

HEALTH-RELATED QUALITY OF LIFE (HRQOL) BEFORE AND AFTER INITIATION OF DIRECTLY OBSERVED SHORT COURSE CHEMOTHERAPY (DOTS) AMONG TUBERCULOSIS PATIENTS – A DESCRIPTIVE FOLLOW UP STUDY

Community Medicine

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ABSTRACT

Background: Assessment of Health Related Quality of Life (HRQoL) among TB patients will help in-depth understanding of disease on various dimensions of health & to improve their overall health & well-being. With this background, the study was conducted to compare the HR-QoL among tuberculosis patients before initiation and after 6 months of initiation of treatment. **Methods:** A follow-up descriptive study was conducted among all newly detected TB patients registered under TB unit, during November 2021 - April 2022. A total of 150 TB patients were interviewed in OPD during the first visit, out of which 141 completed six months of follow up and remaining 9 succumbed to the illness. HR-QoL was measured using WHO-QoL BREF questionnaire. **Results:** The median scores for all health domains showed that the TB patients had poor HRQoL before initiation of treatment. i.e., general health (38), environmental health (41), psychological health (42), physical health (46) & social health (50). There was a gradual, but significant improvement of Quality of life with respect to all domains after 6 months of initiation of treatment (<0.001). The greatest improvement was observed with general health domain and least with physical health domain of HR-QoL. **Conclusion:** TB has remarkable negative impacts on patient's HRQoL, and DOTS has a significant impact on improvement of HRQoL of TB patients.

KEYWORDS

HR-QOL; TUBERCULOSIS; WHO QoL-BREF; INDIA

INTRODUCTION

Tuberculosis is a chronic communicable bacterial disease caused by *Mycobacterium tuberculosis*; primarily affecting lungs (pulmonary tuberculosis) and can affect all other organs except nails and hairs (extra pulmonary tuberculosis). Despite being curable and having structured treatment regimen, it continues to be one of the most important public health problems worldwide.

As per WHO Global report 2021[1], global incidence of TB for the year 2021 was 5.8 million. Reduced access to TB diagnosis and treatment resulted in an increase in TB deaths. 1.3 million TB deaths among HIV-negative people & 214,000 among HIV-positive people were estimated globally. India is the highest TB burden country accounting for nearly 25% of global burden with approximately 2.8 million cases[2]. The disease apart from causing morbidity also takes a role in the physical, psychological, economic and social wellbeing of a person. The impact of the disease is seen not only with the infected person but also in their family[3].

For comprehensive evaluation of health status, it is essential to consider the overall impact of tuberculosis on health and patient's well-being, which can be assessed by quality of life. WHO defined Health Related Quality of Life (HRQoL)[5] as a representation of biophysical-social orientation towards the concept of health. Measuring a disease's impact on the HR-QoL of the patient is an important component in making policy decisions.

Acceptance and success of National Tuberculosis Elimination Program will improve if effect of the disease on different health domains is taken into account and strategies are adopted to make the program more client-oriented and comprehensive[7]. HRQoL findings of TB patients would help us in-depth understanding the effect of disease on various dimensions of health in order to improve their health and well-being. The impact of Tuberculosis on HR-QoL of patients has largely been overlooked and understudied in India. With this background, the study was conducted to assess and compare the HR-QoL among tuberculosis patients before initiation and after 6 months initiation of treatment.

METHODOLOGY

A follow-up descriptive study was conducted among all the newly detected tuberculosis patients above 18 years registered for daily dose regimen in TB unit, RRMCH, Bengaluru during November 2021 to

April 2022 were considered for the study. Patients from different parts of the southern Bengaluru attend TB unit, RRMCH for management of tuberculosis. Tuberculosis patients co-infected with HIV, MDR-TB Patients & study participants not available after three consecutive visits were excluded from the study. Based on Yamane equation, $n = N/1+Ne^2$ (n – Sample size, N – Known population (30x6=180), e –Margin of error (0.05 for 95% confidence), n = 124. Considering 15% for loss to follow up, sample size ~ 150. A total of 150 TB patients registered under NTEP unit RRMCH during November 2021 to April 2022 were included in the study. convenient sampling method was used.

