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**Manoj Kumar Yadav**  
Department of Community  
Medicine, S N Medical College  
Agra, Uttar Pradesh, India

**Dr. Mohit Raghav**  
Department of Community  
Medicine, G S Medical &  
Hospital Pilkhuwa Hapur,  
Uttar Pradesh, India

**SS Chaudhary**  
Department of Community  
Medicine, S N Medical College  
Agra, Uttar Pradesh, India

**Manisha**  
Department of Community  
Medicine, S N Medical College  
Agra, Uttar Pradesh, India

**Corresponding Author:**  
**Dr. Mohit Raghav**  
Department of Community  
Medicine, G S Medical &  
Hospital Pilkhuwa Hapur,  
Uttar Pradesh, India

## Study of defaulters amongst pulmonary tuberculosis patients attending DOTS centre in urban area of Ghaziabad district

**Manoj Kumar Yadav, Dr. Mohit Raghav, SS Chaudhary and Manisha**

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### Abstract

**Background:** the main problem of chemotherapy today is not the need to introduce new regimens or more potent drugs, but to apply the existing ones successfully and patient compliance was critically important throughout the prescribed period of treatment.

**Objectives:** to determine the default rate among above Tuberculosis patients under DOTS and to elicit reasons of treatment default in the above tuberculosis patients.

**Study design:** Observational Cross-Sectional Study.

**Setting:** The study was carried out in selected DOTS centers of district Ghaziabad.

**Participants:** 850 study subjects age group more than 15 years.

**Sampling:** Multistage sampling.

**Statistical Analysis:** SPSS version 13.

**Study period:** May 2014 to April 2015.

**Results:** Defaulters amongst pulmonary tuberculosis patients attending DOTS centre in urban area of Ghaziabad district from two selected T.U. the defaulter rate in urban Ghaziabad was 6.5%. Majority (36.36%) of the defaulters belong to 15-25 years age group. Among defaulters 63.6% were males as compared to 36.4% were females. Defaulter rate was high among those who were illiterate (36.36%). Defaulter were higher in upper lower class (72.72%). Important reasons as stated by the defaulters for interrupting treatment was fear of side effects of drugs (81.81%), quick relief from symptoms of disease (72.72%), clash with working time (45.45%), left the locality 36.36%.

**Conclusion:** It was concluded that the defaulter rate in urban Ghaziabad was 6.5%. Majority (36.36%) of the defaulters belong to 15-25 years age group. Important reasons by the defaulters for interrupting treatment was fear of side effects of drugs.

**Keywords:** Default rate, Tuberculosis patients, DOTS, DOTS centre, Side effect

### Introduction

The most important component of DOTS is to ensure patient's adherence to treatment by giving every dose under direct observation. Treatment compliance may be a problem due to poor awareness of TB including treatment. Non-adherence to treatment has been recognized as a major problem for cure of TB. The therapeutic regimens as recommended by WHO has been shown to be highly effective for both preventing and treating tuberculosis but poor adherence to medication was a major barrier to its global control<sup>[1]</sup>. Non-compliance to self administered multi-drug tuberculosis treatment regimens is common and most important cause of failure of initial therapy and relapse<sup>[2]</sup>.

### TB-related Millennium Development Goal

Target 8-To halt by 2015 and begin to reverse the incidence of malaria and other major diseases, including tuberculosis. Indicators for Target 8 to be used to evaluate the implementation and impact of TB control.

Indicator 23: Between 1990 and 2015, to halve the prevalence and death rates associated with tuberculosis.

Indicator 24: By 2005, to detect 70% of new smear positive TB cases arising annually, and to successfully treat 85% of these cases.

The indicator 23 of the MDGs mentions that between 1990 and 2015 prevalence of TB disease and deaths due to TB should be halved. With respect to the progress towards

indicator 23, as per the recent WHO estimates, in the year 1990, the prevalence rate of TB in India was 338 per 100,000 populations and the mortality due to TB was 42 per 100,000 populations [3].

Defaulting from treatment continues to be one of the major obstacles in the control of TB. Since there was an ongoing transmission of infection from defaulter, preventing persons from defaulting was essential for successful TB control activities. Therefore, it was necessary to understand the reasons for default after initiation of the treatment and plan strategies to reduce default and thereby increase the success of treatment outcome [4]. Among new sputum positive cases, in India, the default rates had decreased from 9% for the cohort of TB patients registered in 1999 to 5% for the cohort of patients registered in 2011 [5].

