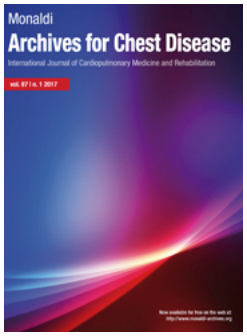

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Psychological morbidity and quality of life of patients with pulmonary tuberculosis

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Abstract

Tuberculosis (TB) is associated with psychological distress, poor coping, deterioration in health-related quality of life (HRQL), and stigma. However, these issues have never received sufficient attention as a part of routine care. The healthcare workers and physicians of primary contact are not sensitized to use discrete screening questionnaires to identify and address these issues.

A longitudinal study was hence conducted in the Department of Pulmonary Medicine in collaboration with the Department of Psychiatry. 75 microbiologically confirmed 'new' pulmonary TB patients were enrolled. Socio-demographic and clinical details were noted. The patients were then evaluated for psychological distress using the General Health Questionnaire-12-Hindi version (GHQ-12) and Patient Distress Thermometer (PDT); coping strategies using the Coping Strategy Check List-Hindi Version (CSCL); HRQL using the World Health Organization Quality of Life-Brief-Hindi version (WHOQOL-Bref), and stigma using the Explanatory Model Interview Catalogue-affected persons Stigma Scale (EMIC-SS), at the start of treatment. Those having a GHQ-12 score ≥3 were labeled as 'screen positive' for psychological distress and referred to a consultant psychiatrist for detailed psychological assessment. Treatment was given by the psychiatrist if diagnosed with a psychiatric illness. All those without the diagnosis of a psychiatric illness were counseled by a pulmonologist. All patients were called for a follow-up visit and repeat assessments on the 15th day at the end of the intensive phase, using the same instruments employed at baseline. The patients already on treatment by the psychiatrist were again evaluated for their psychiatric illness.

32 (42.7%) patients had psychological distress (GHQ-12≥3) at baseline. 20 of them (26.7%) were diagnosed with a psychiatric illness. However, only 2 (2.7%) patients had psychological distress and psychiatric illness at follow-up ($p<0.001$). Mean scores of GHQ-12, PDT, CSCL, WHOQOL-Bref-26, and EMIC-SS at baseline were 3.000±1.9590, 2.333±1.2980, 3.480±2.2017, 311.63±30.201 and 5.267±1.8478, respectively. All the scores improved significantly at follow-up ($p<0.001$). The scores of the various instruments used in the study significantly correlated with each other.

Comprehensive screening for psychological distress and assessment of HRQL should be part of routine TB care. The healthcare workers under the program should be sensitized to use the various screening tools on a day-to-day basis to identify patients who require expert psychiatrist care. The

majority of the patients with distress, but without a psychiatric illness, can be handled well with dedicated counseling sessions by the healthcare workers themselves. The ancillary staff should be encouraged and trained to meet the demands in resource-constrained settings. A multidisciplinary approach, with close integration of TB programs with mental health services, is urgently required to eliminate TB.

Key words: TB, psychological distress, HRQL, screening tools.

Introduction

Tuberculosis (TB) is known to be associated with stigma and affects health related quality of life (HRQL) badly [1,2]. However, despite incorporation of novel patient friendly measures for treatment delivery so as to deal with stigma, patients still suffer from psychological morbidities and poor HRQL [1,2].

Assessment of psychological distress and HRQL as a part of routine care is rarely carried out [3]. Physicians of primary contact lack knowledge about the readily available and easy-to-use screening tools, and are not sensitized to use them on a day-to-day basis. Other reasons for non-assessment include busy out-patient departments and fear of infection during verbal interactions. There is poor patient acceptance for diagnosis of psychological co-morbidities. Hence, psychological morbidities remain unidentified and undertreated, leaving a majority to cope up with the mental health issues either on their own, or with a little help of the members of their social circle. Lack of appropriate counselling and/or expert psychiatrist advice complicates the management of the underlying disease as well, and indirectly contributes to poor treatment outcomes [3-6]. The situation is even grimmer in the Indian sub-continent when compared with the global scenario, because of the huge burden of TB, and scarce resources while planning for any multidisciplinary approaches.

