Assessment of Quality of Life Through Patient Counselling and Medication Adherence among Tubercular Patients in Tertiary Care Hospitals

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ABSTRACT:

Mycobacterium tuberculosis causes TB, and medication adherence is defined as "the extent to which a person follows the agreed-upon advice of a medical practitioner". Quality of life (QOL) is a patient's assessment of their daily life, while health-related QOL evaluates the impact of a disease or disorder on their health. The study aimed to evaluate patients' QOL while taking anti-tubercular drugs, identify factors contributing to poor medication adherence, and determine the effectiveness of counseling based on age, literate status, medication duration, and comorbidities. A prospective observational study was carried out in tuberculosis department at different healthcare centers. 240 TB patients were studied. Using a pre-designed proforma and a Microsoft Excel worksheet, data was collected and analyzed using Statistical Package for the Social Sciences (SPSS). Patient counselling is a major factor in tuberculosis patients' adherence to anti-tubercular treatment. 178 (82%) tuberculosis patients adhered to counselling, whereas 40 (18%) did not. In the age group of >70 (32.5%) and 70-80 (23%), non-adherence is higher. Males 23 (57%) adhere more than females 17 (43%).The characteristics of study population revealed that male patients (41-60) with hypertension were more likely to be non-adherent. Maximum 30% of non-adherence was due to patient feeling unneeded and 25% to forgetfulness. Age, gender, education, and case type were identified. Future researches are needed to confirm the reasons.

1. INTRODUCTION:

Mycobacterium tuberculosis is the pathogen that's responsible for spreading tuberculosis, an infectious disease. Older adults are known to be more susceptible to developing TB. Although commonly recognized in high-income nations, this is rarely taken into account in situations in underdeveloped nations. According to the WHO, medication adherence is defined as "the degree to which the individual's conduct conforms the approved instructions from a medical professional [1,2]." The process of health professionals and others imparting information to patients and caregivers in the hopes that it may change the patients' health-related behaviors or enhance their overall health status is referred to as patient education [3]. The quality of life, often known as QOL, refers to how an individual perceives the caliber of their day-to-day life; in other words, it is an evaluation of how well they are doing or how poorly they are doing. This encompasses the entirety of an individual's existence, including their mental, social, and physical well-being. In the field of medicine, the term " health-related quality of life is an evaluation of the degree to which a sickness, disability, or ailment may impact an individual's well-

being over the course of their lifetime. The main aim of this study is to monitor patients who are on Anti-Tubercular treatment and evaluation of quality of life through patient counselling by increasing medication adherence.

Various tactics have been developed in an effort to improve tuberculosis treatment adherence. Several of these methods are directed at patients (e.g., education and counselling, financial incentives and reimbursements, peer support, and directly observed therapy). The techniques used for patient education encompass a vast array of methods, such as the giving of awareness via mass media, the provision of written texts, audio-visual materials, and computer-based patient awareness programs by healthcare professionals or organizations, and individualized counselling methods [3].

Many methods have been utilized to increase adherence.

• **Patient education and counselling:** Patient education and counselling can be defined as the sharing of awareness or the provision of individual or group counselling regarding the necessity of completing treatment for tuberculosis.

• **Incentives and reimbursements:** Cash or money to pay costs connected with obtaining services or to make receiving services more appealing.

• **Peer assistance:** Those who share the same social circle may encourage someone who has tuberculosis to return to the medical facility or go with them directly.

• **Directly observed therapy (DOT):** Patients are required to have a designated agent (such as a health professional, a community volunteer, or a member of the patient's own family) watch over while they take their anti-tubercular medications.

Patients' lack of health literacy and awareness of the advantages of therapy and the hazards of abruptly discontinuing therapy, as well as the incidence of adverse effects and associated expenditures, are obstacles to adherence. In today's world, research on the socioeconomic and variables which lead to non-adherence to tuberculosis (TB) treatment is typically conducted on adults but very rarely in children.

It is possible that failure to adhere to anti-tubercular medication may lead to the development of multidrug-resistant tuberculosis (MDR-TB), extended infectivity, and inappropriate treatment results for tuberculosis [4,5]. A variety of factors have been proven to be significantly linked with non-adherence to an anti-TB medication. These factors include: lack of awareness of the benefits of completing a treatment course, starting to feel better, and forgetting, running out of medication at home, distance to the hospital, human immunodeficiency virus (HIV) seropositivity, alcoholism, herbal medication use, prejudice, and masculine gender. Non-adherence to anti-tuberculosis drug therapy was also substantially linked with pharmacological adverse effects, being in the maintenance phases of chemotherapy, and tablet burden, not maintaining proper contact with health practitioners, and not receiving adequate family support [5].