According to RNTCP 2015 report the default rate in India for new sputum smear positive is 6% whereas in Uttar Pradesh default rate in new sputum smear positive patient is 6% in 2013 [1]. (18). This study was conducted to determine the default rate among above Tuberculosis patients under DOTS and to elicit reasons of treatment default in the above tuberculosis patients

### Materials & Methods

The present observational cross-sectional study entitled "Study of Defaulters amongst Pulmonary Tuberculosis patients attending DOTS centre in of District Ghaziabad" was carried out in selected DOTS centers of district Ghaziabad Department of Community Medicine, Santosh Medical College, Ghaziabad. All new sputum smear positive pulmonary tuberculosis patients were taking treatment from sampled DOTS Centers. The study was carried out in one year from May 2014 to April 2015. Ethical clearance was obtained from IEC prior to the commencement of the study.

**Sample Size:** According to Government of India (2007) by using overall prevalence of defaulter 10.2% among patients put on DOTS (82).

The sample size was calculated by the formula ( $n = Z \cdot Z \cdot P \cdot Q / L \cdot L$ )

Sample Size ( $n$ ) =  $1.96 \times 1.96 \times 10.2 \times 89.8 / 2.04 \times 2.04 = 845.52 = 846$

$n$  is the desired sample size

$P$  is prevalence of Defaulters among DOTS patient = 10.2%

$Q = (100 - p)$

$L = 20\%$

Substituting all the values we get sample size ( $n$ ) = 846

Round figure is 850.

**Inclusion Criteria:** All new sputum smear positive pulmonary tuberculosis patient attended treatment in sampled dots centers whose age was >15 years from October 2014 till my desired sample size 850 patient were seen on working days.

**Exclusion Criteria:** 1. Patient, whose contact information was incomplete 2, Patient, who died or transferred to other DOTS centre

**Sampling Technique:** Multistage sampling was used to cover the sample size for present study.

### Stage-1 Selection of tuberculosis unit (TU)

The list of tuberculosis unit along with their designated microscopic centers and DOTS centers was obtained from district tuberculosis center. There were two TU in Ghaziabad city named as 1. District tuberculosis clinic Ghaziabad 2. ESI hospital Sahibabad selected for study.

### Stage-II Selection of designated microscopic centers (DMCs)

In second stage three designated microscopic centers (DMCs) from each TU were selected randomly. District tuberculosis clinic Ghaziabad (TU) had five DMCs out of these three DMCs 2,3 and 5 were selected randomly, ESI Hospital Sahibabad had five DMCs named as out of five DMCs 1, 4 and 5 were selected randomly.

### Stage III Selection of DOTs centers

All the DOTS centers under these selected DMCs were taken for study. All the new sputum smear positive (NSP) patients put on treatment on selected DOTS centers during the study period were taken for study till the desired sample size was achieved. The selected DOTS were visited and the TB patients were carefully briefed about the purpose of the study with a written consent so as to get full co-operation in conducting the study. These were 850 TB patients from all selected DOTS questioned with self-administered well-designed pre-tested and close-ended questionnaire with prior permission from the patients.

**Data Processing and Analysis:** Data was coded and transferred to a master chart and simple and correlated tables were prepared and analyzed using SPSS.

### Results

41.17% of TB patients were from 15-25 yrs age group, 30.58% from 26-35 yrs, 23.52% from 36-45 yrs and 4.70% from >45 yrs age group. Table 1 Majority 54.1% of Tb patients were females and 45.9% males. 75.29% TB patients were Hindus, 22.35% Muslims and 2.35% Sikh/Christian.

Almost half (49.41%) of TB Patients were from other backward category (OBC), 35.29% from scheduled caste (SC), and 15.29 % from general category. 44.71% were from nuclear family, 31.76% from joint family and 23.53% from three generation family.

In this study of defaulters amongst pulmonary tuberculosis patients attending DOTS centre in urban area of Ghaziabad district from two selected T.U. the defaulter rate in urban Ghaziabad was 6.5%.