A study was hence planned to estimate the burden of psychological distress and assess HRQL in patients suffering from pulmonary TB with the use of authenticated screening tools. Expert psychiatric opinion was sought for identification of psychiatric illness in patients showing psychological distress on screening. Assessments were repeated after end of intensive phase (IP) of treatment to study the improvements in underlying disease, psychological distress, coping and HRQL.

Materials and Methods

A longitudinal study was conducted in the Department of Pulmonary Medicine in collaboration with the department of Psychiatry.

75 microbiologically confirmed 'new' pulmonary TB patients (by sputum smear microscopy/CBNAAT) were enrolled in the study. (Considering the prevalence of psychological

distress and follow up period of 2 months, **s**ample size was calculated as 66. Keeping in mind the possible attrition, it was decided that 75 patients be included).

Exclusion criteria

Patients aged <18 years, those with a history of anti-tubercular treatment in the past, pregnant and lactating females, those who refused consent, patients with pre-existing psychiatric illness, those who didn't have capacity or those who were critically ill were excluded from the study. The retreatment cases were excluded from the study because it is expected that the patients with a previous course of complete/ incomplete anti-tubercular treatment for TB will behave differently while carrying out assessment for the indices under consideration. Since they have already faced a challenge earlier, their positive and negative thought processes may differ depending on the outcomes during their previous course of treatment, and hence may provide an over/under-rated measurement of psychological distress, coping, HRQL and stigma.

After enrollment, on day 15th from the date of diagnosis, a specially designed structured proforma was be used to record the relevant history, socio-demographic data and clinical details. The patients were then evaluated for psychological distress using General Health Questionnaire-12-Hindi version (GHQ-12) and Patient Distress Thermometer (PDT); coping strategies by using Coping Strategy Check List-Hindi Version (CSCL); HRQL by using World Health Organization Quality of Life- Brief- Hindi version (WHOQOL-Bref), and stigma by using EMIC affected persons Stigma Scale (EMIC-SS). Those having GHQ≥3 were labelled as 'screen positive' for psychological distress and referred to consultant psychiatrist for detailed psychological assessment. Treatment was given by the psychiatrist if diagnosed with a psychiatric illness, as per individual needs. Depending on the severity of the illness, medications, brief counselling, supportive psychotherapy or a combination was chosen. All those without the diagnosis of a psychiatric illness were counselled by the pulmonologist about the cause, course and management of TB in detail and the need to remain compliant to treatment.

All the patients were called for a follow-up visit on 15th day of end of IP, and reassessment was carried out using all the instruments which were used at baseline. The patients already on treatment by the psychiatrist were again evaluated for their psychiatric illness.

Scales

GHQ-12: A 12-item screening instrument, validated measuring psychological distress in the Indian population. Any participant scoring ≥3 was defined as a case with psychiatric morbidity [7].

PDT: A modified visual analogue scale that resembles a thermometer, ranges from 0 to 10, and is used to assess patients for distress [8].

CSCL: A self-administered scale, comprising of 36 coping strategies used to deal with stressful situations and indicates their use in day-to-day life [9].

WHOQOL-Bref: Contains a total of 26 questions and is used to assess HRQL [10].

EMIC-SS: EMIC-SS is used to study stigmas produced by various neglected diseases and conditions including TB [11].

The data so obtained, at the two points of assessment was tabulated and statistically analyzed.

The patients who needed a change in anti-tubercular treatment due to any reason, or were detected with drug resistance at any point, or dropped out during the follow-up period were excluded from the study. Thus, only those 75 patients who could complete the follow-up assessments were included in the final analysis.

The study was approved by the institute's Ethics committee vide letter no. Trg.9(310)2022/24733 dated 27-07-2022.

Statistical analysis

Normality of quantitative data were checked by measures of Kolmogorov Smirnov tests of Normality. Our variables were non-Normally distributed (skewed) so were represented as mean and standard deviation with Median and interquartile range; comparisons for two groups (GHQ Score <3 and ≥3, and also presence/ absence of psychiatric illness) were made by Mann-Whitney U test. For time related variables of skewed data, Wilcoxon Signed rank test was applied, (comparison of variables of baseline data with follow-up variables). Spearman correlation coefficient were calculated to see relation of different variables (quantitative data).