During the course of the past several years, there has been a marked increase in the emphasis placed on active case finding among populations that are thought to be at a greater risk of contracting tuberculosis. These populations include HIV-positive patients, diabetes patients, and children [2].

2. DATA AND METHOD:

2.1 Study design and tools

In the tuberculosis departments of a variety of healthcare facilities, prospective observational research was carried out. The research was conducted over the course of a six-month duration, beginning in August and ending in January. The study utilised a variety of questionnaires, including WHOQOL BREF, MARS, and ARMS [6]. Patients of all age groups, new and old cases with comorbidities like human immunodeficiency virus (HIV), diabetes mellitus (DM), and hypertension (HTN), pregnant women, and nursing mothers, as well as patients in continuous phase of treatment [7-9]

The study will contribute to an overall review of patients' understanding regarding diseases and the medications used to treat illnesses. The improvement in one's quality of life will be observed as a result of both improved medication adherence and increased adherence achieved through counselling.

2.2 Sample size

The observational study was carried out in 218 individuals diagnosed with tuberculosis in different tubercular departments.

2.3 Sampling and Data Collection

Patients of all age receiving anti-tubercular medication, including new cases as well as old cases, individuals with additional respiratory tract infections (RTI), high blood pressure, diabetes, HIV infection, and other co-morbid conditions Participants comprised people with poor outcomes who had visited the hospital while on an anti-tubercular medication regimen within the last five months, as well as expecting mothers and nursing mothers [10]. Individuals with multi drug resistant tuberculosis (MDR-TB), patients with TB who also had a TB diagnosis, and patients with mental retardation were excluded from the study. Patients were informed about the study using a format designed specifically for patient information while the data was still being collected. The patient's demographic characteristics, like age, gender, comorbidities, as well as educational levels, were entered into the data entry form that was specifically created for this purpose [11].

2.4 Statistical Analysis

Using a Microsoft Excel worksheet, data were entered and controlled on a predesigned proforma (Microsoft Corp, Redmond, WA). All responses were examined for potential errors [12]. Variables are calculated using mean and standard deviation. The data was assessed and analyzed in the form of percentages using IBM's SPSS software [11,13]

2.5 Ethical approval and Consent to participate

The research was carried out in conformity with the Declaration of Helsinki and with the necessary authorization of the Institutional Review Board with the Reference number (Regd No: ECR/227/Inst/AP/2022/RR-16). Each patient signed an informed written consent form and received information about the trial in the form of patient information [12].

3. RESULTS

3.1 Demographics

Men (53%) are more likely than females (43%), overall, to develop tuberculosis. This may be due to the fact that our workplaces cater more to men, are unhealthy, and are stressful. The age group over 70 has the highest percentage of non-adherence (32.5%). After counselling, we evaluated each patient's level of adherence, and we discovered that males are less likely to use counselling assistance than females are- 23% of men versus 17% of women. When compared to literates, whose non-adherence rate was 37% (N=15), illiterates had a higher rate of 63% (N=25). This is due to the fact that literate people can quickly and easily comprehend the seriousness and benefits of counselling.

Table 1 lists the characteristics of the study population where there were no gender differences that were statistically significant for the factors listed below.

S. No.	Parameter	Male (n=116)	Female (n=102)	p- value
**Table 1: Characteristics of the Study Population (n=218)**				
1	Age (Mean ± SD[1])	49.70±11.64	51.42±11.14	0.2669*
2	Height (Mean ± SD)	153.4±7.75	155.3±7.59	0.4119*
3	Weight (Mean ± SD)	54.71±4.75	54.24±4.58	0.4586*
4	Literacy Background (N%)			
	Literate	55(47)	60(59)	0.0922**
	Illiterate	61(53)	42(41)	
5	Type of Case (N%)			
	New	58(50)	53(52)	0.7726**
	Old	58(50)	49(48)	

[1] SD- Standard deviation

Table 2 and Table 3 illustrate the effect of counselling on QOL before and after. A statistically significant difference was noticed between the raw and transformed scores among all domains obtained before and after counselling (BC and AC).

