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**Diksha Mehta**

M.Sc. Nursing Student, Akal  
College of Nursing, Baru Sahib,  
Himachal Pradesh, India

**Jasvinder Kaur Saini**

Department of Nursing, Akal  
College of Nursing, Baru Sahib,  
Himachal Pradesh, India

## Drug non compliance and its contributory factors among tuberculosis patients

**Diksha Mehta and Jasvinder Kaur Saini**

### Abstract

Tuberculosis is an infectious disease caused by mycobacterium Tuberculosis. The disease primarily affects lungs and causes pulmonary Tuberculosis. Tuberculosis is a transmissible disease that requires prolonged treatment and the lack of adherence to a prescribed treatment increases the risk of morbidity, mortality and spread of the disease in the community. India is the country with the highest burden of TB. The World Health Organization, TB statistics for India for 2016 gives an estimated incidence figure of 2.79 million cases of TB for India. The study was aimed to find out the non-compliance and its contributory factors among patients with TB. A Quantitative research approach with descriptive Study design was used to assess the non-compliance and its contributory factors among patients with TB. The Study was conducted in Selected DOTS centers of Himachal Pradesh. Purposive sampling technique was used to select one hundred eighty five subjects from the population. Structures interview schedule was used to assess the non-compliance and its contributory factors among patients with tuberculosis. The Result of the study shows that Majority (95%) patients with Tuberculosis were having side effects of the medications, 60% patients with TB were not maintained the records of the medication, 55% patients confidentiality is not maintained, 65% don't know the symptoms of TB, 70% subjects was quit medication due to the complication of the medications, 70% quit medication after symptoms disappears. Major contributing factor to non-compliance was side effects of the drugs.

**Keywords:** Patient with tuberculosis, non compliance, contributory factors, DOTS centers

### Introduction

"Tuberculosis is an infectious disease caused by mycobacterium Tuberculosis." The disease primarily affects lungs and causes pulmonary Tuberculosis<sup>[1]</sup>.

Tuberculosis is a transmissible disease that requires prolonged treatment, and the lack of adherence to a prescribed treatment increases the risk of morbidity, mortality and spread of the disease in the community<sup>[2]</sup> According to WHO Millions of people continue to get TB every year around the world in 2017; 6.4 million new cases of TB were officially notified to the national authorities and then informed to whom. This number has increased since 2013, after 4 years (2009-2012), in which 5.7-5.8 million new cases were reported annually, mainly due to the increase in case reports detected by the private sector in India and, in 2017, an increase in Notifications in Indonesia. The 6.4 million reported cases accounted for 64% of the estimated 10.0 million new cases that occurred in 2017. 10 accounted for 80% of the global gap of 3.6 million, the three largest were India (26%), Indonesia (11%) and Nigeria (9%)<sup>[3]</sup>.

India is the country with the highest burden of TB. The World Health Organization (WHO) TB statistics for India for 2016 gives an estimated incidence figure of 2.79 million cases of TB for India. In Himachal Pradesh total population covered by RNTCP is 7,200,000, total 14,070 patients notify in public sector and 891 in private sector<sup>[4]</sup>.

About 14,000 TB patients are diagnosed and put on treatment each year in Government Health Institutions of Himachal Pradesh. According to officials of state government in 2017, against the target of 14070, State diagnosed and put near 15000 new TB patients in the Government Health institutions. Nearly 550 TB deaths are reported each year in the Himachal<sup>[5]</sup>.

Compliance with therapy is one of the important factors that affect the outcome of the therapy. Compliance can be defined as the extent to which a patient's behavior matches

**Correspondence**

**Jasvinder Kaur Saini**

Department of Nursing, Akal  
College of Nursing, Baru Sahib,  
Himachal Pradesh, India

medical advice. Non-compliance with self-administered multidrug TB treatment regimens is common and the most important cause of initial therapy failure and relapse. Non-compliance can also result in acquired resistance to medications. Non-compliance with treatment is defined when patients with Tuberculosis, 30 days after the start of treatment, missed the follow-up appointment and could not be contacted, by notification or home visit, or when the administration of the medication was interrupted for more 30 days. Consecutive Non-compliance with self-administered multidrug TB treatment is a frequent and most important cause of initial therapy failure and relapse. Non-compliance can also result in acquired resistance to medications, which requires a longer and more expensive therapy that is less likely to be successful than the treatment of Tuberculosis susceptible to medications<sup>[6]</sup>.

