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ROLE OF CLINICAL PHARMACIST IN TB MEDICAL ADHERENCE AND QUALITY OF LIFE

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Abstract:

The TB burden in this area was found to be moderate, despite several government initiatives and preventive measures. TB is one of the major causes of mortality globally. There were additional important risk factors. The majority of patients showed excellent adherence to their TB medications, and pharmacist counseling helped the remaining patients. This will aid in preventing the emergence of multidrug resistance brought on by non-adherence. The pharmacist must be aware of potential care needs and concerns while creating pharmaceutical care plans and developing strategies to deliver pharmaceutical care services for TB patients. As a result, the pharmacist can feel more assured about significantly enhancing the quality of life for their patients.

Keywords: risk factors, non-adherence, quality of life

1. Introduction

Tuberculosis is the 13th leading cause of death and second leading infectious killer after COVID-19 with 1.5 million deaths in 2020 (1,2) . A report from the year 2021 stated that there are nearly 30 countries that accounted for 86% new TB cases. 8 countries account for two thirds of the total, with India leading the count, followed by China, Indonesia, Philippines, Pakistan, Nigeria, Bangladesh and South Africa. Multidrug resistant TB continues to be a major public concern as only one in three people with MDR-TB have access to treatment (3). Despite all the consequences, TB incidence is falling at about 2 % per year and from 2011 to 2020 there was cumulative fall of 11%. In contrast, in the year 2021 India witnessed a 19% increase of new cases compared to previous year. As per global TB report 2021, the estimated incidence of all types of TB in India for the year 2020 was 188 per 100,000 populations. It was reported in the Telangana state there were 43689 new cases with 16489 previously treated and 60178 Drug resistant TB (4-9). The risk factors for infection include geography, race, ethnicity, HIV co-infection, tobacco usage, alcohol, diabetes mellitus etc(10-14). Thus identifying the risk factors and countering them is a crucial step in preventing the disease progression.

2. Methodology

Study site:

A 6 month single centered, prospective study with a sample size of 269 was conducted at district government hospital, Sangareddy, Telangana state in India.

Inclusion and exclusion criteria:

Patients diagnosed with TB at government hospital and patients moved from private hospitals to government hospital, patients with complete demographic and medical history, age between 5 – 90 years whose native language is either Telugu or Hindi and who agreed to participate in the study were included in the study. Patients who got misdiagnosed with TB, who died during the treatment were excluded from the study.

Overview of the study:

This study was divided into two phases: a pre-counselling phase (phase 1) and post counselling phase (phase 2). There was no control group as participant acted as their own controls in the pre-counselling phase. All patients who met inclusion criteria were contacted through telephone and requested to provide consent and answer the employed questionnaire. They were counselled regarding the disease and importance of medication adherence. Patients with low medication adherence and quality of life were contacted again after 6 months and their post counselling data was obtained.

Study procedure:

Patient information was obtained from the department in the form of treatment cards and their mobile number was obtained from treatment cards. A data collection form was designed to collect information about medication adherence and quality. Informed consent was obtained orally. A 8-item adherence questionnaire by Morisky and 26-item questionnaire by WHO popularly known as WHOQOL-BREF questionnaire was employed to assess the medication adherence and quality of life. All the treatment cards of patients were reviewed and relevant information pertaining to our study was obtained. The patients demographic data, Reason for hospitalization, symptoms on admission, marital status, key population, educational level, mobile number, predominant symptoms, type of treatment adherence, site of disease, type of patient, case definition, Duration, previous regimen, HIV /Diabetes /other co-morbidities related information, addicted related information (alcohol/tobacco), information related covid test ,regimen type, date of initiation of intensive phase, date of initiation of continuation phase and no. of households, family history, Past medication history, allergies and follow-up visit were collected from the individual patients data. Other treatment with dose, frequency, route of administration and monitoring parameters are collected if needed. Pre-counselling and post-counselling responses were obtained. Medication adherence scores were calculated and categorized the individuals as high, moderate and low. Quality of life scores were calculated, transformed and categorized as good and poor quality of life.

Data analysis:

Qualitative data were represented as frequencies and percentages. Quantitative variables were described using mean standard deviation, median and interquartile range based on the values. Prevalence was obtained using the

Prevalence = (Number of existing cases / Total population) x 100

Non-parametric tests were determined to be appropriate based on the type of data and type of data distribution.