**Table 1:** Age wise distribution of defaulters

Age group (in years)	Number	Percentage (%)
15-25	20	36.36
26-35	15	27.27
36-45	15	27.27
>45	5	9.09
Total	55	100

36.36% defaulter's were from 15-25 years 27.27% from 26-35 and 36-45 year each, and 1 9.09% in >45 age group. 63.6% defaulters were males and 36.4% females.

**Table 2:** Occupation Wise Distribution of Defaulters

Occupation	Number	Percentage (%)
Un employed	25	45.45
Un skilled worker	15	27.27
Semiskilled worker	5	9.09
Skilled worker	5	9.09
Semi professional worker	5	9.09
Total	55	100

45.45% defaulters were unemployed, 27.27% unskilled worker, followed by 9.09% semiskilled, semi professional and skilled worker in each occupation. Table 2

**Table 3:** Education Wise Distribution of Defaulters

Education	Number	Percentage (%)
Illiterate	20	36.36
Up to primary	15	27.27
Up to middle	5	9.09
Up to 10 <sup>th</sup>	5	9.09
Up to 12 <sup>th</sup>	5	9.09
Up to graduate and above	5	9.09
Total	55	100

Defaulter rate was high among illiterate 36.36%, 27.27% from primary and 9.09% in middle, high school and graduate each. Table 3

**Table 4:** Socio-economic status of Defaulters as per Kuppuswamy's scale

Socio-economic status	Number	Percentage (%)
Lower class	10	18.18
Upper Lower class	40	72.72
Lower middle class	5	9.09
Total	55	100

Defaulter were higher in upper lower class 72.72 %, 18.18% from lower class and 9.09% lower middle class. Table 4

**Table 5:** Reason of Default (Multiple Responses) as Stated by Defaulters

Causes of default	No. of defaulters	Percentage (%)
Left the locality	20	36.36
Taking treatment from other source	15	27.27
Relief from symptoms	40	72.72
No Relief from symptoms	15	27.27
Side effect	45	81.81
Loss of work due to the higher frequency of visits to DOTS centre	25	45.45
Financial problem	15	27.27
Others (social stigma, Took alternative treatment)	10	18.18

Important reasons as stated by the defaulters for interrupting treatment was fear of side effects of drugs (81.81%), quick relief from symptoms of disease (72.72%), clash with working time (45.45%), left the locality (36.36%) followed by financial problem, taking t/t from other source, no relief from symptoms (27.27%) in each reason of default while a few 18.18% were default their treatment due to others cause like (social stigma, took alternative treatment). Table 5

## Discussion

In the selected T.U. defaulter rate was 6.5%. In a similar study done by Kumar M *et al.* 2002 <sup>[6]</sup> in Lucknow showed that 10.6% patient didn't complete the treatment. Sophia *et al.* 2003 <sup>[7]</sup> conducted her study in Bangalore city showed that defaulters rate was 25% among tuberculosis patients treated under DOTS. Jaiswal *et al.* 2003 <sup>[8]</sup> conducted a study in Moti nagar and Nehru nagar, New Delhi, showed that 117 of 1786(6.5%) patients and 195 of 1890 (10%) patients left care before their treatment.

K. jaggaraamma *et al.* 2007 <sup>[9]</sup> in their study showed that the default rate was 20%. According to Geeta S Pardesh 2010 <sup>[10]</sup> the default rate amongst the 716 patients registered at the Tuberculosis Unit was 10.33%. B Castelnuovo *et al.* 2010 <sup>[11]</sup> in their study showed that the proportion of patients defaulting varied from 11.3% to 29.6%. Mittal and Gupta 2011 <sup>[12]</sup> conducted study in Agra showed that 15.1% defaulted.

36.36% of the defaulters were belong to 15-25 year, 27.27% from 26-35 and 36-45 years age group each, and least 9.09% in >45 years of age group. In a similar study done by Kumar M *et al.* 2002 <sup>[6]</sup> in Lucknow showed that maximum default in the 35-44-year age group (25.4%), followed by the patients aged above 45 years(18.1%). Mittal and Gupta 2011 <sup>[12]</sup> conducted a study in Agra which showed that almost one-fourth (22.8%) patients were >45-year age group defaulted.

