High Adherence	66 (43.1%)	66 (43.1%)	X ² = 11.6, df=2 p=0.003
Medium Adherence	66 (43.1%)	66 (43.1%)	
Low Adherence	66 (43.1%)	66 (43.1%)	

Table-III: Compliance To Tuberculosis Medication.

S.No	Vaiables	Never/Rarely		Once in a while/sometimes/ usually/all the time	
		n	%	n	%
1.	Forget taking Medicine	251	68.6	115	31.4
2.	Skipped Medicine because of other reason	266	72.7	100	27.3
3.	Stopped taking medicine because of side effects	280	76.5	86	23.5
4.	Forget medicines at home	218	59.6	148	40.4
5.	Stopped medicine by own self	301	83.6	60	16.4
6.	Difficult daily treatment	108	29.5	258	70.5
7.	Difficult to take medicine because of large number	196	53.6	170	46.4
8.	Did you take all your medicines yesterday	305	83.3	61	16.7

Scoring

Option 'never' will be scored as '0', Option once in a while, Sometimes, usually and all the time will be scored 1.

Scores: >2 = low adherence, 1 or 2 = medium adherence, 0 = high adherence

Africa, china, Indonesia, Nigeria and India were extensively reviewed¹⁶⁻¹⁸.

Our study is generally in consistence with that of Ali *et al* in their study of 203 patients and their families in Karachi found that 82% had adequate knowledge about disease however they observed that less than one third were not well aware of the risk factors¹⁴.

Tanzania, only 30% had satisfactory knowledge of disease and treatment, this is in conformity to our study where 35.5% had adequate knowledge¹⁹.

Poor compliance or non-adherence to anti tuberculosis treatment is considered one of the major factors leading to the relapse, persistence and resurgence of this disease in addition to

the increasing incidence of immune deficiency diseases¹⁹. Non adherence to treatment was found to be 164 (44.8%), 123 (33.6%) medium and 79 (21.6%) low adherence. Oyugi *et al* in their study of patient related factors influencing adherence to anti tuberculosis treatment observed that 25% of patients are non-compliant in Kenya. This supports my findings regarding

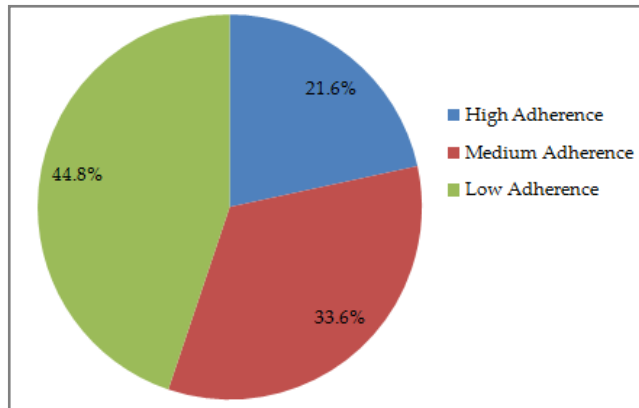


Figure-II: Compliance to tuberculosis treatment.

adherence to treatment. Poor compliance or non-adherence to anti tuberculosis treatment is considered one of the major factors leading to the relapse, persistence and resurgence of this disease in addition to the increasing incidence of immune deficiency diseases²⁰⁻²².

In my study distance from the health care facility and waiting time there had positive association with adherence (table-I & II). Boyle *et al* and Naing *et al*^{9,21} in their studies to find out adherence and contributing factors observed that distance from healthcare facility is statistically significant factor towards compliance and this is in conformity with our findings as well .

Majority of the patients 336 (91%) were males and their level of education was up to matric in 175 (48%) cases and only 79 (20%) were inter pass or beyond. Seventy nine percent (289) of the respondent were married. This is also in conformity with other international studies^{17,18}. Seventy eight percent (286) were from rural settings. While 287 (78%) were employed and 184 (50%) had income of 20000/- and more than. Sixty Four percent (233) 64% had to travel for

more than 30 minutes to reach the healthcare facility with 290 (79%) using public transport. Waiting time at the facility was more than 30 minutes for 192 (52%) of the interviewed^{23,24}.

Eighty eight percent (322) knew about DOTs and had actually used the facility. None or low availability of medicines were complained about by 277 (82%) of the patients. The findings in this study are generally consistent with other local or international studies^{10,14}.

DOT strategy has been an effective way of ensuring compliance. In our study 322 (88%) had availed this facility and were compliant so far as they used it. Naidoo, Dick J & Cooper D²³ in their work on exploring adherence and contributing factors and Boyle *et al*, Naing *et al*^{2,9,22} also in their similar research observed that application of DOT strategy ensured more than four times compliance among patients.

Another factor that came to attention during review of literature was that physicians in Pakistan have poor awareness about and low compliance with WHO guidelines^{25,26}.

The association between knowledge and non-adherence is well established in our study and a number of factors working in unison appear to affect adherence to treatment.

CONCLUSION

Adherence to treatment was inadequate in majority of the patients. A statistically significant association was found between knowledge and adherence. Other statistically significant factors included distance from the healthcare facility and between the waiting time at the facility and adherence. Low level of regular education and medicine not being readily available were other contributory factors.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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