Psychological Distress and Associated Factors among Adult Tuberculosis Patients Attending Public Health Institutions in Dire Dawa and Harar Cities, Eastern Ethiopia: A Cross Sectional Study Design

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Abstract

Background In developing countries the prevalence of psychological distress was higher among tuberculosis patients. Patients with tuberculosis infection were more prone to psychological distress than peoples without tuberculosis. However, little studies were conducted in on psychological distress among tuberculosis patients in Ethiopia, particularly in Eastern Ethiopian public health institution.

Methods

Institution based cross-sectional study design was conducted in four hospitals and six health centers that are found in Dire Dawa and Harar cities from January 10 to February 10, 2018. All Tuberculosis patients who fulfil inclusion criteria attending TB treatment in selected Health institution included in the study. A structured questionnaire was used for data collection on sociodemographic factors, psychological distress, health related factors, stigma experience and alcohol use. Data was coded, entered and cleaned using Epi Data version 3.1 software and finally exported into SPSS version 20 software for analysis. Bivariate and multivariate logistic regression was carried out. All variables with p value ≤ 0.25 were taken into the multivariate model and P- Value less than 0.05 was taken as statistically significant.

Results

The prevalence of psychological distress among tuberculosis in this study population was 63.3% (95% CI: 58.1, 68.1). Being from rural residence (AOR: 1.98; 95% CI: 1.01, 3.86), co-infection TB-HIV (AOR: 2.15; 95% CI: 1.02, 4.56), presence of at least one chronic disease (AOR:3.04; 95% CI:1.59,5.79), experience of stigma (AOR: 1.71; 95% CI:1.01, 2.90), Pulmonary and MDR-TB (AOR:2.53; 95%
CI:1.50,4.28) and smoking cigarette (AOR:2.53; 95% CI:1.06,6.03) were associated with psychological distress.

Conclusion

In this study almost two third of the study participant had of psychological distress among tuberculosis patients. Chronic disease morbidities, HIV and TB co-infection and TB discrimination were associated with psychological distress. The co-morbid diagnosis of chronic diseases and TB- HIV co-infection needs more psychological care.

Background

Psychological distress is a general term that is used to describe unpleasant subjective state of depression and anxiety which have both emotional and physiological manifestations that interferes with activities of daily living. It is characterized by symptoms of depression and anxiety and may also somatic symptoms. In normal functioning individuals psychological distress is the fluctuation of mood. Psychological distress can result in negative views of the environment, self and others [1].

A state of distress can be caused by many things such as severe stressor, everyday stressors, poverty, unemployment, death of a loved one, a relationship break-up, medical illness or physical illness, alcohol and drug use [2, 3]. As a consequence of illness many patients face psychological challenges [4]. Tuberculosis (TB) is one among those illnesses that result in PD. In addition to this social isolation TB patient from the family and community, neglect by family and society were association with PD among TB patients [5]. This affects the quality of life of the patients [6].

The severity of PD is dependent upon the situation and how someone perceive it. No
two people experience one event the exact same way [1, 7]. Just as mental illness
can impact on areas of the individual’s life, psychological distress can also have
direct and indirect effects on the individual’s psychological, social and occupational
functioning, affecting many areas of their life, including relationships, work and
health [8].

Many people who suffer significant psychological distress do not come into contact
with specialized mental health services. While many of these people may seek help
from general practitioners, counsellors and support groups, significant numbers do
not access any type of formal help in the face of psychological distress [8]. In 2015,
more than 300 million peoples were estimated suffer from depression, this accounts
to 4.4% of the world’s population. Worldwide the number of peoples with depression
and anxiety increasing especially in low income countries. More than 80% of this
disease burden occurred in low and middle income countries. Nearly half (48%) of
the world depressed population were living in the South East Asia and Western
Pacific regions. The prevalence of depression in Eastern Mediterranean, Americas,
European, and African region were 16%, 15%, 12% & 9% respectively. In Ethiopia,
4.7% of total population were suffer from depressive disorder in general
population[2].

In Europe, 44.4% of tuberculosis (TB) patients had suffered from psychological
distress. In the region magnitude of depression among TB patients was range from
49.4 % to 60.5% while of anxiety accounted from 26.0% to 38.3% [9, 10]. In Eastern
Mediterranean 46.3% of TB patients were suffering from depressive disorder [11]. In
Western Pacific Regions 16.8% to 65.2% of TB patients suffered from psychological
distress [12, 13]. In low and middle income countries depressive episode among TB
patients were more than three times higher than peoples without tuberculosis [14].
Among TB patients in Africa, more than half of the patients were suffering from psychological distress. The prevalence of psychological distress among TB patients higher in Africa. The lowest range from 8% to 25.4% [15, 16]. Majority study showed the highest psychological distress range from 40% to 81.1% [17–20]. The prevalence of depression ranges from 43.4 to 61.1% [20–22].

