

# Study of Depression among MDR TB Patients - A Cross-sectional Observational Study

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## ABSTRACT

**Introduction:** Anti tuberculosis drug resistance is a major public health problem that threatens progress made in TB care and control. Globally prevalence of MDR TB (Multidrug resistance tuberculosis i.e. resistance to Isoniazid and Rifampicin) is estimated around 4.1% in new cases and 19% in previously treated cases according to WHO report. Clinical depression is common but often neglected problem among TB patients. This study was conducted to know problem of depression among MDR TB patients. Aims and objectives of this study were to determine the prevalence of depression in people with TB at the time of anti-TB treatment initiation and to assess factors associated with baseline depression.

**Material and methods:** It is an observational study conducted in tertiary care centre. After obtaining proper consent and ethical consent data was collected using PHQ 9 score. Data was analysed using appropriate statistical methods.

**Results:** Out of total 100 patients 80% were Pulmonary Tuberculosis (PTB) while 20% were Extrapulmonary Tuberculosis (EPTB). Around 56% patients were male while 44% were female. Prevalence of depression was 51%.

**Conclusion:** Depression is common problem among MDR TB which is preventable and can be managed if identified at early stage.

**Keywords:** MDR TB, Depression, PHQ9 Score

## INTRODUCTION

Tuberculosis is an endemic disease worldwide, specially prevalent in developing countries which mainly affects lung but can also present as a multisystem disorder.<sup>1</sup> Several comorbidities are associated with tuberculosis<sup>2</sup> like cardio-metabolic disorders; respiratory disorders, arthritis and cancer; and substance-use disorders. Clinical depression is a common, under-recognized but a treatable condition that, if occurs with TB, is associated with increased morbidity, mortality.

A syndemic is defined as the convergence of two or more conditions that act synergistically to magnify the burden of disease.<sup>3</sup> TB patients comorbid with depressed are more likely to substance abuse such as alcohol or drugs<sup>4</sup> and their chances of adherence and compliance to the ATT (anti tubercular treatment) are less.<sup>5</sup> therefore These individuals not only carry a larger risk for negative TB outcomes, such as lost to follow up, post TB squalor, drug resistance and death they may also spread infection for longer periods of time in the community. HIV is also a major important comorbid condition that influence outcome in TB, depression with TB-HIV patient may impact the outcome of both the diseases.

To achieve the targets set by The end TB strategy by WHO, multidisciplinary approaches will require to treat syndemics such as TB and depression together, rather than as separate problems and diseases.

Our aim was to carry out a study of depression in the context of TB. It was done with objectives to determine the prevalence of depression in people with TB at the time of anti-TB treatment initiation, and to assess factors associated with baseline depression.

## MATERIAL AND METHODS

It was a cross sectional observational study conducted at Department of Respiratory Medicine, GMC Bhopal at TB hospital Idgah hills which is largest TB hospital of central India and Designated Drug resistance TB nodal centre. Patients with drug sensitive and drug resistance Pulmonary and extrapulmonary Tuberculosis attending OPD and IPD at TB hospital who were fulfilling inclusion criteria were included in the study. Study was conducted in 100 patients between time period May 2019 to October 2019.

**Inclusion criteria:** 1) Patients who were diagnosed as MDR TB (CBNAAT {Catridge based nucleic acid amplification test} –Rifampicin Resistance) both pulmonary and extrapulmonary. 2) Patients who are >15-60 years of age.

**Exclusion criteria:** 1) Patients who are not MDR TB i.e. Rifampicin sensitive TB are not included. 2) Patients of age <15 and >60 years. 3) Patients with previous history of any psychiatric illness are excluded. 4) Patients with history of any substance abuse. 5) Patients having history of acute stress reaction in last 6 months (to rule out Post Traumatic Stress Disorder). 6) Patient whose general condition is poor to interview. 7) Non cooperative patient.

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**Methodology**

After obtaining all necessary ethical clearance, patients who were fulfilling the inclusion criteria were selected. The purpose of study was explained to patients. Written and informed consent were obtained from patients. Data was collected using pretested proforma meeting the objectives of the study. Patient Health questionnaire 9 (PHQ9) was used to assess the status of depression in the patients. patients

socioeconomic status are evaluated by modified Kuppaswami scale<sup>6</sup> for urban population and modified Prasad scale<sup>7</sup> for rural population. Co morbidity status of patients are also evaluated. Data was analyzed using appropriate statistical methods.

**STATISTICAL ANALYSIS**

Statistical analysis of data is done by help of SPSS 20.0 Software (trial Version).Statistical analysis was done for mean and frequency. Chi square test had been applied to find the relationship between the factors.

