Psychological morbidity and illness perception among patients receiving treatment for tuberculosis in a tertiary care centre in Sri Lanka

J S Galhenage[1], J P Rupasinghe[2], G S Abeywardena[3], A P De Silva[4], S S Williams[5], B Gunasena[1]

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Abstract

A descriptive cross sectional study was carried out to determine prevalence of depression and anxiety and to describe disease perception among patients with tuberculosis (TB) at National Hospital for Respiratory Diseases (NHRD), Welisara. Consecutive patients on anti-TB therapy admitted to wards and attending clinic were recruited until the estimated sample of 430 was reached. They were assessed using Hospital Anxiety and Depression Scale (HADS) and Brief Illness Perception Questionnaire (BIPQ). A total of 254 in-ward patients and 176 clinic patients were included. Of the in-ward patients, 25.2% had depression and 12.6% had anxiety. Of the clinic patients, 17.6% screened were positive for anxiety and 8.5% screened were positive for depression. Mean BIPQ score was 27.44 for the whole population. Prevalence of depression was significantly higher among in-ward patients (25.2%, $p<0.0001$), elderly age groups (20.5%, $p=0.007$), patients with lower education levels (20.6%, $p= 0.012$) and previously treated patients (32.3%, $p=0.004$). In-ward group (50.8%, $p=0.002$), lower education group (48.7%, $p<0.0001$), previously treated group (60%, $p=0.005$) and patients with depression (60.8%, $p=0.001$) and anxiety (68.3%, $p<0.0001$) showed significanly higher BIPQ scores. Our study shows that depression and anxiety are common among patients receiving treatment for TB.

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Introduction

Tuberculosis (TB) is still a significant public health problem in Sri Lanka. Completing the recommended course of treatment gives the individual TB patient the best chance of cure, and also protects the community by preventing the spread of TB. Adherence to treatment however can be influenced by psychological factors [1].

In Sri Lanka prevalence of lifetime ever depression among community is 6.6% to 11.2% in Colombo but the rate is higher among clinical populations with chronic kidney disease (CKD) (27.9%) and following myocardial infarction (MI) (38.4%) [2, 3, 4]. Also, prevalence of depression was 22.2% and anxiety was 32.6% among internally displaced persons in post-war Jaffna District [5]. Studies have shown an association between TB and common mental disorders (46.3%-80%) [6]. The self-regulation model suggests that the illness beliefs of individuals guide their coping strategies. Maladaptive coping strategies in turn contribute to psychological morbidity in the form of anxiety and depression.

National Hospital for Respiratory Disease (NHRD) is the largest tertiary care centre and accomodates patients with respiratory illnesses from all the districts of Sri Lanka. It has about 750 admissions per month. The objective of this study was to determine prevalence of depression and anxiety and describe the disease perception among patients with TB at NHRD, Welisara, Sri Lanka.

Methods

A descriptive cross sectional study was carried out at the 11 tuberculosis wards of NHRD and the chest clinic situated within the same premises. It was conducted over a period of five months from 1 November 2014 to 31 March 2015. The sample size was calculated to detect a prevalence of psychological morbidity of 50% with a margin of error at 5% and an α error at 5%. The computed sample size of 384 was further inflated to 422 to accommodate a 10% dropout rate, which was then rounded off to 430. We considered the proportion with psychological morbidity as 50% to obtain the maximum required sample size. The study participants were 15 years or older and on anti-TB

[1]*National Hospital for Respiratory Diseases, Welisara,* [2]*Teaching Hospital, Kandy,* [3]*District General Hospital, Matale,* [4]*National Intensive Care Surveillance and* [5]*Department of Psychiatry, Faculty of Medicine, University of Kelaniya, Sri Lanka.*

Correspondence: JSG, *e-mail: <janithgalhenage@yahoo.co.uk>.* *Received 8 September and revised version accepted 12 December 2015*

therapy for more than 2 weeks. Consecutive patients who were not critically ill and could give written informed consent were included until the estimated sample size was achieved. The data were collected using self administered questionnaires of Hospital Anxiety Depression Scale (HADS), Brief Illness Perception Questionnaire (BIPQ) and personal clinical records. HADS was used to assess psychological morbidity and BIPQ for cognitive and emotional representation of TB.

