

CLINICAL PHARMACIST PATIENT INTERVENTION ON ADHERENCE TO ANTI-TUBERCULAR DRUG THERAPY

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ABSTRACT

Tuberculosis (TB) is one of the most ancient diseases of mankind, with molecular evidence going back to over 17,000 years. In spite of newer modalities for diagnosis and treatment of TB, unfortunately, people are still suffering, and worldwide it is among the top 10 killer infectious diseases, second only to HIV. According to World Health Organization (WHO), TB is a worldwide pandemic. It is a leading cause of death among HIV-infected people. In India, historically speaking, fight against TB can be broadly classified into three periods: early period, before the discoveries of x-ray and chemotherapy; post-independence period, during which nationwide TB control programs were initiated and implemented; and the current period, during which the ongoing WHO-assisted TB control program is in place. Today, India's DOTS (directly observed treatment-short course) program is the fastest-expanding and the largest program in the world in terms of patients initiated on treatment; and the second largest, in terms of population coverage. Major challenges to control TB in India include poor primary health-care infrastructure in rural areas of many states; unregulated private health care leading to widespread irrational use of first-line and second-line anti-TB drugs; spreading HIV infection; lack of political will; and, above all, corrupt administration. Multidrug-resistant TB (MDR-TB) is another emerging threat to TB eradication and is a result of deficient or deteriorating TB control program. WHO with its "STOP TB" strategy has given a vision to eliminate TB as a public health problem from the face of this earth by 2050. For this review article, data available at the official websites of WHO; and from the Ministry of Health, Government of India, were consulted, and search engines PubMed[®] and Google Scholar[®] were used.

KEYWORDS: Bovine TB, DOTS, HIV/TB, Multidrug-resistant TB, RNTCP.

INTRODUCTION

Worldwide, Tuberculosis (TB) remains to be the most vital cause of death from a single transmittable condition. Although, recent^[1] decades have actually seen enhanced initiatives in the fight to end TB, basic gaps are hindering these initiatives, specifically in resource- constrained settings and in setups with a high burden of disease. The World Health Organization (WHO) estimates that near to 54 million TB deaths were avoided in between 2000 as well as 2017 because of improved condition avoidance as well as administration, and solution delivery, nonetheless, approximately 10 million people remain to fall ill with TB yearly. Multidrug resistance tuberculosis.^[2] (MDR-TB) defined as bacillary resistance to at least two most effective drugs, Isoniazid (INH) as well as Rifampicin (RMP). Extensively medicine resistant (XDR) consumption is multi medication resistance consumption with additional bacillary resistance to any kind of fluoroquinolone and a minimum of one of the^[3] medications (Kanamycin (Kilometres), Amikacin (Am) and also Capreomycin (Cm)). Genetic 2

resistances took place normally to anti TB-drugs as a result of chromosomal mutation gone along with mycobacterium replication. The MDR-TB has established due to improper use anti TB medicines. MDR-TB is a risk for managing worldwide TB.

Multi medication resistant tuberculosis is an arising globally issue. That stated brand-new situations of MDR-TB is 2.9% among heavy part of global populace. Pakistan rated fifth on the list of 22 international high burdened countries in consumption and also forth in the checklist of 27 high strained MDR-TB countries. The percent of MDR-TB is in the list 5 3.4 of brand-new TB cases as well as 21 in the listing of pulled back instances.^[6] The development of drug resistant pressures of mycobac terium is due to poverty, lack of nutrition, population migration, poor health facilities, inadequate real estate and cleanliness, urbanization, political instability as well as evacuee increase. MDR-TB treatment is feasible however may 3 price 100 times greater than TB treatment price, failing of^[7] therapy

might verify even more cost in future and also each person of MDR-TB without correct therapy will contaminate 10-15 individuals yearly.

Adherence has actually been specified as the degree to which clients' actions coincides with the health advice provided. By comparison, non-adherence to medicine^[8] treatment can be evaluated by the variety of medication doses missed out on, mistimed, or otherwise administered incorrectly. Non-adherence has actually been deemed a^[9] behavior problem that the pharmacist can assist to fix by identifying risk elements and after that intending suitable interventions. Clients who really feel^[10] personally in charge of their own treatment, as well as health as a whole, tend to be more certified, which is why the principle of concordance is changing the terms of conformity. Different 11 strategies have been utilized to enhance treatment adherence of TB people. Specific individual treatment and follow-up, clear lines of interaction, compliance aids, instructional materials, and also incentives have all been shown to enhance adherence.^[11,12]