In Ethiopia the prevalence of psychological distress among TB patients were higher than other countries. In Ethiopia, Nationwide study showed that the magnitude of depression among general population was found 9.1% [23]. Among TB patients lowest prevalence rate of psychological distress were 19.82% [24]. In other studies it ranges from 40.6% to 67.6% [19, 20]. This prevalence was higher in case of retreatment cases. The prevalence for those patients who were on retreatment was 87.7% [17].

To the knowledge of these researchers, there is limited studies that assessed the magnitude of psychological distress among TB patient is in Ethiopia. Therefore, this study will determine the magnitude of psychological distress and associated factors in Eastern Ethiopia.

METHODS AND MATERIALS

Study design and setting

Institution based cross-sectional study design was conducted among patients diagnosed with all types of TB in Harar and Dire Dawa cities in Eastern Ethiopia from January 10 to February 10, 2018. Ten health institutions, two hospitals and one health centers from Harar and two Hospitals and five health Centers from Dire Dawa cities were selected. All adult tuberculosis patients aged 18 years old and above on treatments follow up selected Hospitals and Health centers were included in the
study. Critically ill patients, mentally ill patients, patients who have hearing and communication problem was excluded from the study.

Sample size and sampling procedure

The sample size was determined based on the formula for a single population proportion by taking a proportion of psychological distress of 67.6 % [17], by assuming 95% confident interval of $Z_{\alpha/2} = 1.96$, margin of error 5%.

[Due to technical limitations, this equation is only available as a download in the supplemental files section.]

By adding 10% non-response rate final sample size 370

Consecutive sampling techniques was used to select the study participant. All adults TB patients attending TB clinic during the study period in selected hospitals and health centers were included in the study until the sample size was reached. All adult tuberculosis patients aged 18 years old and above who fulfill inclusion criteria selected Hospitals and Health centers were included in the study. Critically ill patients, mentally ill patients, patients who have hearing and communication problem was excluded from the study.

Data collection

A structured questionnaire was used to collect data on sociodemographic variables such as age, sex, residence, and educational status, religion, ethnicity income of the family, and marital status and health related issues like chronic disease and self-rating TB illness severity was assessed by interviewer administered questionnaire and other health related issues like HIV test, ART treatment, TB treatment history, TB type and TB treatment phase addressed by document reviewing. An outcome variable (presence of on psychological distress) was assessed by Kessler 10-item (K-10). Kessler 10-item (K-10) scale will be used
containing 10 questions. Items on the K-10 scale measure distress based on questions about anxiety and depressive symptoms that a person has experienced in the most recent 30 days’ period. The frequency each item on the K-10 scale experienced by a patient was recorded using a five-value response option for each item ranging from one (none of the time) through to five (all of the time). The score ranges from 10 to 50. A cut off score greater than or equal to 16 was considered as had psychological distress [13, 17, 18, 25].

Experienced Stigma: an individual who experiences treatment by family members, neighbors, and friends in daily life since the diagnosis of TB. The 9 item stigma questionnaire was used. The items have four point Likert scale ranging from 1 to 4 (strongly disagree/ disagree/ agree/ strongly agree) respectively. The total scores ranged from 9 to 36. Stigma was defined if the summed score was more than the median score [13]. The Cronbach alpha for the stigma in this for the pretest study was high (Cronbach’s alpha = 0.93).

Data processing and analysis

Collected data were checked for completeness and consistency, coded and entered into Epi Data Version 3.1 software and exported into Statistical Package for the Social Sciences (SPSS window version 20) for analysis. Data were explored and cleaned prior to analysis using SPSS. Descriptive statistics was employed to estimate the sociodemographic, health related factors and prevalence of psychological distress. Bivariate and multivariate logistic regression analysis were carried out to determine the predictors of psychological distress. Variables with a P-value less than 0.25 in bivariate binary logistic regression analysis were included final regression model. Enter method logistic regression was applied to determine predictors of psychological distress. Statistically significant association was
declared considering adjusted odds ratio at 95% confidence interval with P-value less than 0.05.