Statistical analysis:

Wilcoxon rank sign rank test was used to compare the difference between the pre and post counselling medication adherence and quality of life. Wilcoxon rank sign rank test was used to compare the difference between the pre and post counselling medication adherence and quality of life. Correlation and regression analysis was performed to determine the relationship between variables and to find out the predictors for the variables affecting medication adherence and quality of life. Spearman's rank correlation was used to assess the relationship between medication adherence and quality of life. If a perfect positive correlation exists, the coefficient will be +1 which indicates their association. If a perfect negative correlation exists, the coefficient will be -1 which indicates complete disagreement. If there is no relationship between two variables, the correlation will be zero. Linear regression was performed to identify the factors associated with poor medication adherence and quality of life. Their significance was tested.(15).

Evaluation of medication adherence:

Medication adherence was determined by asking the questions from 8-item Morisky medication adherence questionnaire. Participants answers were categorized according to the following scores: "Yes = 0; No = 1 (item 1-4

and 6), Yes=1; No = 0 (item 5), a=1, b,c,d,e = 0 (item 8). When adding the above scores together, we get a total score for medication adherence correlating between higher scores and higher medication adherence and were categorized according to the following scores: "</=5 low adherence, 6 or 7 = medium adherence, 8 = high adherence.

3. Results

Evaluation of quality of life:

A 26 item WHOQOL-BREF questionnaire was opted for the study. It is a 5 point likert scoring type of questionnaire in which the patients was asked to select one among them and put the appropriate scores. WHOQOL-BREF is derived from the 100-item. It measures the physical, psychological, personal relationship and environmental domains. After obtaining the scores, the scores are transformed to 100 and then classified into poor or good. If score is less than 50 then the person has poor quality of life and if it is more than 50 then the person has good quality of life**.** The score was calculated using the following table:

Table 1: Quality of life

Domains		Pre counselling: N = 269			Post counselling: N = 269		
		Score ≥ 50	Score <50		Score ≥ 50	Score <50	
	Mean± standard deviation	Good: N (%)	Poor: N (%)	Mean± standard deviation	Good: N (%)	Poor: N (%)	P value
Physical health	50.20 ± 9.81	139 (52%)	130 (48%)	44.60 ± 17.17	169 (63%)	100(37%)	0.004
Psychological health	48.08 ± 9.36	124 (46%)	145 (54%)	50.51 ± 7.5	195 (75%)	74 (28%)	0.001
Personal relationships	44.30 ± 15.13	121(45%)	148 (55%)	46.45 ± 9.15	158 (59%)	111(41%)	0.01
Environment	50.05 ± 5.17	193(72%)	76 (28%)	50.05 ± 5.17	210 (78%)	59 (22%)	0.483
Skewness	-0.848	Skewed data					

Table 2 : Medication adherence vs quality of life

Pre-counselling			Post counselling		Rs value	P value
Physical domain	Quality of life		Quality of life			
Adherence	Good	Poor	Good	Poor	-0.19	0.001
High	76 (44%)	95 (56%)	139 (60%)	92 (40%)		
Moderate	42 (70%)	18 (30%)	20 (83%)	4 (17%)		
Low	21 (55%)	17 (45%)	10 (71%)	4 (29%)		
Psychological domain						
Adherence	Good	Poor	Good	Poor	-0.09	0.107
High	69 (40%)	102 (60%)	172 (74%)	59 (26%)		
Moderate	39 (65%)	21 (35%)	16 (67%)	8 (33%)		
Low	16 (42%)	22 (58%)	7 (50%)	7 (50%)		
Social relationships						
Adherence	Good	Poor	Good	Poor	-0.132	0.03
High	66 (39%)	105	137 (59%)	94 (41%)		
Moderate	35 (58%)	25	14 (58%)	10 (42%)		
Low	20 (53%)	18	7 (50%)	7 (50%)		
Environment						
Adherence	Good	Poor	Good	Poor	-0.21	0.0003
High	112 (65%)	59 (35%)	184 (80%)	47 (20%)		
Moderate	52 (87%)	8 (13%)	18 (75%)	6 (25%)		
Low	29 (76%)	9 (24%)	8 (57%)	6 (43%)		