The National Tuberculosis Control Program Revised (RNTCP) is a government initiative to control Tuberculosis in the government of India. According to the national strategic plan 2012-2017, the program has the vision of achieving a "India free of TB" and its objective is to achieve universal access to TB control services. The program provides, through the government health system, several free diagnostic and treatment services for the quality and quality of Tuberculosis throughout the country. We seek to employ the person who recommended the TB control strategy, points (Direct observation treatment, short course), to the Indian scenario. Based on the results of a recent study,

RNTCP has issued guidelines for states on the daily treatment of Tuberculosis. The daily regime will replace the alternate day regime (Three times per week) from January to February 2016 in the selected states. The daily regimen has been shown to be effective in reducing relapse rates and drug resistance<sup>[7]</sup>.

### Objective

1. To elicit the drug non-compliance and its contributory factors among patients with TB.
2. To find out the correlation between drug non-compliance and its contributory factors.

### Material and Methods

A Quantitative research approach with Descriptive Research design was used for the study to assess the non-compliance and its contributory factors among patients with TB. The study was conducted in Selected DOTS Centers. One Hundred Eighty five patients were purposively selected from the population. Structures interview schedule was used to assess the non-compliance and its contributory factors among patients with tuberculosis. Ethical committee and administrative permission was taken from the concerning authority. Informed consent was obtained from the study participants before commencement of the study.

### Results

**Table 1:** Frequency (f) and Percentage (%) distribution of T.B Patients on the basis of socio-demographic N=185

S. No	Sample characteristics	Frequency(f)	Percentage (%)
1	<b>Age</b>		
	18-33yr	75	40.5
	34-49yr	34	18.5
	50-64yr	38	20.5
2	65-79yr	38	20.5
	<b>Religion</b>		
	Hindu	165	89.2
3	Muslim	16	8.6
	Christian	4	2.2
4	<b>Gender</b>		
	Male	123	66.5
5	Female	62	33.5
	<b>Type of family</b>		
	Joint family	68	36.8
	Nuclear family	113	61
6	Extended family	2	1.1
	Single	2	1.1
	<b>Area of residence</b>		
7	Urban	74	40
	Rural	82	44.3
	Semi urban	29	15.7
8	<b>Education level</b>		
	No formal education	17	9.3
	Secondary	27	14.6
	Higher secondary	63	33.5
9	Graduate or above	51	27.6
	<b>Occupational status</b>		
	Farmer	148	80
	Business	23	12.4
10	Private job	12	5.9
	Govt job	3	1.6
11	<b>Family income</b>		
	Below 5000	94	50.8
	5001-15000	54	29.2
15001-25000	23	12.4	

	Above 25000	14	7.4
	<b>Marital status</b>		
9	Married	148	80
	Unmarried	23	12.4
	Widow	12	5.9
	divorcees	3	1.6
	<b>Substance abuse</b>		
10	Yes	112	60.5
	No	73	39.5
	<b>Quit substance abuse after treatment</b>		
10.1	Yes	54	70.8
	No	19	29.2
	<b>Family history of TB</b>		
11	Yes	25	13.5
	No	160	86.5
	<b>Source of information</b>		
12	Health care worker	123	66.5
	TV	52	28.1
	News	4	2.2
	Posters	6	3.2
	<b>Type of TB case</b>		
13	New	140	75.7
	Relapse	16	8.6
	Treatment failure	29	15.7
	<b>Patient HIV status</b>		
14	Positive	6	3.2
	Negative	133	71.9
	unknown	46	24.9
	<b>Type of Drug regimen</b>		
15	I	128	69.2
	II	57	30.8

Table 1: depicts that Majority (40.5%) of the subjects were in the age group of 18-33year, Majority (89.2%) of subjects were Hindu, Majority (66.5%) of the subjects were male, Majority (61%) of the subjects belongs to nuclear family, Majority (44.3%) of the subjects were from rural area, Majority (33.5%) of the subjects education level is higher secondary, Majority (80%) of the subjects were farmer, Majority (50.8%) of the subjects income were below 5000, Majority (80%) of the subjects were married, Majority

(60.5%) of the subjects were substance abuser, Majority (70.8%) of subjects quit substance abuse after treatment, Majority (86.5 %) of the subjects having no family history of TB, Majority (66.5%) of subjects were getting information from health care worker, Majority (75.7%) of the subjects were new TB case, Majority (71.9%) of the subjects were HIV negative and Majority (69.2%) of the subjects were on type I Drug regimen.