**Ethical consideration**

Ethical approval was obtained from the Institutional Health Research Ethical Review Committee of Haramaya University, College of Health and Medical Sciences. Letter of permission was obtained from Harari Regional and Dire Dawa Administrative Health Bureau. Written informed consent were obtained from each study participant after explaining the purpose of the study. The interview was conducted in a private area. The participants were the right not to respond to question that not comfortable with it. Personal identifying details were not recorded. Participants identified with mild to moderate type of psychological distress counseled and severe form were linked to the psychiatric clinic for better evaluation and treatment.

**RESULTS**

**Socio demographic characteristics**

A total of 365 participants were interviewed which gives response rate of 98.6%. The mean age of the study participants was 35.52 years (±13.93 SD) in age ranges from 18 to 85 years old and nearly less than half (45.8%) were age below 30 years old. More than half (56.2 %) of study participant were males and 78.1% were urban resident. More than half (55.9%) were married and one third of the respondents were single 117 (32.1%). Two third of the respondents (58.6% were grade 7 or less educational status. Concerning occupational status 68 (18.6%) were government employed while 13 (3.6%) NGO employed. Two hundred twenty-eight (62.5%) of respondents have income ≥ 1000 Ethiopian Birr (ETB) and 18.1% of the study
participant have no income and live with support from family or others (Table 1)

Prevalence of Psychological Distress

Among 365 Tuberculosis patients, 231 (63.3 %) had psychological distress (95% CI: 58.1, 68.1). The mean of psychological distress was 19.23 (± 7.18 SD) ranging from 10 to 50. Among study participant 25.5%, 31.8% and 6% showed mild, moderate and severe form of psychological distress respectively. Psychological distress among study participant’s females gender 106 (66.2%), greater than 45 years old 54 (70.1%), rural residence 67 (78.8%), TB and HIV co-infected 54 (81.8%), repeated TB treatment 29 (76.3%), one or more chronic diseases 87 (82.1%), stigma experienced 130 (76.9%), alcohol risk drinkers 14 (87.5%), cigarette smokers 50 (83.3%) had higher proportion of psychological distress. Psychological distress among pulmonary TB, MDR-TB and extra-pulmonary TB were 73.2%, 72.2% and 44.8% respectively (Table 2)

Health related and substance use characteristics

Less than two third (60.3%) of study participant were diagnosed with pulmonary TB while 18 (4.9 %) and 127 (34.8 %) MDR and extra pulmonary TB respectively.

Majority (89.6%) of study participants were new TB treatment category. Almost two third (64.4%) of TB patients were in continuous treatment phase. Concerning HIV status of the study participant’s one fifth (18.1%) of study participants were reactive for HIV test. Less than one third (29 %) of study participant had one or more chronic diseases. Almost half (46 %) of the study participant had experienced stigma due to the disease. Few (5.5%) of the study participant had family history of mental illness. Less than half (44.4%) of the study participants were rate their TB illness as moderate type while 132 (36.2%) rate as severe form (Table 2).

Predictors of Psychological Distress
In bivariate logistic regression analysis revealed that age, residence, marital status, current chat chewing, current smoking, illness severity, TB treatment phase, TB treatment category, HIV status, Alcohol drinking risk, one or more chronic disease, experienced stigma, and TB-HIV co-infection type were associated with psychological distress. In the model; sex, educational status, TB treatment phase, and family history of mental illness were not associated in bivariate logistic regression model. The association of different factors with psychological distress was assessed with bivariate logistic regression analysis (Table 3). In multivariate logistic regression analysis showed that single/divorced/widowed, rural residence, TB and HIV co-infection, one or more chronic disease, experienced stigma, being pulmonary and MDR tuberculosis patient and current smoking cigarette were significantly associated with psychological distress. (Table 3) In this study, patients whose lives in rural area were two times higher odds of psychological distress as compared to urban residence (AOR: 1.98, 95% CI: 1.01, 3.86). Marital status was factors associated with psychological distress. Patients who were single/divorced/widowed were 1.9 times higher odds of psychological distress as compared to those whose who were married (AOR: 1.88, 95% CI: 1.06, 3.35). Concerning TB-HIV co-infection, co-infection patients were associated with psychological distress. TB and HIV co-infected patients were 2.2 times higher odds of psychological distress as compared to those non co-infected patients (AOR: 2.15, 95% CI: 1.02, 4.56). Similarly, patients who had one or more chronic disease 3 times higher odds of psychological distress as compared to patients who have no chronic disease (AOR: 3.04, 95% CI: 1.59, 5.79). TB disease category had associated with psychological distress. Pulmonary and MDR TB patients were 2.5 times more likely associated with psychological distress as compared to Extra Pulmonary TB (AOR:
Regarding stigma experience patients who had experienced stigma were 1.7 times higher odds of psychological distress as compared to non-experienced ones (AOR: 1.71, 95% CI: 1.01, 2.90). Patients who currently cigarette smokers were 2.5 times more likely associated with psychological distress as compared to non-smokers (AOR: 2.53, 95% CI: 1.06,6.03) (Table 3)

