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A Study to Assess the Quality of Life of Patients with Pulmonary Tuberculosis in Selected Areas Surat District, Gujarat

Ms. Nilam Rathod[1], Dr. Rani Shetty[2]

[1]Ph. D. Scholar, Community Health Nursing, Maniba Bhula Nursing College, Uka Tarsadia University, Bardoli, Surat, Gujarat.
[2]Dean-Para Medical Science, Medical Surgical Nursing, Maniba Bhula Nursing College, Uka Tarsadia University, Bardoli, Surat, Gujarat.

ABSTRACT

Introduction: Tuberculosis (TB), caused by Mycobacterium tuberculosis, is a leading cause of death, with 1.6 million fatalities in 2021, mostly in low- and middle-income countries. It impacts patients' quality of life through reduced functioning, medication side effects, stigma, and lack of support. This study assesses the quality of life of pulmonary TB patients and its association with socio-demographic variables.

Methodology: This cross-sectional study used a quantitative approach to assess the quality of life of 148 pulmonary tuberculosis patients in a selected community area of Bardoli taluka. Participants, aged 18 and above, on DOTS therapy, and fluent in Gujarati, Hindi, or English, were recruited via purposive sampling. Exclusions included patients with deafness or mutism. Data were collected using the modified St. George's Respiratory Questionnaire (covering symptoms, activity, and impact) through interviews and analyzed using range, mean, standard deviation, median, and mean percentage.

Result: The mean percentage for the symptom component was 58.02%, reflecting that, on average, patients experienced symptoms that significantly impacted their quality of life. The activity component mean percentage of 44.64% indicated that, patients have a moderate level of impairment in their activities of daily living due to pulmonary tuberculosis. The mean percentage for the impact component was 37.62%, reflecting a substantial average impact on the patients' overall quality of life. In this study, age and gender were significantly associated with the severity of symptoms in patients with pulmonary tuberculosis, with younger patients and males generally experiencing more severe symptoms

Conclusion: Based on the findings of the study, it was concluded that the quality of life of patients was affected in terms of symptoms, activity and impact due to Tuberculosis.

Keywords: Assess, Pulmonary Tuberculosis, QOL, Patients

Introduction:

Tuberculosis (TB) is a serious disease caused by Mycobacterium tuberculosis, which normally affects the lungs and can spread to different parts of the body, like the kidney, spine, or meninges. TB is viewed as one of the best 10 reasons for death around the world, caused roughly 1.6 million passings in 2021. As of January–September 2024, India has reported 19.88 lakh TB patients, a 4.2% increase from the

same period in 2023[1]. There were 73,211 cases reported in Gujarat from January to June 2024[2]. Before the Covid illness pandemic (Coronavirus), TB was the main cause of death from a solitary irresistible specialist, second to human immunodeficiency infection (HIV)[3]. In 2022, the majority of the assessed passings brought about by TB among HIV-pessimistic individuals happened in the WHO locales of South-East Asia (53%) and Africa (27%)[6]. Mycobacterium tuberculosis is remembered to taint multiple billion people (close to one-fourth of the world's population)[5]. As per a report by the World Wellbeing Association (WHO) in 2022, there are assessed 10.6 million instances of TB revealed overall in 2021 contrasted with 10.1 million (95% UI:9.5-10.7 million) in 2020. The worldwide typical occurrence of TB is 189 cases for each 100,000 individuals in 2021. Over (90.0%) of cases happen in low-and centre pay nations (LMIC)[6]. A bigger number of men than ladies or kids were impacted (56.5%, 32.5%, and 11.0%, respectively)[3]. The Eastern Mediterranean Locale (EMR) positions third with 112 cases for each 100,000 populace each year after Africa and Southeast Asia, which are set in the first and second positions, separately. It is assessed that around 11,000 individuals got TB in Egypt in 2021 with a frequency pace of 10 cases/100,000 people[3]. TB is an airborne illness communicated through the air from the contaminated individual while hacking or talking. Openness to mycobacteria tuberculosis doesn't bring about TB disease in undeniably uncovered population[5]. A great many people who are presented to microbes can stop bacterial replication and mend themselves or foster idle TB contamination (LTBI). A couple of people who are presented to the sickness can ultimately foster dynamic TB, which can be deadly while possibly not enough treated [7,8].