**Table 2:** Frequency (f) and percentage (%) distribution of non-compliance to TB treatment N=185

S. No	Sample characteristics	Frequency(f)	Percentage (%)
1	<b>Last date of drug collection</b>		
	Yes	113	61.2
	No	72	38.9
2	<b>No of tablets collected</b>		
	1-20	81	43.8
	21-60	100	54.1
	61-90	4	2.2
3	<b>No of remaining tablets</b>		
	Yes	69	37.3
	No	116	62.7
4	<b>Taking drug on time</b>		
	Yes	140	75.7
	No	45	24.3
5	<b>Ever missed drug</b>		
	Yes	22	11.9
	No	163	88.1
6	<b>No of days missed taking drugs in last 7 days</b>		
	None	166	89.7
	1-2days	16	8.6
	3-4days	1	0.5
	5-7 days	2	1.1

7	No of tablets missed in last four weeks			
	None		165	89.2
	1-10 days		14	7.6
	11-20 days		6	3.2

Table 2: Showed that majority 61.2% of the Subjects were known the last date of drug collection. Majority 54.1% of the Subjects collected 21-60 tablets, Majority 62.7% Subjects were not known the remaining tablets, Majority 75.7% of the Subjects were taking drug on time, Majority

88.1% of the subjects were not ever missed the drug, Majority 89.7% of the subjects were not known the missed drugs in last 7 days, Majority 89.2% of the Subjects were not known the tablets missed in last four weeks.

**Table 3:** Frequency (f) and Percentage (%) distribution of contributory factors. (Client related factors) N=20

S. No	Sample characteristics	Frequency(f)	Percentage (%)
1	<b>Side effect</b>		
	Yes	19	95
	No	1	5
2	<b>TB diagnostic method</b>		
	Yes	11	55
	No	9	45
3	<b>TB can cured if TB treatment taken daily</b>		
	Yes	8	40
	No	12	60
4	<b>Record of Medication</b>		
	Yes	8	40.3
	No	12	60.5
5	<b>Confidentiality</b>		
	Yes	9	45
	No	11	55
6	<b>Symptoms of TB</b>		
	Coughing with bleeding	13	65
	All of above	7	35
7	<b>If not completed the treatment</b>		
	TB disease will not be cured	3	15
	Nothing will happen	8	40
	Will re infect	9	45
8	<b>Benefit by DOTS</b>		
	DOTS completely cure TB disease	2	10
	DOTS prevent cough and chest pain	18	90
9	<b>Best method to prevent transmission of TB</b>		
	Cover the mouth and nose when sneezing	10	50
	Not eat together	9	45
	Not sleep together	1	5

Table 3: depicts that Majority 95% of the Subjects were known the side effects of the medications, Majority 55 % of the subjects were known the TB diagnostic method, Majority 60 % of the subjects were not known TB can cured if TB treatment taken daily, Majority 60.5% of the subjects were not maintain record of medication, Majority 65% of the subjects were not maintain confidentiality, Majority 65%

of the subjects were known the TB symptoms like Coughing with bleeding, Majority 45% of subjects were Known it will be re infect if not completed the TB Treatment, Majority 90% of subjects were known the benefit by DOTS, it prevent cough and chest pain, Majority 50% of the subjects were known the best method to prevent transmission of TB, like Cover the mouth and nose when sneezing.

**Table 4:** Frequency (f) and Percentage (%) distribution of contributory factors (Health system related factors) N=20

S. No	Sample characteristics	Frequency (f)	Percentage (%)
1	<b>Health worker attitude</b>		
	Friendly	13	65
	Rude	7	35
2	<b>Travelling time</b>		
	Less than 30 minutes	18	90
	30 minutes or more	2	10
3	<b>Meet health staff in every visit</b>		
	Yes	14	70
	No	6	30
4	<b>Health education</b>		
	Yes	12	60
	No	8	40

5	<b>Get drugs in each visit</b>		
	Yes	17	85
	No	3	15
6	<b>Waiting time</b>		
	Less than 30 minutes	14	70
	30 minutes to 1hr	6	30
7	<b>Cost of travel</b>		
	Nil	14	70
	1-10 rupees	5	25
	11-20 rupees	1	5
8	<b>Availability of medicine</b>		
	Always available	14	70
	Sometime not available	6	30

Table 4: depict that Majority 65% of subjects were friendly attitude with health workers, Majority 90% of subjects were travel less than 30 minutes, Majority 70% of subjects were met health staff in every visit, Majority 60% of subjects were known the health education regarding TB, Majority

85% of subjects were get drugs in each visit, Majority 70% of subjects were wait less than 30 minutes, Majority 70% of subjects were spend Nil cost for travel, Majority 70% of subjects were always available for medicine.