HADS is a reliable instrument for detecting states of depression and anxiety among in-hospital patients, out-patients and in populations with no psychiatric illness [7]. It has been validated for Sri Lanka but not published [8]. Seven questions are related to anxiety [HADS-A] and the other seven questions to depression [HADS-D]. Each question is rated on a four point scale scored from 0 (not at all) to 3 (very often). A score of 11 or more is considered a definite case and a score of 8-10 is considered a doubtful case in each sub category in terms of the validation. For perception of disease we used the Sinhala and Tamil translations of BIPQ with 9 items. It is composed of eight items related to illness perception, rated on a 0-10 scale. It assesses the dimensions of consequences, time line, personal control, teatment control, identity, concern, understanding and emotional response (Table 2). Item 9 requiring patient to list three important causal factors for illness, was not applied in this study. A higher score reflected a more threatening view of the illness, whereas a lower score reflected a benign illness perception or a benign view of illness [9]. It has not been validated for Sri Lanka.

Approval was obtained from the Ethics Review Committee of Faculty of Medicine, University of Kelaniya. Data were analysed using Statistical Package for Social Sciences 21 (SPSS 21).

Results

Of the 430 participants 254 (59.1%) were in-ward patients and 176 (40.9%) were clinic patients.The majority were males (73%). The mean age of the study population was 46.4 (SD=15.2). The majority of participants (71.7%) were married and educated up to G.C.E. ordinary level or more (84.2%). Around 30% of the study population did not have a steady income. One fifth (19.1%) were regular alcohol consumers and one third (35.2%) smoked cigarettes on a regular basis. A total of 11.8% of patients used one or several psychoactive substances. Sputum positive pulmonary TB (69.8%) was the commonest and most were in category 1 treatment group (84.4%). About 10% had experienced one or more side-effects related to anti-TB therapy.

The mean HADS-A value for the total population was 6.03 (95% CI = 5.63 - 6.42). The mean HADS-D value was 6.57 (95% CI of 6.15-6.99). A total of 63 (14.7%) and 79 (18.4%) patients met criteria for anxiety and depressive disorder respectively. Of the clinic patients, 17.6% screened positive for anxiety and 8.5% screened positive for depression. Of the in-ward patients 25.2% had depression and 12.6% had anxiety (Table 1). In-ward patients (p<0.0001) and elderly (p=0.007) had significantly higher depression scores in comparison to clinic patients and younger age groups respectively. A lower level of education was associated with a higher likelihood of depression (p=0.012). Previously treated patients (defaulters, relapse and treatment after failure) had a higher chance of having depression in comparison to the new treatment group (p=0.004). Associations between anxiety level according to HADS-A scale with other socio-demographic or disease related parameters showed no statistical significance.

Table 2 shows that study participants had a lower score for BIPQ, on items such as time line (2.92;SD=2.903), personnel control (2.23;SD=3.143), treatment control (1.40;SD=2.470) and understanding (2.65;SD=3.707). There was a higher score for items such as consequences (4.94; SD=3.723), concern (5.12; SD=4.047) and emotional response (4.71; SD=3.933). The mean total illness perception score for whole TB population was 27.44 (SD=14.407) on a range of 0-72. For clinic and inward patients the mean scores for BIPQ were 23.84 and 29.91 respectively. Since the BIPQ has not been validated for Sri Lanka, cut off level for illness perception score was taken as 30 after rounding off the mean total BIPQ score of 27.44. Patients with a total BIPQ score of more than 30 were categorised as having a threatening view of their illness. In-ward patients (p=0.002), patients with an education below ordinary level (p<0.0001) and previously treated patients (p=0.005) had a higher proportion with a threatening view. Patients who had definite depression and definite anxiety scored higher for BIPQ (p=0.001 and p<0.001) respectively (Table 3).

Table 1. Hospital Anxiety and Depression Scale Scores

Setting	*Number (%) of patients according to HADS-A score*			*Number (%) of patients according to HADS-D score*		
	Normal (<7)	*Doubt (8-10)*	*Definite (>11)*	*Normal (<7)*	*Doubt (8-10)*	*Definite (>11)*
Clinic	108 (61.4%)	37 (21%)	31 (17.6%)	129 (73.3%)	32 (18.2%)	15 (8.5%)
Inward	162 (63.8%)	60 (23.6%)	32 (12.6%)	128 (50.4%)	62 (24.4%)	64 (25.2%)
Total	270 (62.8%)	97 (22.6%)	63 (14.7%)	257 (59.8%)	94 (21.9%)	79 (18.4%)

Table 2. Response on Brief Illness Perception Questionnaire (BIPQ)

Illness perception item	*Mean Score (SD)*
Consequences [How much does your illness affect your life?]	4.94 (3.723)
Time line [How long do you think your illness will continue?]	2.92 (2.903)
Personnel control [How much control do you feel you have over your illness?]	2.23 (3.143)
Treatment control [How much do you think your treatments can help your illness?]	1.40 (2.470)
Identity [How much do you experience symptoms from your illness?]	3.96 (3.427)
Concern [How concerned are you about your illness?]	5.12 (4.047)
Understanding [How well do you feel you understand your illness?]	2.65 (3.707)
Emotional response [How much does your illness affect you emotionally?]	4.71 (3.933)
Total BIPQ score	27.44 (14.407)