Categorical variables were reported as counts and percentages. Group comparisons were made with the Chi-Sq test if all expected cell frequencies were more than 5 and Fisher's Exact test when expected cell frequencies were less than 5.

All the statistical tests were two-sided and were performed at a significance level of α=0.05. Analysis was conducted using IBM SPSS STATISTICS version 22.0 (Armonk, NY: IBM Corp.).

Results

The socio-demographic, clinical and psychological variables of all the patients are depicted in Table 1. It was seen that 32 (42.7%) patients had psychological distress (GHQ-12 ≥3) at baseline. Out of them, 20 (26.7%) were diagnosed with a psychiatric illness. However, only 2 (2.7%) patients had psychological distress and psychiatric illness at follow-up. GHQ-12 scores were unaffected by age (p=0.627), gender (p=0.4), demography (0.963), occupation (p=0.574), family income (p=0.578), co-morbidities (p=0.103) and addiction (p=0.589).

Table 2 shows that significantly lesser number of patients had psychological distress and psychiatric illness at follow-up (p<0.001).

Table 3 shows the mean scores of GHQ-12, PDT, CSCL, WHOQOL-Bref-26 and EMIC-SS, at baseline and at follow-up. All the scores improved significantly at follow-up (p<0.001).

Table 4 shows the correlation of different scales with each other. GHQ-12 Hindi version correlated positively with PDT, CSCL and EMIC-SS, and negatively with WHO-QOL-Bref-26 The various scales also correlated significantly with each other.

Discussion

Infectiousness of the disease, perceived fear of transmission, physical disability, pill burden, withdrawal from inter-personal relationships, discrimination and age-old stigma, health disparities and social and economic consequences contribute to psychological co-morbidities and poor HRQL in patients with TB. However, despite massive leaps in the diagnosis and treatment strategies, mental health issues have remained grossly unidentified and unaddressed, and pose as serious threat to TB elimination programs [12].

This study was the first of its kind from the Indian subcontinent, to use a variety of discrete screening tools for assessment of psychological distress, coping strategies, HRQL and stigma in patients suffering from pulmonary TB. It provides valuable insights into the burden of psychological trauma which the TB patients may be going through, coping methods and impact on the HRQL.

42.7% of the patients were from the highly productive age group of 18-30 years. 58.7% were males and 65.3% were from urban background. Majority of the patients were not suffering from any co-morbid illness. All patients showed clinical, radiological and bacteriological response to anti-tubercular treatment at the end of IP of treatment.

GHQ-12 is an easy to administer screening tool which can be used by the health care workers of primary contact to screen for presence of psychological distress, and has been validated in the Indian population. In this study, GHQ-12 scores were unaffected by age, gender, demography, occupation, family income, co-morbidities and addiction habits.

It was seen that out of 42.7% of the patients who were suffering from psychological distress, 26.7% were diagnosed with a psychiatric illness, and needed treatment by an expert psychiatrist. If left untreated, they would have required additional resources for management and could have added to the morbidity and mortality. However, timely treatment by the psychiatrist was effective in decreasing the burden of psychiatric illness at follow-up. Additionally, in patients with psychological distress but without psychiatric illness, counselling by the pulmonologist was highly fruitful, as there was a statistically significant decrease in the number of patients left with psychological distress at follow-up. Global data with respect to the burden of psychological co-morbidities, and their assessment methods, is highly variable [3,13-19]. Similar reduction in psychological co-morbidity at follow-ups has been noted in the past, however, with the use of a different instruments [5,13,16,18].

Routine screening with such quick and easy-to-use screening questionnaires should become a part of routine management of patients with TB, and should be incorporated under the program. The healthcare workers and physicians of primary contact should be sensitized to administer these tools. If screen positive, they can be thoroughly dealt with, by an expert psychiatrist help, as some of these patients may be requiring medications for mental well-being, psychotherapy or need based individualized therapies. At the same time, this study suggests that educational and counselling sessions should be provided by the physician/ HCW at the point of first contact, as it is highly successful in significantly decreasing the psychological distress in a majority of the patients.

This study also measured psychological distress by another easy-to-use tool, the PDT. The psychological distress measured by PDT correlated well with the distress measured by GHQ-12

Hindi version. Hence, PDT also emerged as a handy tool for screening for psychological distress in patients with TB, on a routine basis.