Among defaulters 63.6% were males and 36.4% females. In a similar study done by Kumar M *et al.* <sup>[6]</sup> 2002 in Lucknow showed that non compliance was a little higher in female (11%) as compared to male that is (10.4%). Sophia *et al.* 2003 <sup>[7]</sup> conducted study in Bangalore city showed that treatment defaults were significantly higher in males as compared to females.

That 45.45% defaulters were unemployed, 27.27% unskilled worker, followed by 9.09% semiskilled, semi professional and skilled worker each occupation. In a similar study done by Bernard N Muture *et al.* 2011 <sup>[13]</sup> in their study in Kenya showed that (66.1%) patients were unemployed.

Defaulter rate was high among those who were illiterate (36.36%) followed by studied primary (27.27%) and much less in middle, high school and graduate (9.09%) in each. In a similar study done by Kumar M *et al.* <sup>[6]</sup> 2002 in Lucknow showed that it was more prevalent in illiterate (13.9%). P.G. Gopi *et al.* 2007 <sup>[14]</sup> in their study showed that the non-adherence rate was higher among illiterates 39% than literates who was 30%.

Important reasons as stated by the defaulters for interrupting treatment was fear of side effects of drugs (81.81%), quick relief from symptoms of disease (72.72%), clash with working time (45.45%), left the locality (36.36%) followed by financial problem, taking t/t from other source, no relief from symptoms (27.27%) in each reason of default while a few (18.18%) were default their treatment due to others cause like (social stigma, took alternative treatment). In a similar study done by Sophia *et al.* (2003) <sup>[7]</sup> in Bangalore city showed that among the treatment related reasons, 'side effects to anti-TB drugs' (37.3%) were most frequent. K. jaggaraamma *et al.* 2007 <sup>[9]</sup> in their study showed that the Reasons for default given by the patients were: drug related problems like nausea, vomiting, giddiness (42%), migration (29%), relief from symptoms (20%), work related problems (15%), consumption of alcohol (15%), treatment from other private or public health facility (13%), domestic problems

(8%), stigma (2%), other reasons given by (16%) patients. Majority of patients gave multiple reasons for default. Next important reasons were improvement in symptoms and lack of time (14.4% and 13.5%, respectively). Sweta Gupta *et al.* 2011<sup>[15]</sup> in their study showed that when trying to assess the reasons for treatment interruption, the most common reason was a feeling of early improvement as stated by (30.05%) patients. Bernard N Muture *et al.* 2011<sup>[13]</sup> in their study in Kenya showed that (12.5%) attributed their default to traveling away from treatment localities among defaulters (6.6%) cited inadequate food as reason for their default. Ignorance on need for treatment compliance by 16.7% and was the most frequent reason attributed to default; Anti-tuberculosis drug side-effects were attributed by (10.8%), 11.7% were Feeling better after medication so they discontinue the treatment. Nabil Tachfouti *et al.* 2012<sup>[16]</sup> in their study showed that 73.9% of defaulters evoked that feeling better or cured is the main reason to interrupt their treatment. Ukwaja KN *et al.*<sup>[17]</sup> 2014 in their study in Nigeria showed that the reasons for defaulting were feeling of getting better (35.4%), long distance to health facility (25.3%), lack of money (10.1%), medication side effects (5.1%), condition worsened *i.e.* did not improve with the use of TB drugs (4%). Nirmalya Roy *et al.* 2015<sup>[18]</sup> conducted her study in West Bengal showed that most commonly cited reasons for default were alcohol consumption, adverse effects of anti-TB drugs, long distance of DOT center from residence, temporary vocational migration, poor patient provider interaction, and social stigma.

### Conclusion

In this study of defaulters amongst pulmonary tuberculosis patients attending DOTS centre in urban area of Ghaziabad district from two selected T.U. the defaulter rate in urban Ghaziabad was 6.5%. Majority (36.36%) of the defaulters belong to 15-25 years age group. Among defaulters 63.6% were males as compared to 36.4% were females. Defaulter rate was high among those who were illiterate (36.36%). Defaulter were higher in upper lower class (72.72%). Important reasons as stated by the defaulters for interrupting treatment was fear of side effects of drugs (81.81%), quick relief from symptoms of disease (72.72%), clash with working time (45.45%), left the locality 36.36%.

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