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ORIGINAL RESEARCH

To Assess The Quality Of Life And Coping Strategies Of Pulmonary Tuberculosis Patient In Gandhi Nagar Bhopal (M.P.)

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ABSTRACT

Aim: To assess the quality of life and coping strategies of pulmonary tuberculosis patient in Gandhi Nagar Bhopal (M.P.).

Material and methods: A sample size of 50 patients was chosen from the Provincial TB Clinic for the purpose of this investigation. In order to establish a control group, a sample of 50 individuals was randomly selected and thereafter allocated to the participants who joined the Blood Transfusion Organisation clinic in sequential order. The quality of life assessments were given to the participants by investigators who had received specialised training. A questionnaire consisting of two parts was developed, with the first portion gathering demographic information and the second half including the Quality of Life (QOL) questionnaire. The second component was a 36-item abbreviated version of the SF-36 questionnaire, which was used to assess health-related quality of life. Previous research has examined the validity and reliability of the SF-36 questionnaire.

Results: It was observed that 36 patients (72%) presented with pulmonary tuberculosis, whereas 14 patients (28%) had extra-pulmonary tuberculosis. Among the case group, there was a total of 31 individuals who tested positive for smear positive pulmonary tuberculosis, accounting for 62% of the group. The average age of the patients was 54.85±4.52 years, whereas the controls had an average age of 42.85±3.85 years. The average score of the quality of life (QOL) was 55.25±3.69 for the case group and 70.89±6.87 for the control group. The energy category of the SF-36 questionnaire had the lowest score among the two groups, with values of 43.84± 5.74 and 62.87±5.82 for the patients and controls, respectively. In general, the quality of life (QOL) score was recorded as 60.12± 4.74 at 3 months after anti-tuberculosis therapy, and as 64.23±4.88 at 9 months following the same treatment.

Conclusion: The research findings revealed that tuberculosis patients exhibited low quality of life scores, despite the implementation of novel therapeutic and surveillance approaches. Consequently, it is deduced that greater emphasis should be placed on enhancing QOL to enhance treatment response, reduce drug failures, and promote better mental and physical well-being in individuals affected by TB.

Keywords: Quality of Life, Tuberculosis, coping strategies

Introduction

Tuberculosis (TB) is a longstanding infectious disease that has had a significant impact on human populations throughout history. Despite advancements in treatment tactics and surveillance, it continues to be a leading cause of mortality worldwide. According to estimates, about one third of the global population is affected by Mycobacterium tuberculosis infection [1]. According to available data, in the year 2010, there was a recorded incidence of 8.8 million newly diagnosed cases and 1.1 million fatalities attributed to tuberculosis (TB) in both developing and industrialised nations [2]. The Global Plan to Stop Tuberculosis (TB) by 2015 and 2050, created by the World Health Organisation (WHO), aims to achieve a 50% decrease in both the prevalence and death rates of TB by 2015. Furthermore, the plan sets the long-term objective of attaining a rate of fewer than 1 case per 1 million people annually by the year 2050. This suggests that there is a need for improved effectiveness in the control of tuberculosis compared to its existing state [3]. In addition to the burden of sickness and death, there are other factors that contribute to the challenges faced in treating certain conditions. These include the prolonged length of therapy and the need of combining several medications, which may result in significant alterations to an individual's overall life structure. Nevertheless, despite the predominant emphasis on mortality and incidence rate, there has been a lack of thorough consideration given to the changes in morbidity and health status indicators [4]. There is a growing inclination to assess and enhance the quality of life for those afflicted with chronic illnesses. Consequently, enhancing the everyday functioning and quality of life (QOL) in these persons has become a therapeutic goal. Furthermore, healthcare practitioners have come to recognise that only focusing on the physical components of an illness is insufficient. It is important to advocate for the

