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Research Article

**EVALUATION OF TREATMENT COMPLIANCE AMONG  
PATIENTS ON DOTS UNDER REVISED NATIONAL  
TUBERCULOSIS CONTROL PROGRAMME**Dr Tashfeen Farooq<sup>1</sup>, Dr Izhar Rashid<sup>2</sup>, Dr Muhammad Omer<sup>3</sup><sup>1</sup> Foundation University Medical College<sup>2</sup> Rehman Medical College, Peshawar<sup>3</sup> Sheikh Zayed Medical College, Rahim Yar Khan**Article Received:** February 2020**Accepted:** March 2020**Published:** April 2020**Abstract:****Aim:** The aim of the study was to find the DOTS compliance indicator and factors responsible for non-compliance.**Methods:** The present observational study was conducted between January 2019 to January 2020 at the Pulmonology and Community medicine department of Holy Family Hospital, Rawalpindi.**Results:** Of the 337 patients interviewed, majority of patients 270 (80.11%) complied and 67 (19.88%) did not comply with treatment. The main reasons for non-compliance are the perception of false treatment of their disease 26 (38.81%), 23 side effects of drugs (34.33%), fear of losing salary 9 (13.43%) and migration of patients 7 (10.44%).**Conclusions:** Repeated counseling and motivating non-compliant patients will help reduce non-compliance with treatment recommendations.**Key words:** tuberculosis, DOTS, compliance, non-compliance, NTCP**Corresponding author:****Dr. Tashfeen Farooq,**

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**INTRODUCTION:**

Tuberculosis (TB) is a major cause of disease and death worldwide, especially in Asia and Africa. Worldwide, in 2006, there were 9.2 million new cases and 1.7 million deaths from tuberculosis, of which 0.7 million cases and 0.2 million deaths among people infected with HIV.

In Pakistan, 1.8 million cases of tuberculosis occur every year, which is one-fifth of new cases of tuberculosis in the world and two-thirds of cases in the region of Southeast Asia.

This makes the highest TB load in the world. In the year 2016, annual performance of revised national tuberculosis control programmed (NTCP) in Pakistan, in terms of cure rate of new smear positive patients was 84%, default rate was 6.4%. Given the above facts, this study was a small attempt to find DOTS compliance and related causes for non-compliance in Lahore.

**METHODS:**

This observational study was conducted between January 2019 to January 2020 at the Pulmonology and Community medicine department of Holy Family Hospital, Rawalpindi. The sample size was not specified and was regardless of age and gender, were included in this study. Patients who were treated from other health centers (primary care centers, secondary health centers) in which the sputum microscopy center was not available were excluded from the study. Two visits were also excluded, TB MDR cases, hospitalized patients and patients who did not agree to participate in the study,

patients who could not be contacted at the address of residence.

**Definition of default study**

The missing DOTS component has been found to be non-compliant for more than 2 weeks.

A list of 381 patients registered from tuberculosis registers was prepared. The first study was then carried out. Prior informed consent was obtained for patients. It's best to interview patients at DOTS centers, and people lost at DOTS centers were questioned at home.

The follow-up questionnaire was conducted after the end of treatment. Collected data was analyzed using Graph Pad InStat3 software. The Chi-Square test was used for statistical analysis.

**RESULTS:**

Of the 381 registered patients, only 337 patients were interviewed despite two visits to their homes. Of the 337 interviewed patients, 270 (80.1%) were mostly deaths and 67 (19.9%) not. It was found that 51 of 67 nonadjacent patients were not compatible during the first study, 37 patients were referred to DOTS and treatment was terminated, and 5 patients were treated from private clinics (3 from a registered specialist, 2 in advance). 4 patients migrated and 5 patients discontinued treatment, mainly due to adverse drug reactions. A recent survey found 16 patients did not comply with treatment, these 4 patients recovered from associated STS treatment, but 12 patients discontinued treatment altogether.

