Depression among Pulmonary Tuberculosis patients: a Case Series Study

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Abstract
Background: Tuberculosis is a transmissible infection which is responsible for foremost cause of illness. Depression is common mental ailment associated by loss of pleasure or interest, sadness and guilty feeling. Co-existence of tuberculosis with anxiety or depression results in non-adherence to treatment which is one of the commonest reasons of acquired drug resistant tuberculosis.
Objectives:To observe the frequency of depression and its intensity among TB patients using a standardized Hamilton Scale.
Study Settings:This descriptive case series study was undertaken in Pakistan Health Research Council TB Research Centre in collaboration with Department of TB and Chest Medicine, King Edward Medical University/Mayo Hospital Lahore during July 2017 to June 2018.
Methods: After taking the informed written consent, patients seeking treatment were interviewed and data was collected using pre-designed questionnaire. Depression and it severity was assessed by using Hamilton depression scale.Total score of each patient was calculated and any accumulative score <10 is considered as normal, 10-13 as mild depression, 14-17 Moderate depression and >17 as severe depressions. Data was entered and analyzed by using SPSS.
Results:A total of 140 pulmonary TB patients were enrolled in present study consisting of 87 (62.15%) males and 37 (37.85%) females with an overall mean age of patients remained 39.34±15.06.Around 62% patients had depression further severe depression was found to be among 14% of patients, while moderate and mild depression was noted to be among 19% and 29% of the patients while 38% patients were found to be normal.
Conclusion: Level of depression among pulmonary TB patients is very high and must be given significant importance at every level. Factors related to depression are age, gender, poverty, social stigma and distance of traveling to reach healthcare facility.
Keywords: Pulmonary Tuberculosis, Depression, Treatment of TB.

I.   Introduction

Tuberculosis (TB) is a transmissible disease and notorious infection which is responsible for foremost cause of illness. It is amongst top ten causes of mortality around the world and lead as a single infectious agent causing death also ranked above human immune-deficient virus infection[1]. Pakistan has been ranked 4[th]in equivalence to Philippine that contained 6% global load of TB cases after India, China and Indonesia and amongst top eight countries bearing 87% global load of TB patients[1]. World health Organization reported that during 2018 Pakistan had 562000 new TB cases while 43000 died of TB solely[1].

Depression is communal mental ailment associated by loss of pleasure or interest, sadness, guilty feeling, selflessness, trouble sleeping, tiredness and deprived concentration. Further disorder is chronic, recurrent and considerably damages one's ability to handle daily matters of life that may lead to suicide[2]. An estimate of 300 million cases has been reported to undergo depression which makes about 4.4% population of whole world[2]. Patients suffering from TB also develop depression by the passage of time[3]. A varied range of 41-61% depression among TB patients has been reported in various studies in different countries[4,5].

Depression and anxiety among TB patients has been a neglected entity. Though,a study has reported that co-existence of TB with anxiety or depression results in non-adherence to treatment which is one of the commonest reasons of acquired drug resistant TB[6]. Normally lifetime risk of depression was calculated among females as 10-25% while 5-12% in males. Further clinical depression adds a value of 5-9% among males and 2-3% among males[7].

Pakistan possesses a high burden of TB and drug resistant TB. National TB Control Program (NTP) Pakistan endorsing the implementation of stop TB strategy effectively as introduced by World Health

Organization (WHO) and showing great success but considerable surge in incidence rate has been notified countrywide and globally[8]. Depression is an important co-morbidity and studies have reported its negative effects on treatment outcomes among TB and other chronic diseases patients[6,9]. Therefore, present study was undertaken to observe the frequency of depression and its intensity among TB patients using a standardized Hamilton Scale.

II. Methodology

This descriptive case series study was undertaken in Pakistan Health Research Council (PHRC) TB Research Centre in collaboration with Department of TB and Chest Medicine, King Edward Medical University/Mayo Hospital Lahore during July 2017 to June 2018. A sample size of 137 patients was calculated by taking a prevalence of depression as 45.5% among TB patients[4], though a total of 140 patients of pulmonary TB were finally included in present study.

Newly diagnosed and unregistered pulmonary TB patients and patients with other comorbidities like viral hepatitis, diabetes, chronic obstructive pulmonary disorder and cardiac patients were not included in this study. Convenient serial sampling technique was used to collect the data.

After taking the informed written consent, patients seeking treatment were interviewed and data was collected using pre-designed questionnaire. Demography, history, socio-economic status and other related information was noted. Depression and it severity was assessed by using Hamilton depression scale[10]. Total score of each patient was calculated and any accumulative score <10 is considered as normal, 10-13 as mild depression, 14-17 Moderate depression and >17 as severe depression. Data was entered and analyzed by using SPSS version 26.0. Qualitative variables like gender, history and severity of depression etc. were presented as frequency and percentage while quantitative variables like age and scoring of Hamilton scale was presented as mean ± standard deviation.