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implementation of the most optimal and efficacious therapies that aid patients in attaining a normal quality of life, with quality of life (QOL) being seen as one of the key determinants. There are several approaches for assessing health status and evaluating illness treatment. The evaluation of patient-reported outcomes is a good approach for this objective, and quality of life (QOL) measures have been created to evaluate patients' outcomes in both clinical research and practise [5]. The concept of Quality of Life (QOL) refers to an individual's subjective evaluation of their physical and mental well-being within the context of their everyday existence. This encompasses several aspects of functioning, including physical, psychological, economic, spiritual, and social dimensions [6]. This phenomenon has the capacity to demonstrate the influence of illnesses and associated morbidities on individuals' everyday activities and overall functioning. The assessment of this metric is particularly crucial for individuals with a chronic illness, as their mental and social welfare, in addition to their physical well-being, are impacted by the condition and its associated prolonged therapy[4]. Hence, it is important to conduct an investigation into the quality of life (QOL) of tuberculosis (TB) patients in order to identify suitable measures for enhancing their health status and overall QOL [7]. The current approach to TB management is centred on the objectives of reducing death rates and minimising morbidity. The use of quality of life monitoring has been identified as the most effective approach in attaining this objective [8]. The assessment of health status across several dimensions has garnered significant attention in the field of epidemiological research [9]. The 36-Item Short Form Health Survey (SF-36) has demonstrated effectiveness in various clinical applications, health research policy evaluations, and population-based studies. Unlike measures that are specific to certain age groups, communities, or diseases, the SF-36 assesses both physical and mental health dimensions of an individual's well-being [10,11]. The present questionnaire also takes into account the health status associated with quality of life (QOL), including several dimensions such as physical, mental, and social aspects. It has been recognised as a valuable instrument for documenting the results of therapeutic interventions and care-related measures [12]. Evaluating quality of life (QOL) is a commendable approach that has significance in gauging the extent and consequences of one's health condition [10]. The survey questionnaire has shown its efficacy in assessing treatment response and physiological functioning of the respiratory tract in individuals with pulmonary illnesses [13]. Given that the optimisation of quality of life (QOL) constitutes a primary objective in TB treatment and care, it is essential for healthcare practitioners and researchers to acquire further insights about QOL, its associated determinants, and strategies for its enhancement.

Material and methods

A sample size of 50 patients was chosen from the Provincial TB Clinic for the purpose of this investigation. In order to establish a control group, a sample of 50 individuals was randomly selected and thereafter allocated to the participants who joined the Blood Transfusion Organisation clinic in sequential order. The quality of life assessments were given to the participants by investigators who had received specialised training. The tuberculosis (TB) patients underwent the administration of these assessments at the initial assessment, two-month mark, and six-month mark at their routine scheduled appointments. The data used in this investigation were obtained via in-person interviews conducted by interviewers who had received appropriate training. In order to complete the study's quality of life assessments, all participants had face-to-face interviews. Prior to the commencement of the study, all participants were duly informed of the voluntary nature of their involvement, the assurance of confidentiality, and the exclusive use of their data for research purposes. Furthermore, the preservation of participants' data confidentially was achieved by the absence of any personally identifiable information. A questionnaire consisting of two parts was developed, with the first portion gathering demographic information and the second half including the Quality of Life (QOL) questionnaire. In the initial phase of the study, all tuberculosis (TB) patients provided responses to supplementary inquiries regarding their condition. This portion encompassed the clinical classification of TB, encompassing pulmonary cases (both smear positive and smear negative) as well as instances of extra-pulmonary tuberculosis, as defined by the World Health Organisation (WHO). Additionally, patients were asked to report on the progression of their treatment at three specific time points: baseline, two months into treatment, and upon completion of the treatment regimen. The second component was a 36-item abbreviated version of the SF-36 questionnaire, which was used to assess health-related quality of life. Previous research has examined the validity and reliability of the SF-36 questionnaire [3]. The SF-36 questionnaire has undergone prior translation, validation, and standardisation processes specifically tailored for the Indian population. The present questionnaire has eight distinct areas that evaluate several aspects of health, including physical functioning, physical role, body pain, general health, energy, social functioning, and the emotional domain and mental health. Furthermore, it is possible to aggregate certain areas in order to establish comprehensive measurements of quality of life (QOL). Higher scores on the SF-36 categories and summary scores are indicative of improved health.

Statistical analyses

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The statistical analyses were conducted using SPSS, version 25.0, developed by SPSS in Chicago, Illinois. The variables were compared using Chi-square and one-way ANOVA testing. In addition, the Pearson correlation coefficient was used to ascertain the degree of link between continuous quantitative factors. Additionally, the Spearman correlation coefficient was utilised to evaluate the relationship between quality of life (QOL) ratings and ordinal variables. A repeated measures analysis was conducted to compare the quality of life (QOL) of tuberculosis (TB) patients at various time periods. Ultimately, the use of linear regression analysis was employed to account for the influence of certain confounding factors. All hypotheses tests conducted in this study were two-tailed, with a significance level of $p<0.05$ indicating statistical significance. The data are given in the form of mean ± standard deviation (SD) for quantitative variables, whereas frequency and percentages are used for qualitative variables.