For sure, TB control administrations centre around advancing microbiological fix and involving this boundary as a sign of treatment achievement. Albeit this is basic from a general wellbeing point of view, it doesn't successfully make sense of the physical, mental, and social enduring of patients with TB[6]. TB can cause not just an extraordinary effect on the patient's physical, mental, and public activity yet in addition a striking financial test [7,8]. Patients with TB experienced issues in playing out their exercises of day-to-day living. Past examinations showed that patients with TB experience psychosocial disappointment and social shame because of their illness [9,10,11]

Research concentrates by Araiya and Sartika detailed patient's disappointment with their overall wellbeing and they showed low quality of life (QoL) because of decreased working status, antagonistic impacts of treatment, social shame, and absence of social help. Monetary and pay sources, family backing, and gloom are firmly connected with most QoL spaces in TB patients [12, 13]. QoL is an expansive and complex multi-layered idea that is characterized by the WHO as a "person's view of their situation in life with regards to the way of life and worth frameworks wherein they live and about their objectives, assumptions, principles, and concerns".[14] The St. George's Respiratory Poll for COPD (SGRQ-C) is a particular variant of the SGRQ custom-made to evaluate wellbeing related personal satisfaction in people with respiratory circumstances. It comprises of 14 things covering these spaces, with everything scored on a scale from 0 to 100. Higher scores show a more noteworthy hindrance in wellbeing related nature of life.[15]

A study by Gupta D, Agarwal R, Aggarwal AN was conducted to assess the factors Affecting Tuberculosis Patients' Quality of Life in Surabaya, Indonesia among 157 patients by using RAND-36 survey questionnaire. The study found that age, level of education, and comorbidity affect quality of life in several domains. However, mental distress affects quality of life in all domains[16]. A case control study was conducted among 268 patients at Gulabdevi chest hospital Lahore with the aim to assess the QOL of Patients with Tuberculosis. Study has revealed that TB has a large impact on affected individuals' QoL

through issues related to its diagnosis, treatment, social support and functioning, and health behaviour[17].

Methodology

Study Approach and Design

This research utilized a quantitative approach with a cross-sectional design to evaluate the quality of life in patients with pulmonary tuberculosis (TB). The primary objective was to assess how pulmonary TB affects patients' symptoms, daily activities, and overall well-being at a specific point in time.

Setting: The study was conducted in villages of Bardoli Block of Surat district, Gujarat.

Population: Community people of Bardoli block.

Sample and Sampling Technique

The study included a sample of 148 patients who were receiving directly observed therapy (DOT) for pulmonary tuberculosis. Participants were selected using a non-probability purposive sampling technique.

- **Eligibility Criteria:**
  - Adults aged 18 years or older.
  - Patients willing to participate in the study and available during data collection.
  - Patients fluent in Gujarati, Hindi, or English.
  - Exclusion of patients with deafness or muteness.

Tools and techniques:

- **Tools:**

1. **Socio-Demographic Information:** This section comprised 12 questions designed to gather detailed information about the patients' background, including their age, gender, marital status, education level, occupation, monthly income, and other relevant socio-demographic factors.
2. **St. George's Modified Respiratory Questionnaire:** This section included 13 questions specifically targeting the impact of pulmonary tuberculosis on the patients' quality of life. The SGRQ is a validated and reliable tool for evaluating the impact of respiratory diseases on health-related quality of life. The Cronbach's alpha coefficients for the SGRQ subscales typically range from 0.70 to 0.90, reflecting the tool's high reliability. The questionnaire measured three key areas:

  - **Symptoms:** The frequency and severity of TB-related symptoms experienced by the patients.
  - **Activity:** The degree to which TB symptoms interfere with the patients' ability to perform daily activities.
  - **Impact:** The overall effect of the disease on the patients' general quality of life.