DISCUSSION

The prevalence of psychological distress among TB patients is similar to study conducted in China (65.2%) [13], Addis Ababa, Ethiopia (67.6%) [17], and in three Oromia State hospitals, Ethiopia (64%) [25]. It is higher than study in Enugu, Nigeria (25.4%) [16], in Jimma University, Ethiopia (19.8%) [24], in Wolaita Sodo University Hospital and Sodo Health Center, South state of Ethiopia (40.6%) [20] and Addis Ababa, Ethiopia (48.9%)[26]. The difference in magnitude may be associated with sociodemographic and economic differences among study areas.

Study participants whose marital status single/ divorced/widowed were associated with psychological distress as compared to married individuals. This finding is consistent with a study done in Addis Ababa, Ethiopia [17]. This finding also supported by study finding done in South Africa showed that being married or cohabitated were less likely associated with psychological distress as compared to non-cohabited patients [19]. This might be due to the fact that being married or cohabitating was associated with reduction in the stress and depression condition of the patients [27].

Being co-infected with TB and HIV were associated with psychological distress as compared to non-co-infected patients. This finding is consistent with study done in
three hospitals in Oromia regional state of Ethiopia and South Africa [18, 25]. Similarly this study in line with study done in Cameroon and study Wolaita Sodo, South Ethiopia showed that TB and HIV co-infected patients were higher depression state as compared to non-infected ones [20, 22]. This might be due to the fact that HIV infection itself was associated with psychological distress. This is result in psychological distress from both infections [28].

Chronic disease significantly associated with psychological distress. Study participants who have one or more chronic disease significant associated with psychological distress as compared to patients who have no chronic disease. This finding is consistent with study done in South Africa [29]. This might be due to the fact that chronic diseases like stomach ulcer, sexually transmitted disease, migraine headache and lower back pain were associated with psychological distress in addition to TB [30].

Experienced stigma was significantly associated with psychological distress. TB patients who experienced stigma were associated with psychological distress as compared to patients who didn’t experienced Stigma. This finding were in line with the study done in Shandong Province, Eastern China [13]. Similarly study conducted in three Oromia state hospitals in Ethiopia and Wolaita Sodo, South Ethiopia, supported this study finding [20, 25]. This might be due to the fact loss of family support, social discrimination, fear of social isolation result in psychological distress [31].

These result is in line with a cross-sectional study from 48 low- and middle-income countries showing that is TB patients who was smoker were associated with a higher depression as compared to non—smoker patients [14]. This might be due to the fact that depression is more higher among substance used as compared to non-user one.
Conclusion

In this study almost two third of the study participant had of psychological distress among tuberculosis patients. Chronic disease morbidities, HIV and TB co-infection and TB discrimination were associated with psychological distress. The co-morbid chronic diseases and TB- HIV co-infection needs more psychological care.

List of abbreviations

ART Antiretroviral Therapy
HIV Human immunodeficiency virus
MDR-TB Multi-Drug Resistant Tuberculosis
TB Tuberculosis

Declaration of competing interests

“The authors declare that they have no competing interests” that may affect the work described in this manuscript

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Tables

Table 1. Socio demographic characteristics of respondents on TB treatment follow up at public Health Institution in Dire Dawa and Harar cities, Eastern Ethiopia, 2018 (n=365)
Due to technical limitations, Table 1 is only available as a download in the supplemental files section.

Table 2. Health related and substance use of respondents among TB treatment follow up at Public Health Institution at Dire Dawa and Harar cities, Eastern Ethiopia, 2018 (n=365)

Due to technical limitations, Table 2 is only available as a download in the supplemental files section.

Table 3. Factors associated with Psychological distress among adult TB patients attending at Health institutions in Harar and Dire Dawa cities, Eastern Ethiopia, 2018 (n = 365)

Due to technical limitations, Table 3 is only available as a download in the supplemental files section.

Supplementary Files

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