Table 2: Comparison of Pre & Post counselling effect on quality of life (raw score)						
Domains	**Minimum score**		**Maximum score**		**Mean± SD**		**p- value**
	BC	**AC**	**BC**	**AC**	**BC**	**AC**	
1	10	10	19	35	14.20±2.09	26.74±6.46	<0.0001
2	**7**	10	18	42	12.46±1.75	21.43±5.10	<0.0001
3	4	4	16	34	6.34±1.41	11.47±3.20	<0.0001
4	8	5	29	39	14.92±2.82	30.73±8.34	<0.0001

Domain 1: Physical activity; Domain 2: Psychological; Domain 3: Social relationship; Domain 4: Environment

Table 3: Comparison of Pre & Post counselling effect on quality of life (Transformed score 0-100)						
Domains	**Minimum score**		**Maximum score**		**Mean± SD**		**p- value**
	BC	**AC**	**BC**	**AC**	**BC**	**AC**	
1	13	1	44	100	25.99±7.97	70.68±23.48	<0.0001
2	6	19	50	94	26.80±7.76	63.96±20.45	<0.0001
3	6	6	50	94	27.96±10.55	69.10±22.60	<0.0001
4	6	13	69	100	23.41±9.19	72.78±25.90	<0.0001

Domain 1: Physical activity; Domain 2: Psychological; Domain 3: Social relationship; Domain 4: Environment

4. DISCUSSION

A prospective observational study lasting for a period of six months was carried out in patients of all age groups, including new and old cases, who were receiving an anti-tuberculous treatment regimen.

Before counselling the Domain 1 is calculated as 25.99% and it is increased to 70.68% after counselling and for Domain 2 the score is 26.80% before counselling and 63.96% after counselling.

Total 178(82%) cases adhered to counselling and 40(18%) cases are non-adhered. Interviews were conducted with a total of 116 male tuberculosis patients (58.0%) and 84 female tuberculosis patients (42.0%); the overall rate of adherence to anti- tubercular medication was 81.9% and 103 males (88.5 %) and 13 female patients (11.6%) were non-adhered. Both studies prove that patient counselling play a major role in TB patients [3].

30%(N=12) feels no need of medication which is the most prominent reason, means majority of people think that drugs are not essential after getting relief from symptoms, may be any side effects can result from long term usage. 25% (N=10) forgetting to take medication regularly due to more work stress, long term usage (or)

forgets the timings and precautions to take medicines which is the second major cause.

Higher rate of non-adherence is found in the age group >70 (32.5%). For this concern the supporting another study also stated that patients with age 70-80 years have low adherence levels.

After counselling we had assessed the adherence levels of all patients, from that we obtained that males 23(57%) are having higher non-adherence levels to counselling aids than females 17(43%). Interviews were conducted with a total of 56 default TB patients out of 569 recorded patients (45 men and 11 females).

Rate of non- adherence is higher in case of illiterates which was 63% (N=25) when compared to literates which was 37% (N=15). Another study showed that 61 % in rural area and 39 % in urban area are having higher rate of non-adherence.

In our non-adherent study population (n=40), HIV patients are more in number 15(36%) [14,16]. HTN 5 (13%), Asthma 3(8%), only DM 2(5%) [8,17], and 6(15%) patients have no recorded comorbidities.

Type of case also can affect the adherence of patient. In our study the total non- adhered old cases are 88%

(N=35) which are more when compared to new cases 12% (N=5).

5. CONCLUSION

The characteristics of the study population revealed that the majority of the patients were males, of age group between 41-60, and they all had one comorbidity, which was hypertension [18]. According to the findings of a study that analysed the relationship between patient counselling and quality of life using the WHOQOL BREF questionnaire, patient counselling is an essential component of efficient TB control. After analysing the reasons for non-adherence, it was determined that the patient feeling that they were not needed accounted for a maximum of 30% of the problem, while forgetfulness accounted for 25%.

Age, gender, educational status, comorbidity, and type of case were identified as demographic variables of non-adherence. Where a male patient over the age of 70 with comorbidities including HIV and illiteracy was found to have a high degree of non-adherence to prescribed treatments. Future researches were needed in a greater number of populations to confirm the causes of non-adherence in tuberculosis patients.

AUTHOR CONTRIBUTIONS

P. Divya Bhargavi: study design, Data curation, methodology, visualization, and writing - original draft. **Siddhartha Lolla:** Formal analysis, methodology, writing – original draft. **Reshma Ajay, Suresh D K:** Data analysis, Data interpretation, analysis, and Data curation. **Emani Sai Sri Jayanthi, Cheppalli Vani:** Data interpretation, formal analysis, and writing – review/editing.

DECLARATION OF INTEREST: None

CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest in this study. The authors are responsible for the content and writing of the papers.

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