III. Results

A total of 140 pulmonary TB patients were enrolled in present study consisting of 87 (62.15%) males and 37 (37.85%) females with female to male ratio of 1:1.64. Most of the patients registered in present study belong to the Lahore (71.4%) while rests of 28.6% registered patients belong to nearby districts around Lahore. Figure 1 shows the distribution of patients according to their districts of residence. An overall mean age of patients remained 39.34±15.06 while mean age of male patients was found to be 40.65±15.37 higher compared to females as 36.43±13.25.

Sign and symptoms of patients were also noticed and predominantly fever, fatigue, anorexia, weight loss, cough were found to be 96.4%, 99.3%, 98.6%, 97.9% and 95% respectively. History of smoking, other addiction, previous history of treatment, and history of MDR TB contact were also noted and found to be 50 (35.7%), 9 (6.4%),15 (10.7%) and 3 (2.1%) patients respectively. Only 5(3.6%) patients belong to upper middle class on the basis of socioeconomic status scale used in present study while 27 (19.2%) in middle, 60 (42.8%) lower and 48 (34.2%) patients were living below the poverty line.

Figure 1: District Wise proportion of patients

- Lahore
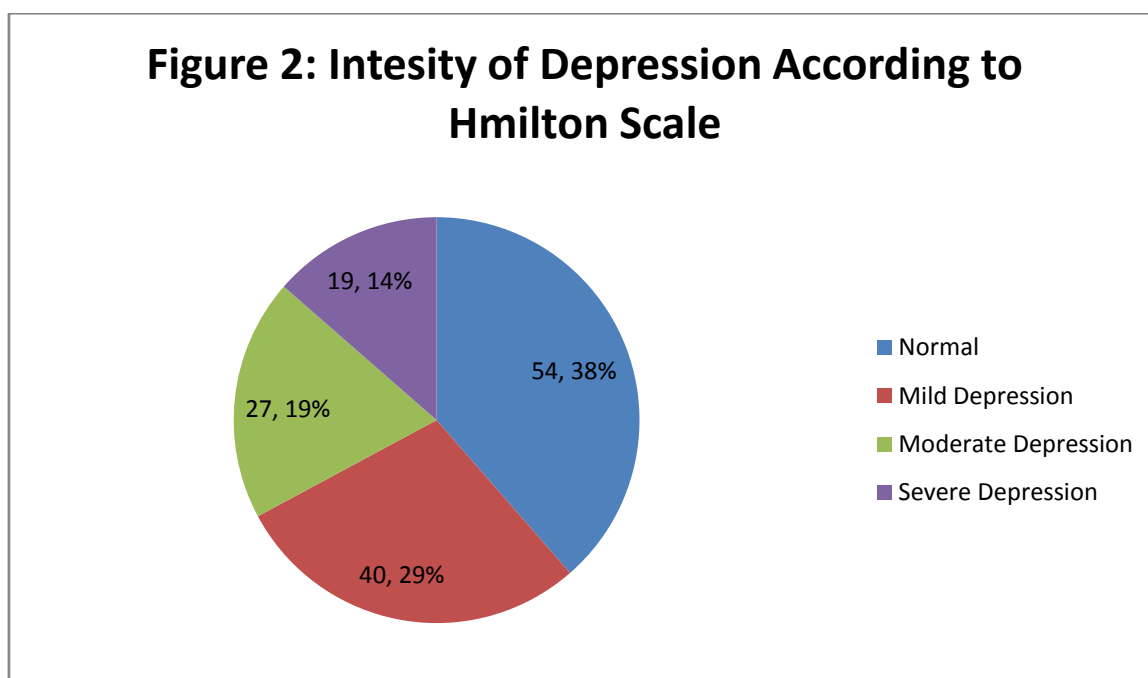- Sheikhupur
- Gujranwala
- Others
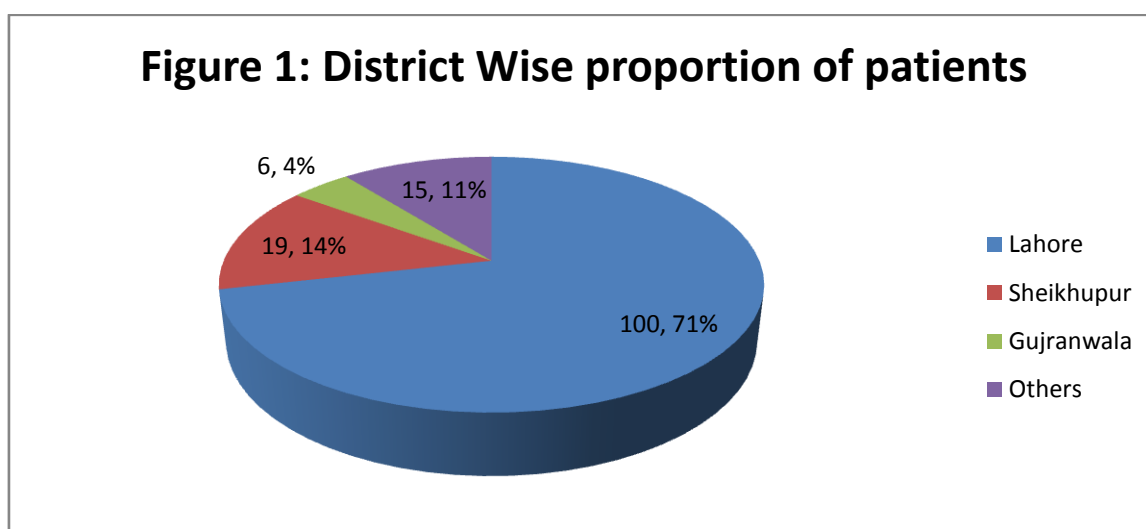
Hamilton rating scale consist of 21 variables and absence each variable has a score equal to zero therefore all variables have been designed to score starting from zero as absent to maximum of 4 at the peak of

variable condition. Mean and standard deviation of each variable is presented in Table I. Total mean score of all variables remained 12.40±5.19 showing considerable depression among pulmonary TB patients.