Table 3: Factors affecting medication adherence and quality of life

Significant predictor	Beta	F value	R^2	t value	P value	Interpretation
Medication adherence						
Age	0.0013	0.12	0.00045	0.3451	0.515	Weak direct relation ship
Occupation	-0.012	0.12	0.00046	-0.3502	0.726	Weak inverse relationship
Diabetes	-0.23	1.35	0.005	-1.1626	0.246	Weak inverse relationship
Tobacco	-0.12	0.3	0.0011	-0.5459	0.586	Weak inverse relationship
Alcohol	-0.26	1.47	0.0055		0.226	Weak inverse relationship
Quality of life						
Age						
Domain 1	-0.22	35.66	0.12	-5.97	<0.001	Weak inverse relationship
Domain 2	-0.29	75.24	0.22	-8.67	<0.001	Moderate inverse relationship
Domain 3	-0.21	12.64	0.045	-3.55	<0.001	Weak inverse relationship
Domain 4	-0.13	19.05	0.067	-4.36	<0.001	Weak inverse relationship
Literacy Rate						
Domain 1	0.41	0.12	0.0008	0.34	0.73	Weak direct relationship
Domain 2	0.28	0.076	0.005	0.076	0.784	Weak direct relationship
Domain 3	2.85	0.98	0.018	1.66	0.98	Weak direct relationship
Domain 4	0.69	0.55	0.0036	0.739	0.461	Weak direct relationship
Occupation						

Domain 1	0.97	16.25	0.057	4.03	<0.001	Weak direct relationship
Domain 2	0.97	16.25	0.057	4.03	<0.001	Weak direct relation ship
Domain 3	1.29	11.87	0.043	3.44	<0.001	Weak direct relation ship
Domain 4	0.7	14.51	0.052	3.80	< 0.001	Weak direct relationship
HIV						
Domain 1	2.56	2.32	0.008	1.523	<0.129	Weak direct relationship
Domain 2	-2.41	2.25	0.084	1.50	<0.134	Weak inverse relationship
Domain 3	-12.35	24.65	-4.965	-4.965	<0.001	Weak inverse relationship
Domain 4	-1.73	1.83	0.0068	-1.35	<0.177	Weak inverse relationship
Diabetes						
Domain 1	-7.2	26.47	0.09	-5.144	<0.001	Weak inverse relationship
Domain 2	-9.61	57.15	0.18	-7.55	<0.001	Moderate inverse relationship
Domain 3	-2.5	1.23	0.0046	-1.10	<0.26	Weak inverse relationship
Domain 4	-0.21	0.034	0.00013	-0.1840	<0.85	Weak inverse relationship
Tobacco						
Domain 1	-5.68	12.39	0.044	-3.51	<0.001	Weak inverse relationship
Domain 2	-5.8	14.23	0.51	-3.77	<0.001	Weak inverse relationship
Domain 3	-8.12	10.54	0.038	-3.25	0.001	Weak inverse relationship

Domain 4	-3.92	10.07	0.036	3.17	0.002	Weak inverse relationship
Alcohol						
Domain 1	-2.63	2.66	0.009	-1.63	0.10	Weak inverse relationship
Domain 2	-4.17	7.38	0.027	-2.71	0.007	Weak inverse relationship
Domain 3	-2.46	0.97	0.0036	-0.98	0.32	Weak inverse relationship
Domain 4	-2.01	2.68	0.009	-1.635	0.10	Weak inverse relationship

4. Discussion

In our study titled impact of clinical pharmacist on enhancing medication adherence and improving quality of life among TB patients in tertiary care hospital sangareddy. 269 patients were consented to be part of the study.

Our study showed there was a significant association between medication adherence and quality of life. If medication adherence is increased then quality of life also improves. Our results were in accordance with Kastien-Hilka et al. they have conducted a observational study to evaluate Health-Related quality of life and its association with medication adherence in pulmonary tuberculosis- designing a prospective observational study in South Africa. Sample size estimation based there upon has led to a recruitment target of 96 patients. A conceptual framework for HRQOL in TB has developed to identify patients -reported outcomes and quality of life database measures for HRQOL and adherence and to generate and endpoint model. Thus this is first longitudinal study in South Africa which evaluates HRQOL and its association with medication adherence in TB in a comprehensive manner.

5. Conclusion

Despite having many government initiatives and preventive strategies TB is one of the leading cause of death worldwide, TB burden in this locality was found to be moderate. Risk factors were also significant. Most of the patients were highly adherent to TB drugs and the rest were improved by pharmacist counselling. There was a significant association between risk factors, medication adherence and quality of life so various counseling aids and strategies must be employed to eradicate the risk factors like nutritional status, alcohol consumption and tobacco usage. Our results concluded that there was significant improvement in the medication adherence and quality of life so pharmacist counselling is a prerequisite for better therapeutic outcomes. This will help prevent development of non-adherence induced multidrug resistance. When writing pharmaceutical care plans and forming strategies to provide pharmaceutical care services for TB patients, it is essential for the pharmacist to be aware of potential care needs and issues. Thus, the pharmacist can be more confident in making significant contributions to improve patients' quality of life.

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