Ethical approval from Institution Ethical Committee was obtained (RRMCH-IEC/83/2020-21). Informed written consent was obtained and confidentiality was maintained. The study participants were interviewed at OPD during their visit, using the same study tool at two different visits: at initiation of treatment and after a 6-months initiation of treatment. The data collected using the semi-structured questionnaire, including socio-demographic details, past and personal history, details on current TB illness and data concerned with HR-QoL, which followed the standard proforma by WHOQOL-BREF[8]. The WHOQOL-BREF contains a total of 26 questions, including: one item from each of the 24 facets contained in the WHOQOL-100 (4 domains: physical, psychological, social, environmental) and other two items representing general health. HR-QoL was assessed by asking how the patient felt about his/her quality of life and health for past 2 weeks. Responses were rated on a scale from 1 to 5 (i.e., higher scores denote higher quality of life). The data collected and analysed using SPSS (24.0). Descriptive statistics was used to present the data. The Quantitative variables assessed using mean & standard deviation; qualitative variables expressed in frequency and percentage. To compare HR-QoL scores among TB patients at initiation and after 6 months of treatment, Wilcoxon sign rank test was used. P-value < 0.05 was considered as statistically significant.

RESULTS

The mean age of study participants was 44 ± 17 , ranging from 18-80 years of age. Socio-demographic details of study participants are illustrated in (Table 1). Out of 150 study participants, 75 (50%) had normal weight (BMI 18.5 to 22.9) followed by 61 (40.6%) had underweight (BMI <18.5) according to revised consensus guidelines BMI for India. Based on their personal habits, 34 (23%) of study participants were habituated to either tobacco 20 (58.8%) or alcohol

use 10 (29.4%).. Among tobacco users, 20% were current users, using mostly beedi (14.7%) & cigarettes (5.3%). Also, 9.3% were every day smokers. Among alcoholics, all were current users.

Based on the secondary data obtained from TB register card (multiple responses), majority of study participants presented with cough more than 2 weeks 94 (62%) (Table 2). Out of 150 study participants, 69(46%) had co-morbidities, most common was diabetes mellitus (43.5%), followed by lung disease like COPD, asthma, Covid-19 (31.9%), hypertension (18.8%), malnutrition (14.5%) & cancer (5.8%).

According to the site of TB infection, 138 (92%) had pulmonary TB & remaining 12 (8%) had extrapulmonary TB at the time of diagnosis. Among EPTB cases, 5 (3.3%) had cervical Lymphadenitis, 5 (3.3%) had spinal TB and 2 (1.4%) had pleural TB. At end of continuation phase, among pulmonary TB patients, 117 (84%) got cured, 11 (7.9%) cases were loss to follow up, 9 (6.5%) cases had died & 1 (0.7%) patient treatment failure (Figure 1).

Based on the Direct Benefit Transfer received by the TB patients, most of them i.e., 88 (58.6%) not received any amount even after 6 months of initiation of treatment. Only 28 (18.7%) received monthly Rs.500 for more than 3 months & 34 (22.7%) received for less than 3 months, after 6 months of initiation of treatment. Out of 150 study participants, 117 (77%) TB patients got cured & out of 33 remaining, 13 (9%) cases were loss to follow up, 9 (6%) cases died, 1 (0.6%) patient put for treatment failure & 10 (7.4%) extra pulmonary patients were on treatment (Figure 2).

Based on WHO-QoLBREF scores used to assess the HR-QoL among TB patients, the overall median scores were less than or equal to 50 for all health domains showing that the TB patients had poor quality of life before initiation of treatment. Among the health domains, general health had least score (38), followed by environmental (41), psychological (42), physical (46) & social (50). After 6 months of ATT treatment, the overall median scores were above 50 for all health domains, highlighting that quality of life among the TB patients improved after 6 months of initiation of treatment. Among the health domains, physical health(61) had least score & social health, environmental health & general health had highest score (75). Comparison of HR-QoL scores before initiation and after 6 months of initiation of treatment showed a statistically significant improvement in overall mean scores of all domains of HRQoL among TB patients after 6 months of initiation of treatment ($p<0.001$). The greatest improvement was seen with general health domain and least with physical health domain of HR-QoL (Table 3).

Table 1. Distribution Of Study Participants According To Their Socio-demographic Characteristics. (n=150)

CHARACTERISTICS	Frequency	Percentage
AGE (In completed years)	18-25	31
	26-35	21
	36-45	30
	46-55	34
	>55	34
GENDER	MALE	98
	FEMALE	52
MARITAL STATUS	NEVER MARRIED	38
	CURRENTLY MARRIED	112
EDUCATION	ILLITERATE	51
	PRIMARY SCHOOL	45
	MIDDLE SCHOOL	11
	HIGH SCHOOL	28
	DIPLOMA	12
	GRADUATE	3
OCCUPATION	UNEMPLOYED	85
	UNSKILLED	8
	SEMI SKILLED	13
	SKILLED	31
	CLERICAL, SHOP-OWNER, FARMER	13
		8.7
		8.7