**Table 1: Distribution of patients according to their compliance to treatment.**

No.	Status	No.	%
1.	Compliance	270	80.1
2.	Non-compliance	67	19.9
Total		337	100

The study showed that compliance in the 21-30 age group (88.3%) was maximum and 41-50 years (65.9%) minimal. The relationship with age is statistically significant ( $p = 0.0241$ ). Compliance with treatment was higher in women (83.5%) than in men (78.1%). However, gender compliance was not statistically significant ( $p = 0.231$ ).

**Table 2: Association of compliance with age of patients.**

No.	Age (Year)	Compliance		Non-Compliance		Total	
		No.	%	No.	%	No.	%
1	<10	04	80.0	01	20.0	05	1.5
2	11-20	28	77.7	08	22.3	36	10.7
3	21-30	113	88.3	15	11.7	128	37.2
4	31-40	66	75.9	21	24.1	87	25.8
5	41-50	27	65.9	15	34.1	42	12.2
6	>50	31	79.5	08	20.5	39	11.6
Total		270	80.1	67	19.9	337	100

$\chi^2=12.924$ ;  $P=0.0241$ , Significant

In educated patients, compliance was higher than for illiterate people. The highest mismatch was observed among illiterates (40.3%) and the lowest among patients (8.3%) trained to graduate. The relationship was statistically significant ( $p = 0.0004$ ).

**Table 3: Association of compliance with sex of patients.**

No.	Sex	Compliance		Non-Compliance		Total	
		No.	%	No.	%	No.	%
1	Male	164	78.1	46	21.9	210	62.3
2	Female	106	83.5	21	16.5	127	37.7
Total		270	80.1	67	19.9	337	100

$\chi^2=1.432$ ;  $P=0.231$ , Significant

DOTS compliance was higher among housewives (89.8%) than unemployed (89.1%) and government service patients (88.9%). The lowest compliance was observed in the employee / daily wager (68.6%). The relationship between occupation and compliance was statistically significant ( $p = 0.003$ ). However, there was no significant relationship between the socioeconomic class and compliance with treatment principles. Compatibility in family history of tuberculosis (86.9%) was higher than in family history of tuberculosis (37%). The relationship was statistically significant ( $p < 0.0001$ ).

**Table 4: Association of compliance with education.**

No.	Education Status	Compliance		Non-compliance		Total	
		No.	%	No.	%	No.	%
1	Illiterate	37	59.7	25	40.3	62	18.4
2	Primary School	62	81.6	14	18.4	76	22.6
3	Middle School	49	89.1	6	10.9	55	16.3
4	High School	49	80.3	12	19.7	61	18.1
5	Higher Secondary	51	86.4	8	13.6	59	17.5
6	Graduate & above	22	91.7	2	8.3	24	7.1
Total		270	80.1	67	19.9	337	100

$\chi^2=22.63$ ;  $P=0.0004$ , Significant

Compliance was significantly higher between non-smokers (86.6%) and non-alcoholic (86.2%). Patients who did not have the habit of chewing tobacco and did not become addicted to others follow the treatment (82.3%) and (81%) respectively. The relationship was also statistically significant ( $p < 0.05$ ). The most common cause of incompatibility is the false perception of healing of the disease because they felt good with the first treatment 26 (38.8%), followed by 23 (34.3%) side effects of the drugs.

No.	Occupation	Compliance		Non-compliance		Total	
		No.	%	No.	%	No.	%
1.	Unemployed	41	89.1	05	10.9	46	13.6
2.	Laborer / Daily wager	94	68.6	43	31.4	137	40.7
3.	Skilled Laborer	05	71.4	02	28.6	07	2.1
4.	Housewife	88	89.8	10	10.2	98	29.1
6.	Govt. Service	08	88.9	01	11.1	09	2.7
7.	Businessman	14	82.4	03	17.6	17	5.0
8.	Farmer	18	85.7	03	14.3	21	6.2
9.	Other*	02	100	00	00	02	0.6
Total		270	80.1	67	19.9	337	100