Discussion

This study shows that nearly one fourth of inward TB patients screened positive for depression. Though prevalence of depression is higher among inward TB patients than the general population of Colombo, it was comparable to the prevalence of depression among internally displaced persons in post-war Jaffna district and among pre dialysis CKD patients [2, 3]. But among TB patients, prevalence of anxiety was lower than internally displaced Jaffna population (32.6%) and depression was lower than patients with MI [5, 8]. A study done in Pakistan using similar scales had shown that 46% depression and 47% anxiety among patients with TB [6]. Our study exclude doubtful cases in HADS-A (22.6%) and HADS-D (21.9%) scales which suggests the true prevalence of depression and anxiety among TB patients may be higher.

According to the illness perception, patients believed that the western medical treatment offered to them was effective, they had control over their illness and the illness was time limited with a cure insight. On the other hand they were concerned about their illness and were affected emotionally. Depression and anxiety associated with a

Table 3. Association of illness perception with patient related factors

		BIPQ marks <30 n (%)	*BIPQ marks >30 n (%)*	*Total*	*p*
Age group	<30 years	54 (61.4%)	34 (38.6%)	88	0.203
	>30 years	184 (53.8%)	158 (46.21%)	342	
Gender	Male	173 (55.3%)	140 (44.7%)	313	0.888
	Female	65 (56%)	51 (44%)	116	
Marital state	Married	162 (54.2%)	137 (45.8%)	299	0.341
	unmarried/widowed/divorced	70 (59.3%)	48 (40.7%)	118	
Education	Ordinary level or below	174 (51.3%)	165 (48.7%)	339	<0.001
	Above ordinary level	59 (75.6%)	19 (24.4%)	97	
Income	<Rs.10,000 per month	84 (53.8%)	72 (46.2%)	156	0.971
	>Rs.10,000 per month	107 (54%)	91 (46%)	198	
Setting	Inward	125 (49.2%)	129 (50.8%)	254	0.002
	Clinic	113 (64.2%)	63 (35.8%)	176	
Patient category	New	210 (58.7%)	148 (41.3%)	358	0.005
	Previously treated	26 (40%)	39 (60%)	65	
Site of TB	Pulmonary	199 (57%)	150 (43%)	349	0.275
	Extra pulmonary	36 (50%)	36 (50%)	72	
Alcohol	Never consumed	117 (58.8%)	82 (41.2%)	199	0.269
	previous/occasional/regular	117 (53.4%)	102 (46.6%)	219	
Smoking	Never consumed	122 (58.4%)	87 (41.6%)	209	0.324
	previous/occasional/regular	112 (53.6%)	97 (46.4%)	209	
Substance abuse	Never	196 (53.8%)	168 (46.2%)	364	0.037
	previous/current	36 (69.2%)	16 (30.8%)	52	
HADS-D score	Less than 11	207 (59%)	144 (41%)	351	0.001
	11 or more	31 (39.2%)	48 (60.8%)	79	
HADS-A score	Less than 11	218 (59.4%)	149 (40.6%)	367	<0.001
	11 or more	20 (31.7%)	43 (68.3%)	63	

threatening view on illness confirms that disease perception will influence the psychological outcome. Identification and treatment of conditions such as anxiety and depression may increase treatment compliance and improve well being of patients with tuberculosis.

This was conducted in a tertiary care centre that receives patients from all the districts of Sri Lanka. Our sample included an adequate total number of patients from different socio economical classes, disease categories and treatment groups related to TB. Therefore our findings can be generalised to TB patients in other parts of Sri Lanka.

This study has few limitations. The cross sectional nature of the study design fails to make causal inference. A proportion of TB patients who were receiving inpatient anti TB therapy were too ill or having hearing and visual impairment to provide informed consent and therefore excluded from the study. Using a self administered questionnaire for data collection among the general population with varying literacy level is another flaw. The Sinhala and Tamil translations of BIPQ have not been validated for the Sri Lankan population and psychiatric morbidity was not confirmed by a psychiatrist using accepted criteria such as ICD 10 or DSM V. However as a preliminary study, this provides data related to an important illness which needs attention of the medical community.

In conclusion, among patients with TB, estimated definite depression was 18.4% and definite anxiety was 14.7%. In-ward patients, lower education group and previously treated patients were significantly depressed and had a threatening view on their illness. Definite depression and definite anxiety were associated with a threatening view on illness perception.

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Conflicts of interests

There are no conflicts of interest.

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