Table I: Hamilton Scale and Mean Score of Each Variable.

Sr. No.	Variable	Mean	Standard Deviation
1.	**Depressed mood**	0.90	0.44
2.	**Feeling of guilt**	0.80	0.51
3.	**Suicide**	0.20	0.40
4.	**Insomnia Early**	0.50	0.50
5.	**Insomnia middle**	0.45	0.50
6.	**Insomnia late**	0.50	0.74
7.	**Work and activities**	0.95	0.59
8.	**Retardation:Psychomotor**	0.50	0.59
9.	**Agitation**	0.65	0.66
10.	**Anxiety: Psychlogical**	0.85	0.57
11.	**AnxietySomatic**	0.70	0.56
12.	**Somatic Symptoms (GIT)**	0.55	0.59
13.	**Somatic Symptoms General**	0.60	0.59
14.	**Genital Symptoms**	0.65	0.57
15.	**Hypochondriasis**	0.40	0.49
16.	**Loss of weight**	0.80	0.51
17.	**Insight**	0.65	0.57
18.	**Diurnal variation 1**	0.45	0.50
19.	**De personalization and de-realization**	0.40	0.49
20.	**Paranoid Symptoms**	0.50	0.50
21.	**Obsessional and compulsive systems**	0.40	0.49
22.	**Total score**	12.40	5.19

On the basis of total score of each individual patient as described in methodology it was revealed that around 62% patients had depression furthersevere depression was found to be among 14% of patients, while moderate and mild depression was noted to be among 19% and 29% of the patients while 38% patients were found to be normal as shown in Figure 2.

Figure 2: Intesity of Depression According to Hmilton Scale

- Normal
- Mild Depression
- Moderate Depression
- Severe Depression

IV. Discussion

Psychometric agony could be explained as hostile thoughts or approaches that effects overall performance of any individual though results in social malfunction and distraction of common life[8]. This situation leads to depression and presently an accumulative of 62% pulmonary TB patients had depression which is further segregated in mild, moderate and severe depression as 29%, 19% and 14 % respectively. A recent survey in China for evaluation of depression and anxiety among pulmonary TB patients reported that around 18% patients had significant depression and 70% patients had significant anxiety and expected to have

depression[9] and the results are in concomitant with present study. A single interview was conducted in present study however a recent study undertaken in Ethiopia based on the evaluation of psychological distress at the beginning of treatment and at the end of treatment reported 67.6% had depression during 1-2 month of treatment and 48.5% had at the end of 6 months of tubercle treatment[11].

A recent study to observe the prevalence of depression among pulmonary TB patients and association of related factors also revealed an overall depression of 51.9% of which 34.2% had mild and rest had significant depression. Further study concluded that low socio-economic status, age and new TB patients at initiation of treatment are the factors associated with high level of depression among pulmonary TB patients[2]. Same associated factors also been reported by a previous study[9] from same settings and results are comparable with present study. Currently mean age of patients 39.34±15.06 showing a young productive age is predominantly involved depression similarly high proportion (62.15%) of males who are basic economic pillars of family are suffering from slow poison like disease makes the situation of high depression understandable. Further distance of traveling to reach healthcare facility is also an important factor as many of study participants (29%) in this study belong to other districts.

A South African study revealed lower formal education, age, poverty and marital status considerably influence the occurrence of depression among pulmonary TB patients[12] are in agreement with the results presented in this study. These factors may be influenced from the attitudes of households sometimes especially from spouse. A study reported that 16% of the respondents have faced misbehave from their households after being diagnosed with tuberculosis. Further a gender bias was also reported when 7/8 (87.5%) female TB patients were misbehaved from their spouse due to suffering from TB, even worse reporting presented that 2/7 (28.6%) were divorced and 6/7 (85.7%) were living with their parents during treatment of tuberculosis[13]. Such kind of social stigma is dangerous for any society especially in countries with high burden of diseases and must be discouraged as it can negatively influence the treatment outcomes.

In conclusion level of depression among pulmonary TB patients is very high and must be given significant importance at every level. Factors related to depression are age, gender, poverty, social stigma and distance of traveling to reach healthcare facility etc. It is recommended to provide clinical psychologist at directly observed short treatment (DOTS) centers for timely screening and management of depression among TB patients. Provision of social support to the TB patients is also demand of the time for batter management and to end TB strategies.

Conflict of interest
None.

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