## DISCUSSION:

In 337 studies, the majority of patients were ineligible for treatment 270 (80.1%) and 67 (19.9%) were ineligible. Jaggarajamma *et al.* A similar 20% mismatch rate was observed in Tamil Nadu studies. Ali *et al.* They reported a compliance rate of 89.4% in 2012, and Usman and others in 2016. They observed a compliance rate of 93% and a default rate of 7%. This may be due to the difference in the definition of non-compliance testing. Patients aged 21–30 were mostly compatible with treatment

(88.3%), and middle-aged patients (41–50 years) were less compatible with DOTS. The relationship with age is statistically significant ( $p = 0.0241$ ). A similar observation that the mismatch was highest in the middle-aged group was reported by Sophia *et al.* 65.2%. However, Menzis *et al.* Older people were found to be less compatible. In this study, compliance was 83.5% for women and over 78.1% for men. In other words, mismatch was more common in men (21.9%). The gender correction relationship was not statistically significant. Mahesh

Kumar et al. Also reported greater disagreement among women. The study clearly shows that the compliance rate among well-educated patients is much higher than among illiterate people. The highest incompatibility was observed among illiterate persons (40.3%). Illiterate patients probably did not know the consequences of irregular treatment. Therefore, to improve DOTS compliance, patients should be trained in various aspects of the disease, the importance of completing DOTS, and treatment. Gopi et al. In a study in South India, they found that illiterates (39%) were not associated with DOTS compared to literacy. The compliance rate was also significantly higher among housewives (89.8%), followed by the unemployed (89.1%) and public officials (88.9%).

In our study, we found no significant relationship between the socioeconomic class of patients and compliance with treatment principles. However, patients with low socioeconomic class V (22.4%) showed greater incompatibility. Probably the majority of patients from the lower socioeconomic class were everyday players and illiterates. Ashry Gad et al. He also revealed the fact that socioeconomic status has no significant relationship to the compatibility of treatment in studies in Alexandria. The results are consistent with this study. However, Chatterjee et al. Earnings have been reported to be inversely related to drug incompatibility. Johansson et al. In their study in Vietnam, they observed that the patient's financial condition was an important indicator of compliance and non-compliance. DOTS incompatibility was much higher among alcoholics and smokers. Similar observations were Burman et al. In 1997, Jakubowiak et al. In 2007. The study revealed a significant relationship between DOTS incompatibility and a positive family history of tuberculosis. O'Boyle et al reported that patients with familial tuberculosis had a higher incompatibility. Incompatibility with treatment was maximal in category II (33.3%), followed by minimal in category I (18.3%) and category III (13.9%). The reason for this is that 23 (33.3%) category II patients have a habit of incompatibility. The relationship between appropriateness and treatment category was statistically significant ( $p = 0.004$ ). In his research in the Tiruvallur region, Jaggarajamma et al. 19%, 38% and 11% of mismatch rates were observed among patients in categories I, II and III, respectively. Sophia et al. In Bangalore, a mismatch rate of 45.2% was found among retreatments significantly higher than in new category I patients (25.4%). The main reasons for non-compliance are the perception of improper treatment of their disease 26 (38.8%), side effects of drugs 23 (34.3%), fear of loss of earnings 9 (13.4%), migration 7 (10.4%), because they feel good the first time. The migration took place mainly in

professional areas. In addition to these 7 patients (10.4%), incompatibility was demonstrated due to home problems, and 5 (7.5%) patients had difficulty taking a large number of tablets as a reason to stop treatment. However, 5 (7.5%) patients discontinued treatment because of another disease. DOT dissatisfaction with the DOT provider explains the incompatibility in 4 patients (6%). Very few 3 patients (4.5%) discontinued treatment on the recommendation of private doctors and started treatment in private clinics. Similarly, Juvekar et al. They reported that they believed 27% have the reasons for non-compliance, 17% of health service problems and 10% of drug side effects.

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