It is seen that in any situation wherein an individual faces any physical stress/illness, a variety of coping mechanisms are generated within, to deal with the same. However, the extent of coping behaviors varies from an individual to another, and such differences differently impact the course of mental and physical health. It was seen that the coping scores, as measured by CSCL in the patients of TB in this study, were poorer at baseline, and improved markedly at follow-up. The contribution of an expert psychiatrist and the counselling by the pulmonologist thus turned out to be noteworthy in coping with TB over a period of time. Very few studies have examined the coping strategies in TB, and have focused primarily on the financial aspect [20,21]. Detailed work-up, as in this study through a standardized instrument CSCL, has not been done in the past in patients with TB.

On a similar front, in such situations of physical stress/illness, as posed by TB, it is expected that the HRQL is deteriorated. Physical constraints and a variety of behavioral negativities due to inherent nature and course of the disease contribute to poor HRQL, and the same was revealed by WHOQOL-Bref scores in this study. Again, the improvement of the scores at follow-up reinforce the role of early management by the primary care physician alone or in collaboration with a psychiatrist. Similar decline in HRQL across all domains (physical, economic, and psychosocial) has been reported in the past, and it has also been emphasized that there is a need to develop, standardize and validate a TB-specific HRQL assessment tool [5,17,18,22,23].

Despite the well-known fact that TB leads to stigma, there are a very few studies which have used validated and reliable tools to identify and quantify the same. This study made a small attempt to measure the same with the use of EMIC-SS. The magnitude of stigma was higher at baseline, and alleviated significantly at follow-up, again emphasizing the need of counselling sessions and a multidisciplinary approach, right from the time of diagnosis, and as a part of routine care. Similar results, with a need to develop practical tools to measure TB-related stigma and evaluate the impact of stigma-reduction interventions on TB elimination programs has been repeatedly stressed upon, in the existing literature [17,24-26].

This study also studied the correlation of various scales at baseline. GHQ-12 Hindi version correlated positively with PDT, CSCL and EMIC-SS, and negatively with WHO-QOL-Bref-26. The

various scales also correlated significantly with each other. This finding suggests that in patients with higher psychological distress (higher GHQ-12 Hindi version and PDT scores), there is significantly poorer coping (higher CSCL scores), significantly poorer HRQL (lesser WHO-QOL-Bref-26 scores), and significantly higher stigma (higher EMIC-SS scores). Hence, any of these scales can be used as a surrogate of one another, alone as well as in combination, as per need or when there are time constraints, and can provide a reliable idea of the varied spectrum of mental health issues. Counselling and/or psychiatric help at the point of first contact, after proper identification of the mental health issues with these tools, is deemed to improve coping, HRQL, stigma and overall psychological well-being.

While aiming for TB elimination in the coming years, it is necessary to manage the disease at the time of diagnosis itself, in totality, and including mental health issues. Such efforts will decrease non-compliance to treatment, delays in health care seeking and spread of disease to the community. There will be an additional impact on overall productivity, with favorable socio-economic consequences and decrease in morbidity and mortality.

Strengths of the study

The study was the first of its kind. Multiple scales were administered to study the different aspects of psychological suffering. Being a longitudinal study, the follow-up assessments helped identify the role of directed counselling sessions and expert psychiatrist consults on a variety of psychological parameters and HRQL. Such an attempt has never been done in the Indian context.

Limitations of the study

The sample size was small. The follow-up period was till end of IP of treatment. A longitudinal study with a longer follow-up period and a larger sample size is needed to elucidate the various psycho-social relationships of TB to a greater extent, and in a broader perspective.

Conclusions

There is an urgent need to identify psychological comorbidities at the time of diagnosis of TB. Under the national program, the physician/ HCW of first contact should be made ‘able’ to confidently use the various available and validated screening instruments as a part of routine care.

He should be able to identify and refer the few patients who require an expert care to a psychiatrist, and should be able to manage the remaining majority with the use of dedicated educational and counselling sessions, on his own, or with the help of ancillary staff. Psychiatrist should be made an integral part of the multidisciplinary care model. Research should be promoted to develop TB-specific screening instruments. The policy makers should focus on developing and integrating additional 'TB-mental health' strategies into routine TB care, as mental well-being is emerging as an important determinant of TB outcomes.