SOCIO ECONOMIC STATUS*	UPPER CLASS	3	2
	UPPER MIDDLE CLASS	44	29.3
	MIDDLE CLASS	90	60
	LOWER MIDDLE CLASS	13	8.7
TOTAL		150	100.0

* Modified BG Prasad Socioeconomic scale for 2022

Table 2. Distribution Of Study Participants According To The Symptoms Presented By Them (n=150)

SYMPTOMS PRESENTED	Frequency	Percentage
COUGH MORE THAN 2 WEEKS	94	62.0
FEVER MORE THAN 2 WEEKS	71	47.3
WEIGHT LOSS	27	18.0
HEMOPTYSIS	1	0.7
LYMPHNODE SWELLING	5	3.3
BONE & JOINT PAIN	5	3.3
ANOREXIA	15	10.0
CHEST PAIN	2	1.4

*Multiple responses & Secondary data from TB register card

Table 3. Comparison Of Hrql Score Before Initiation & After 6 Months Initiation Of Treatment Among Study Participants.

Health Domains	Before Initiation Of Treatment	After 6 Months Of Initiation Of Treatment	Difference In Scores	Z-value	P-value*
General Health	38	75	37	-8.958	<0.001
Physical Health	46	61	15	-6.983	<0.001
Psychological Health	42	67	25	-8.101	<0.001
Social Health	50	75	25	-8.541	<0.001
Environmental Health	41	75	34	-9.257	<0.001

*Wilcoxon-Signed Rank test

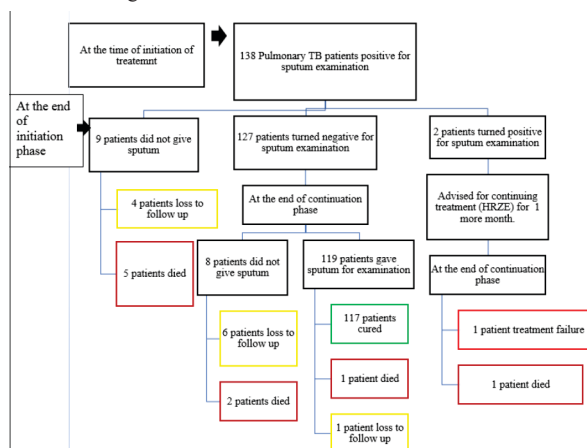


Figure 1. Distribution Of Pulmonary Tb Patients According To Their Sputum Examination Results.

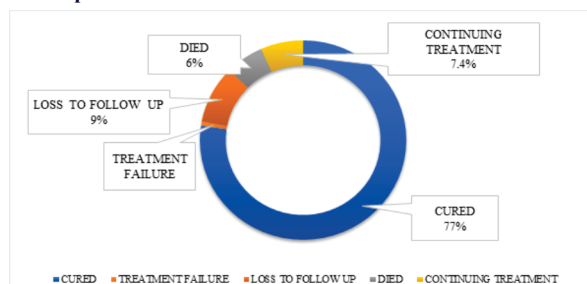


Figure 2. Doughnut Diagram Showing Distribution Of Study Participants, According To Their Treatment Status After 6 Months Initiation Of Treatment.

DISCUSSION

In this study, age wise distribution of tuberculosis disease (Table 1) was in accordance with national distribution i.e., in India tuberculosis is more prevalent in adults affecting most productive age group (15-54 years constitute >80% of TB cases) [3]. Majority of patients were males (Table 1), which was in accordance with the TB India report for 2022 that two-thirds of people who developed TB in previous year were males[3,9]. This may be explained through the greater social mobility among males leading to higher chance of acquiring infection. QOL score is multi-dimensional and is measured as a broad range with the primary focus on the physical, psychological and social performance of individuals. Poor baseline HRQoL status may lead to a greater risk of undesirable outcomes. This study found that all the domains namely general, physical, physiological, environmental health and social relationships of HRQL were poor at the baseline, which was in concordance to study conducted by Aggarwal.A et al[4] and the general health domain was the most affected. These domain scores of our study were found to improve significantly at the treatment completion as shown by other follow up studies like Saurabh et al[10], Atif et al[11], Febi et al[12], Roy et al[13], This implies that HRQoL should be given stress in various tuberculosis programs along with microbiological cure and reduction of mortality.

CONCLUSION

TB has remarkable negative impacts on patient's HRQoL, and DOTS has a significant impact on improvement of HRQoL of TB patients.

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