**Table 5:** Frequency (f) and percentage (%) distribution of contributory factors. (Socio-cultural factors). N=20

Sr. No	Sample characteristics	Frequency (f)	Percentage (%)
1	<b>Taking complementary therapy</b>		
	Yes	8	40
	No	6	60
2	<b>Relationship with society</b>		
	Good	14	70
	Bad	6	30
3	<b>Have you informed your significant other</b>		
	Yes	18	90
	No	2	10
4	<b>Social stigma</b>		
	TB affect job	1	5
	Affect relationship with society	11	55
	Affect relationship with family	1	5
	None of above	7	35

Table 5: depict that Majority 60% of subjects were not take complementary therapy, Majority 70% of subjects were having good relationship with society, Majority 90% of

subjects were informed their significant about TB, Majority 55% of subjects were having social stigma that TB affect relationship with society.

**Table 6:** Frequency (f) And Percentage (%) distribution of Contributory Factors (Health and Medicine Related Factors)

Sr. No	Sample characteristics	Frequency(f)	Percentage (%)
1	<b>Exact reason of missing drugs</b>		
	Travel cost is so expensive	2	10
	Bad behavior of health staff	1	5
	Due to the complication of TB drugs	14	70
	Feeling cured	3	15
2	<b>Duration of treatment</b>		
	6 months	16	80
	12 months	2	10
	24 month	2	10
3	<b>When will you stop your TB DOTS treatment</b>		
	After symptoms disappeared	14	70
	When health worker declared cured/ completed	1	5
		2	10
	When feeling healthy	3	15
	When some side effects appeared.		
4	<b>Who collect drugs</b>		
	Self	9	45
	Treatment supporter	8	40
	Health care worker	3	15
5	<b>How often are you collect drug</b>		
	Daily	3	15
	Once in week	12	60
	In a month	3	15

	After 3 months	2	10
6	<b>Currently on medication other than DOTS</b>		
	Yes	9	45
	No	11	55

Table 6: depicts that Majority 70 % of subjects were missed the drugs, due to the complication of TB drugs, Majority 80% of subjects were on 6 months of treatment, Majority 70% of subjects missed the drugs after symptoms

disappears, Majority 45% of subjects were collected drugs by them self, Majority 60% of subjects were collect medication once in week, Majority 55% of subjects were not on medication other than DOTS.

**Table 7:** Relationship between drug noncompliance score and its contributory factors. N=20

S. No	Sample characteristics	r	p value
1	Drug non-compliance with client related factors	0.11	0.62
2	Drug non-compliance with health system related factors	0.13	0.57
3	Drug noncompliance with socio-cultural factors	0.04	0.85
4	Drug non-compliance with disease and medicine related factors	0.10	0.65

The data presented in table: 7 showed that there was no significant correlation between drug noncompliance with its contributory factors.

### Discussion

Majority 95% of the Subjects were known the side effects of the medications, Majority 55 % of the subjects were known the TB diagnostic method, Majority 60% of the subjects were not known TB can cured if TB treatment taken daily, Majority 60.5% of the subjects were not maintain record of medication, Majority 65% of the subjects were not maintain confidentiality, Majority 65% of the subjects were known the TB symptoms like Coughing with bleeding, Majority 45% of subjects were Known it will be re infect if not completed the TB Treatment, Majority 90% of subjects were known the benefit by DOTS, it prevent cough and chest pain, Majority 50% of the subjects were known the best method to prevent transmission of TB, like Cover the mouth and nose when sneezing.

There was no significant correlation between drug noncompliance with its contributory factors.

### Conclusion

The result of the study reveals that the patients are noncompliance to treatment due to the side effects of the drugs, symptomatic relief during treatment and not getting health education about the completion of the treatment. Informational booklet may help the patient compliance the treatment later in life.

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