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Table 1. Socio-demographic, clinical and psychological variables of the patients (n=75).

Variable		n (%)		Variable		n (%)
Age	**18-30 years**	32 (42.7)		**Comorbidities**	**Yes**	11 (14.7)
	31-40 years	11 (14.7)			**No**	64 (85.3)
	41-50 years	11 (14.7)		**Addiction**	**Yes**	21 (28.0)
	51-60 years	6 (8.0)			**No**	54 (72.0)
	61-70 years	9 (12.0)		**GHQ-12 ≥3 at Baseline (Presence of psychological distress)**	**Yes**	32 (42.7)
	>70 years	6 (12.0)			**No**	43 (57.3)
Gender	**Female**	31 (41.3)		**GHQ-12 ≥3 at Follow-up (Presence of psychological distress)**	**Yes**	2 (2.7)
	Male	44 (58.7)			**No**	73 (97.3)
Demography	**Rural**	26 (34.7)		**Presence of Psychiatric Illness at Baseline**	**Yes**	20 (26.7)
	Urban	49 (65.3)			**No**	55 (73.3)
Occupation	**Skilled Work**	9 (12.0)		**Presence of Psychiatric Illness at Follow-up**	**Yes**	2 (2.7)
	Manual Work	24 (32.0)			**No**	73 (97.3)
	Student	8 (10.7)				
	Unemployed	34 (45.3)				

GHQ-12, General Health Questionnaire-12 Hindi Version.

Table 2. Number of patients with GHQ-12 <3 and ≥3 at baseline and at follow-up; and Number of patients without and with psychiatric illness at baseline and at follow-up.

Baseline GHQ-12 vs Follow-up GHQ-12					
		Follow-up GHQ-12			
		<3	**≥3**	**Total**	**P value**
Baseline GHQ-12	**<3**	43	0	43	<0.001
	≥3	30	2	32	
	Total	73	3	75	
Baseline Psychiatric Illness vs Follow-up Psychiatric Illness					
		Follow-up Psychiatric illness			
		No	**Yes**	**Total**	**P value**
Baseline Psychiatric illness	**No**	55	0	55	<0.001
	Yes	18	2	20	
	Total	73	2	75	

GHQ-12, General health Questionnaire-12 Hindi Version.

Table 3. Mean scores of the different screening questionnaires at baseline and at follow-up.

Screening questionnaire	Baseline Score (Mean ± Standard Deviation)	Follow-up Score (Mean ± Standard Deviation)	p value
GHQ-12	3.000±1.9590	1.053±0.7866	<0.001***
PDT	2.333±1.2980	0.960±0.7060	<0.001***
CSCL	3.480±2.2017	1.387±0.9138	<0.001***
WHOQOL-Bref	311.63±30.201	403.36±16.663	<0.001***
EMIC-SS	5.267±1.8478	2.800±0.9005	<0.001***

GHQ-12, General Health Questionnaire-12- Hindi version; PDT, Patient Distress Thermometer; WHOQOL-Bref, World Health Organization Quality of Life- Brief- Hindi version; CSCL, Coping Strategy Check List-Hindi Version; EMIC-SS, EMIC affected persons Stigma Scale.

Table 4. Correlation of different questionnaires with each other.

		GHQ-12	PDT	CSCL	WHOQOL-Bref	EMIC-SS
GHQ-12	Correlation Coefficient	1.000	0.570**	0.509**	-0.750**	0.582**
PDT	Correlation Coefficient	0.570**	1.000	0.486**	-0.478**	0.486**
CSCL	Correlation Coefficient	0.509**	0.486**	1.000	-0.333**	0.402**
WHOQOL-Bref	Correlation Coefficient	-0.750**	-0.478**	-0.333**	1.000	-0.377**
EMIC-SS	Correlation Coefficient	0.582**	0.486**	0.402**	-0.377**	1.000

GHQ-12, General Health Questionnaire-12- Hindi version; PDT, Patient Distress Thermometer; WHOQOL-Bref, World Health Organization Quality of Life- Brief- Hindi version; CSCL, Coping Strategy Check List-Hindi Version; EMIC-SS, EMIC affected persons Stigma Scale. **Correlation is significant at the 0.01 level (2-tailed).