- **Technique:** Interview technique was used to collect data.

Data Collection

Data collection was conducted through structured face-to-face interviews, which took place at the patients' residences. The interviews were scheduled from May 28, 2024, to July 3, 2024, and each interview lasted approximately 15-20 minutes.

Data Analysis

The collected data were analysed using both statistical and inferential methods. Descriptive statistics we-

re used to summarize the patients' Socio demographic data. Data analysis involved calculating statistical measures including range, mean, standard deviation, median, and mean percentage to evaluate the quality of life of patients with pulmonary tuberculosis. These statistical methods provided a comprehensive overview of the data, helping to assess the severity of symptoms, their impact on daily activities, and overall quality of life. χ^2 test was used to find the association of symptoms, activity and impact component of quality-of-life score with selected socio-demographic variables among patients with Pulmonary Tuberculosis.

RESULT

Sociodemographic variables of sample studied were, the largest age group was 30 years or younger comprised 29.7%. Gender distribution showed that males constitute the majority, making up 56.1% of the sample and Females account for 43.9%. A significant majority of patients are married (77.0%). Unmarried individuals make up 17.6%, and widowers/widows represent 5.4%. The majority of patients identify as Hindu (88.5%) and Muslims constituted 10.1% of the sample. Educational background varied significantly among the patients. The majority have completed primary education (61.5%). Patients with no formal education account for 15.5%, while those with higher secondary education make up 18.9%. Occupational distribution showed that the largest group of patients were labourers (42.6%), followed by those who were self-employed (27.7%). Monthly income distribution indicated that the majority of patients earn between Rs. 5001 and 10,000 (42.6%). Dietary habits showed that most patients followed a mixed diet (72.3%), whereas 27.7% adhere to a vegetarian diet. Lifestyle habits showed, 16.9% of patients used tobacco, 10.8% smoked, and 7.4% consumed alcohol.

Medical data of the sample studied were, majority have pulmonary tuberculosis (98.6%), with only 1.4% having extra pulmonary tuberculosis. The duration of TB varies, with 24.3% of patients having the disease for less than 1 month, 35.1% for 1 to 3 months, 31.8% for 3.1 to 6 months, and 8.8% for more than 6 months. Most patients were on first-line treatment (93.9%), while a small percentage (6.1%) were on second-line treatment. Compliance with treatment was high, with 89.2% of patients adhering to their prescribed regimen and 10.8% not complying. There were no cases of drug-resistant tuberculosis reported (100%). A small percentage of patients (6.1%) reported having additional comorbid conditions, while 93.9% did not. Most patients (95.3%) did not have a history of taking other medications, while 4.7% did.

Table 1: Range, mean, standard deviation, median and mean percentage of quality-of-life score of patients with Pulmonary Tuberculosis

N= 148

Component	Range	Mean	Standard deviation	Median	Mean percentage
Symptom	6.98-131.08	58.02	26.29	58.77	58.02
Activity	0-100	44.64	29.95	55.87	44.64
Impact	0-94.31	37.62	25.16	36.08	37.62

Table 1: It is evident from table 1 that, The Symptom component showed a range of scores from 6.98 to 131.08, indicating a wide variability in symptom severity among patients. The mean score for symptoms was 58.02, with a standard deviation of 26.29, suggesting considerable variation around this average. The median score, which was 58.77, is very close to the mean, indicating that the distribution of

symptom scores is fairly symmetric. The mean percentage for the symptom component is also 58.02%, reflecting that, on average, patients experienced symptoms that significantly impact their quality of life.

For the Activity component, scores ranged from 0 to 100. The mean score was 44.64 with a standard deviation of 29.95, highlighting a significant spread in the ability to perform daily activities among patients. The median score was 55.87, which was higher than the mean, suggesting that while many patients have lower activity levels, there were also a number of patients with higher activity levels. The mean percentage of 44.64% indicates that, on average, patients have a moderate level of impairment in their activities of daily living due to pulmonary tuberculosis.