**RESULTS**

In our study out of total 100 patients 80% were Pulmonary Tuberculosis (PTB) while 20% were Extrapulmonary Tuberculosis (EPTB). 56% patients were male while 44% were female.62% patients had previous history of Tuberculosis while 38% cases were new cases.75% patients had no comorbidities, 11% had Diabetes Mellitus, 6% are People Living with HIV-AIDS and 8% had hypertension. Table-1 shows that most of the patient in this study belong to young age group while old age patients are lesser in number. Table-2 shows that out of 100 patients 49% had minimal depression, 32% had mild depression, 10% had moderate depression, 6% had moderately severe depression and only 3% had severe depression.PHQ9 score was used to calculate

Age group	Ffrequency	Percent
15-30	41	41.0
31-40	34	34.0
41-50	13	13.0
51-60	12	12.0
Total	100	100.0

**Table-1:** Age group distribution

Depression	Frequency	Percent
Minimal	49	49.0
Mild	32	32.0
Moderate	10	10.0
Moderate severe	6	6.0
Severe	3	3.0
Total	100	100.0

**Table-2:** Distribution of patients according to PHQ9 score

Age Group	PHQ9 score					CHI square	P value
	Minimal	Mild	Moderate	Moderately severe	Severe		
15-30	35	4	1	1	0	62.57	<.005
31-40	10	20	2	1	1		
41-50	3	6	2	1	1		
51-60	1	2	5	3	1		
Total	49	32	10	6	3		

**Table-3:** Association of age with depression-

Socioeconomic status	Depression					Total	Chi square	P value
	Minimal	Mild	Moderate	Moderately severe	Severe			
1) Upper	4	3	0	0	0	7	24.942	0.071
2) Upper middle	14	7	0	0	0			
3) Lower middle	20	15	4	1	1			
4) Upper lower	9	5	3	3	2			
5) Lower	2	2	3	2	0			
Total	49	32	10	6	3	100		

**Table-4:** Association of socioeconomic status with depression among TB patients

Socioeconomic status	Depression					Total	Chi square	P value
	Minimal	Mild	Moderate	Moderately severe	Severe			
1) Upper	4	3	0	0	0	7	24.942	0.071
2) Upper middle	14	7	0	0	0			
3) Lower middle	20	15	4	1	1			
4) Upper lower	9	5	3	3	2			
5) Lower	2	2	3	2	0			
Total	49	32	10	6	3	100		

**Table-5:** Association of depression with sex

		Depression					Total	Chi square	P value
		Minimal	Mild	Moderate	Moderately severe	Severe			
Sex	Female	16	13	8	5	2	44	12.361	0.015
	Male	33	19	2	1	1			
Total		49	32	10	6	3	100		

**Table-6:** Association of depression with comorbidities

Comorbidity	Depression					Total	Chi square	P value
	Minimal	Mild	Moderate	Moderately severe	Severe			
No	44	24	5	3	2	78	11.676	0.020
Yes	5	8	5	3	1	22		
Total	49	32	10	6	3	100		

**Table-7:**

the severity of depression among patients. Table-3 shows that in younger patients minimal and mild depression is seen while in elderly patients depression is much more severe as compared to younger patients. P value is statistically significant. Table-4 shows that in upper socioeconomic status patients depression is minimal and mild while in lower socioeconomic status patients depression is moderate and severe. Although p value is not statistically significant. Table-5 shows that Severe depression is more in female. Table-6 shows that depression is more seen in patients where co morbidities are present.

## DISCUSSION

There are very few studies globally to assess problem of depression among TB patients. In India there are very sparse data available. Current study was conducted in 100 patients who are diagnosed as MDR TB.

This study revealed that the prevalence of depression was 51%. The finding is in concordance with other studies carried out in Nigeria 41.9%<sup>8</sup>, in Ibadan Nigeria 45.5%<sup>9</sup> and in Pakistan 46.3%<sup>10</sup>. Although our finding was higher than the study done in Nigeria 27%<sup>11</sup> and Greece 9.93%<sup>12</sup> also our finding are lower than the study done in Kenya 61%<sup>13</sup>, in India 62%<sup>14</sup> and 82%<sup>15</sup>. The variation might be due to the difference in inclusion criteria, study design, data collection methods, sample size and difference in study participants.

Occurrence of depression among DR- TB patients is more among female (63.6%) compared to male (41%)(Table no5). The reason behind it might be due to more social stigma and family and social support. These results are consistent with Ambaw F et al<sup>16</sup> They also found that female (58.1%) are more prone to depression compared to male.

Age is another determinant of depression in TB, we found more severe depression in older population compared to younger one. This might be due to younger population is more involve in their job and other household work and have more social support compared to older age group. This is consistent with Dasa et al<sup>17</sup> who found around 61% depression in older age group.

Patients who has any comorbid condition found to have more depression (77.2%)(Table no6) compared to patients

who has no comorbidity (43.5%). This might be due to large number of medication, drug interaction and drug related adverse effects. Finding are consistent with Duko et al<sup>18</sup> who concluded that TB/HIV co-infected patients can be at higher risk of common mental disorders as a result of stigma and discrimination by the society

Patients who belongs to low socioeconomic status has more severe depression compared to middle class and higher class (Table no.4). The results are consistent with Ambaw et al<sup>16</sup>, who found that poor patients has more incidence of depression 135 patient among 214 patients.

We have taken MDR patients into consideration which is more common in previously treated patients, however we found newly treated patients are more prone to develop depression compared to previously treated. This is consistent with Duko et al<sup>18</sup> who found 207 among 341 cases of depression among newly diagnosed cases of TB

## Limitations

Some limitations associated with this study include missing of some important variables not included in PHQ-9 tools such as substance use and smoking which are found to be associated with depression. Sample size was less. It is single centre study so results cannot be generalized.

## CONCLUSION

The burden of depression among tuberculosis patient is high. Financial constraint, older age and new TB patients are risk to develop depression. Depression should be assessed in all TB treatment centres and health professionals should provide appropriate psychological and medical treatment.

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