Results

Table: 1 presents the demographic characteristics data for the two groups. Out of the whole cohort of 100 participants included in the research, 52% were identified as male while 48% were identified as female. With regards to the domicile of the individuals, it was seen that 54% of the patients were situated in urban localities, while the remaining 46% were found to be residing in rural regions. In relation to the diagnosis of TB, it was found that 60% of the people had symptoms of pulmonary tuberculosis, while the other 40% presented with extra-pulmonary tuberculosis. Furthermore, it was found that 92% of the patients in the study were identified as new cases of TB, while the other 8% were categorised as recurring instances. Among the individuals in the case group, it was observed that 36 patients (72%) presented with pulmonary tuberculosis, whereas 14 patients (28%) had extra-pulmonary tuberculosis. Among the case group, there was a total of 31 individuals who tested positive for smear positive pulmonary tuberculosis, accounting for 62% of the group. The average age of the patients was 54.85±4.52 years, whereas the controls had an average age of 42.85±3.85 years.

Table :1 Basic profile of the Participants

	TB patients =50		**Control =50**		P value
Gender	Number	Percentage	Number	Percentage	0.23
Male	22	44	30	60	
Female	28	56	20	40	
Age					0.41
below 30	6	12	5	10	
30-40	11	22	15	30	
40-50	23	46	20	40	
50-60	6	12	7	14	
Above 60	4	8	3	6	
Mean	54.85±4.52		42.85±3.85		
Area					0.15
Rural	18	36	28		
Urban	32	64	22		
Marital status					0.17
Single	8	16	18	36	
Married	42	84	32	64	
Education level					0.22
Illiterate	25	50	6	12	
up to 8^{th}	10	20	7	14	
up to 12^{th}	12	24	12	24	
Graduate	3	6	25	50	
Occupation					0.41
Unemployed	11	22	3	6	
Private job	24	48	31	62	
Businessman	11	22	10	20	
Government job	4	8	6	12	

The study included a comparison of the baseline quality of life (QOL) between the patients and controls using the SF-36 questionnaire. Table 2 presents a comparison of the mean values for SF-36 categories and the overall

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quality of life (QOL) score between the patients and the control group at baseline. The average score of the quality of life (QOL) was 55.25±3.69 for the case group and 70.89±6.87 for the control group. In general, the quality of life (QOL) among individuals with tuberculosis (TB) at the beginning of therapy was shown to be considerably poorer compared to that of healthy participants ($p<0.001$). Even after controlling for variables such as age, sex, marriage, education, and type of illness using linear regression analysis ($p<0.001$), the same difference was seen. The energy category of the SF-36 questionnaire had the lowest score among the two groups, with values of 43.84± 5.74 and 62.87±5.82 for the patients and controls, respectively. Statistically significant differences were seen between the two groups across all eight categories of SF-36 scores, with a p-value of less than 0.05.

Table :2 Comparison of eight SF-36 category scores between the TB patients and the control group

SF-36 category	TB patients =50		Control =50		P value
	Mean	Sd	Mean	Sd	
Health perceptions	53.06	4.28	69.85	5.85	0.001
Mental health	53.33	4.09	67.05	5.58	0.001
Physical functioning	66.25	4.85	79.04	5.07	0.001
Role functioning	46.11	3.98	71.28	4.25	0.002
Bodily pain	59.02	5.85	74.25	5.31	0.001
Social functioning	61.25	4.28	75.85	5.36	0.001
General health	50.17	6.07	69.22	5.33	0.002
Energy	43.84	5.74	61.25	4.36	0.001
Total score(QOL)	55.25	3.69	70.89	6.87	0.001

Table :3 QOL After 3 and 9 months

QOL	Tb patients		P value
After 3 months	60.12	4.74	0.11
After 9 months	64.23	4.88	

The assessment of the quality of life (QOL) among tuberculosis (TB) patients was conducted at two time points: three months and nine months after treatment with four-drug TB regimens. In general, the quality of life (QOL) score was recorded as 60.12± 4.74 at 3 months after anti-tuberculosis therapy, and as 64.23±4.88 at 9 months following the same treatment. The "Repeated Measures" test was used to analyse inter-group data collected at various time periods (0, 3, and 9 months after the initiation of therapy). The results of this study demonstrate a statistically significant improvement in the quality of life (QOL) of tuberculosis (TB) patients two months after receiving therapy ($p=0.02$). Nevertheless, a lack of statistical significance was seen when comparing the outcomes of patients who had 3 months of tuberculosis therapy to those who received 9 months of treatment ($p=0.11$).