The Impact component scores ranged from 0 to 94.31. The mean score here was 37.62 with a standard deviation of 25.16, pointing to a range of impacts on patients' lives, though this component tends to be less variable than the activity scores. The median score was 36.08, close to the mean, showing a relatively balanced distribution. The mean percentage for the impact component was 37.62%, reflecting a substantial average impact on the patients' overall quality of life.

Association of symptom component and the quality-of-life with socio-demographic variables: Age (χ^2=11.17, P=0.025), gender (χ^2=4.64, P=0.031), monthly income (χ^2=16.95, P=0.001) and diet (χ^2=6.97, P=0.008) showed significant association with symptom component of QOL. The findings signified that younger and male patient had better QOL as compared with others. Religion, marital status, educational qualification, monthly income, diet and occupation did not have any significance.

Association of activity component and quality-of-life with socio-demographic variables: Age (χ^2=18.57, P=0.001), gender (χ^2=6.83, P=0.009), monthly income (χ^2=16.95, P=0.001) and diet (χ^2=6.97, P=0.008) showed significant association with activity component of QOL. The findings signified that younger patients, male patients, patients with lower income and those on mixed diet had better QOL as compared with others. Religion, marital status and occupation did not have any significance.

Association of impact component of QOL with selected socio-demographic variables: In this study, gender (χ^2=4.636, p=0.031), occupation (χ^2=11.49, p=0.022), monthly income (χ^2=21.42, p=0.000), and diet (χ^2=12.18, p=0.000) was significantly associated with the impact component of QOL. The findings signified that male, self-employed and labourer, patients with lower income and those who were on mixed diet were impacted with QOL as compared to others. Age, marital status, religion and education did not have significant association with QOL.

DISCUSSION:

The findings underscore the significant burden of pulmonary tuberculosis on patients' quality of life, particularly concerning symptoms and activity limitations. The moderate to high levels of symptom severity and activity impairment reflect the challenges faced by individuals with TB in managing both their health and daily lives. This study is supported by study done by Gupta D, Agarwal R, Aggarwal AN conducted to assess the factors Affecting Tuberculosis Patients' Quality of Life in Surabaya, Indonesia among 157 patients by using RAND-36 survey questionnaire. The study found that age, level of education, and comorbidity affect quality of life in several domains. However, mental distress affects quality of life in all domains[14].

LIMITATIONS

- This study was limited to selected areas within Surat district, Gujarat. Therefore, the findings may not be generalizable to patients with Pulmonary Tuberculosis in other regions of Gujarat or in differ

ent states or countries.

- The study included a specific sample size of 148 patients. Participants were selected from certain health facilities or communities within Surat district, which may not represent the entire population of TB patients in the district.
- Study Population: The focus was exclusively on patients diagnosed with Pulmonary Tuberculosis. Individuals with other forms of tuberculosis (e.g., extrapulmonary TB) or other respiratory diseases were excluded from the study.
- The study assessed the quality of life at a single point in time or over a limited duration. Long-term impacts of TB or changes in quality of life over time were not addressed.
- Quality of Life Measures: The study utilized specific quality of life measures related to activity and impact components. Other aspects of quality of life, such as emotional well-being or social relationships, may not be comprehensively evaluated.

RECOMMENDATIONS

- The study can be repeated on the large-scale sample to validate and for better generalization of the findings.
- Interventional study can be conducted to improve quality of life of TB patients.
- Comparative study can be done in urban, rural and tribal areas to assess quality of life of TB patients.
- The study can be done including caregivers along with TB patients.

CONCLUSION

Based on the findings of the study, it was concluded that the quality of life of patients was affected in terms of symptoms, activity and impact due to Tuberculosis.

ETHICAL CONSIDERATION:

The permission was obtained from the CDHO, Surat, Gujarat with ref No. 1577. Study was approved by Institute ethics Committee with ref No. MBNC/029/2024-25. The Researcher had taken consent from the patients with Tuberculosis meeting the inclusion criteria.

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