Discussion

The present investigation was undertaken on a sample of 50 persons diagnosed with tuberculosis (TB). The assessment of their quality of life (QOL) was performed using the SF-36 questionnaire. A comparative analysis was then done, contrasting the QOL scores of the TB patients with those of 50 healthy individuals residing in the same geographical region. The research findings revealed a statistically significant decrease in the quality of life among tuberculosis patients across all eight assessed categories, in comparison to the control group. In contrast to the findings of Khoohi et al. where the average quality of life for the majority of individuals in certain countries was reported as 74.26 [14], the present study reveals that tuberculosis patients undergoing DOTS in Chaharmahal and Bakhtiari Province exhibited significantly lower mean QOL scores compared to the established normal range. Additionally, it was observed that individuals in the advanced stage of therapy had a comparatively poorer average quality of life (QOL) score. This trend was also seen among male patients, those residing in rural regions, and those diagnosed with pulmonary TB.A research was conducted by Duyan et al. (2003-2004) on a cohort of 120 tuberculosis (TB) patients who were admitted to the Atatürk Lung Diseases and Chest Surgery Hospital in Turkey. The researchers discovered that the diagnosis of tuberculosis (TB) was linked to alterations in family dynamics and the social context, resulting in adverse effects on the patients' quality of life [14]. A research done in Turkey by Unalan et al. examined a sample of 196 active tuberculosis (TB) patients

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and 108 inactive TB patients, who were then compared with a control group consisting of 196 individuals. The findings of the research indicated that there was a greater prevalence of depression among individuals diagnosed with tuberculosis compared to the control group. Furthermore, the study revealed a negative association between the degree of depression and the quality of life as measured by the QOL scale [15].This research aimed to assess the quality of life (QOL) among individuals diagnosed with tuberculosis (TB) at three distinct time points: the commencement of treatment, three months into treatment, and nine months after the introduction of anti-tuberculosis therapy. The findings of the study demonstrated a statistically significant increase in quality of life (QOL) after a period of three months. This suggests that the four-drug tuberculosis (TB) regimens had a favourable effect on enhancing the QOL of the patients included in the study. Nevertheless, there was a lack of difference seen between the second and third stages of the quality of life (QOL) assessments. Chamal et al. (7) performed a research in China that examined 102 tuberculosis (TB) patients and evaluated their quality of life (QOL) before to treatment, after the first phase, and after the completion of therapy. These results were then compared with a control group consisting of 103 individuals. The researchers observed that the quality of life (QOL) score among tuberculosis (TB) patients was initially poor before to treatment initiation, and subsequently improved during the course of therapy, consistent with the findings of the present study. Despite the observed improvement in quality of life (QOL) over the course of anti-tuberculosis (TB) therapy, the final QOL score after six months still exhibited a lower level compared to that of the general population. A comprehensive evaluation conducted in 2009 revealed that individuals diagnosed with tuberculosis (TB) had a worse quality of life (QOL) compared to the general population, even after completion of treatment [5].The potential cause for the persistently bad quality of life (QOL) during a nine-month course of anti-tuberculosis therapy might be associated with the psychological consequences of the illness. These consequences may arise from the need of isolating oneself from the society and family due to the infectious nature of TB infection. Consequently, TB patients may have depressive symptoms as a result. A research investigation was conducted in Pakistan, using a sample size of 60 individuals diagnosed with tuberculosis (TB), revealing that 80% of the participants exhibited symptoms of depression. The study's findings indicated that the elevated prevalence of depression among individuals with tuberculosis (TB) can be attributed to several factors, including lower socioeconomic status, an extended duration of treatment, the stigmatisation associated with the disease, as well as the fear and apprehension surrounding the potential transmission of airborne bacteria. These factors collectively contribute to a diminished ability to resist the infection and respond to treatment, ultimately result. However, it is important to note that a 9-month course of therapy using potentially harmful substances might result in adverse consequences associated to the treatment of tuberculosis. For instance, the use of isoniazid may lead to liver failure, while rifampicin can cause leukopenia. These side effects can significantly impact the quality of life of those undergoing treatment. In a study conducted by Wang et al., it was shown that individuals with pulmonary tuberculosis had a decline in their quality of life (QOL) in comparison to the general population. Several criteria were found to be connected with this decline, including the size of the infection focus, white blood cell counts, the presence of comorbidities, high ALT levels, and the duration of the illness [17]. Hence, enhancing the quality of life (QOL) for individuals with tuberculosis (TB) may be accomplished via comprehensive knowledge on the illness, its mode of transmission, and the state of transmission. Additionally, regular laboratory assessments and repeated exams during the treatment process are crucial for taking suitable measures in response to drug-related problems.

Conclusion

The research findings revealed that tuberculosis patients exhibited low quality of life scores, despite the implementation of novel therapeutic and surveillance approaches. Consequently, it is deduced that greater emphasis should be placed on enhancing QOL to enhance treatment response, reduce drug failures, and promote better mental and physical well-being in individuals affected by TB.

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