According to WHO data, it is anticipated that the DOT strategy will certainly trigger the variety of TB situations to fall by 53% as well as mortality to be lowered by 58%. DOT is^[13] probably one of the most efficient techniques for enhancing adherence, however alone it might be inadequate. Scientists recommend supplementing as well as thus enhancing a DOT program with other approaches like person education and learning and also rewards as mentioned above. Professional pharmacists supplying pharma-^[14,15] ceutical care services have actually been revealed to improve adherence to therapy and decrease possible prescrib ing errors. There are three foundational elements to^[16-18] pharmaceutical care. First, the individual's pharmaceuti cal care requirements need to be recognized. Following this, a customized pharmaceutical care strategy must be formulated, considering the client's expertise, basic health and wellness beliefs, as well as motivation.^[19] Ultimately, the outcomes targeted in the care strategy need to be assessed.^[20]

The main aim of present work is Impact of clinical pharmacist managed patient counselling on knowledge and adherence to Anti-Tubercular drug therapy in PTB & EPTB Patients. The general objective is to access the Knowledge and Adherence in counselled patients by clinical pharmacist concerning Anti-Tubercular drugs in PTB & EPTB patients. Specipic objectives are to acquire the demographics and socio-economic status of the population under the study, to acquire the patient distribution based on Risk Factors, to know the knowledge of patients about tuberculosis, to improve the adherence to anti-tubercular therapy by conducting Morisky Medication Adherence Questionnaire, to create awareness about tuberculosis, to conduct KAP study regarding patient counselling on tuberculosis among selected population using validated questionnaires.

METHODOLOGY

STUDY SITE: study was conducted at the Bairamalaguda, a urban area in the Ranga reddy district, Telangana.

SOURCE OF DATA: Data was collected by visiting patients bed side in hospital which was chosen in the study and further procedure was carried out by using KAP questionnaire & Morisky questionnaire. The required information was received thereby.

STUDY DURATION: The study was carried out for a period of six months.

STUDY DESIGN: "A Hospital based prospective observational study".

STUDY CRITERIA: The study was carried out by considering the following inclusion and exclusion criteria after taking consent from the people involved in the study in a suitability designed informed consent form in their regional/understandable language.

INCLUSION CRITERIA

The willing participants

TB default patients, including both pulmonary and extra-pulmonary TB whose ages are in between 10-80 year old registered during the period of study.

TB patients (i.e. both recently diagnosed and recurrent TB patients) treated with standard drugs with or without comorbidities in any age group were included in the study.

EXCLUSION CRITERIA

The unwilling participants

Patient with incomplete medical records

Patient who respond inadequately to questionnaire

Patient who becoming restless, too sick, not willing and rushed to the hospital.

ETHICAL COMMITTEE APPROVAL

Prior to the study, Institutional Ethical Committee clearance was submitted to Glen eagles Global Hospital, Ranga reddy district, for the approval with one copy of our protocol.

STUDY PROCEDURE: The study was conducted in KIMS Hospital, Narketpally area of Nalgonda district. The population under study was enrolled based on the criteria of the study. An informed consent was acquired from each individual. Demographic details such as name of the person participating in the study, age, gender, educational status, occupation, regional status, family history, social habits, co-morbid diseases, knowledge of the patient about TB in a specially designed data collection form.

MORISKY ADHERENCE QUESTIONNAIRE

The adherence of the study population regarding TB was tested by a set of eight questionnaires (Annexure- VI) such as the individual's adherence towards medication. Assessing if they experience difficulties in taking medication and, about importance of drug therapy.

ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE OF POPULATION

Then we asked questions to patients. The scores of pre-counselling were recorded later we provided education to everyone involved in the study regarding TB then we At the beginning we assessed the KAP of the population enrolled into the study using separate set of validated questionnaires for knowledge assessment, attitude and practice assessment. Fifteen questionnaires were designed for knowledge assessment including testing the basic information regarding what is TB & their attitude towards disease. The information on Medication & complications of missing dose, importance about counselling done. re-assessed the KAP of the population using same pre-tested questionnaire. Post-counselling marks were given to each question answered by the people and scoring was done for each individual's KAP and also total KAP scoring. At the end of the study, the KAP scores were compared for before and after counselling for the study population. The data was then analyzed using suitable statistical methods.

METHODS

The patients who were admitted to the pulmonology units with confirmed diagnosis of PTB & EPTB and

RESULTS

PATIENT DISTRIBUTION BASED ON DEMOGRAPHIC DETAILS

Table 4: Details of population enrolled into the study.

Gender	Total Population number	Percentage
Male	69	57.5%
Female	51	42.5%
Total	120	

A total of 120 individuals were enrolled into the study, out of which 69 (57.5%) were male and 51(42.5%) were female. There were under drop outs. The data of only

prescribed with anti-tubercular drug therapy were included in the study and followed from the date of admission till date of discharge. The data for the present study was collected by "Chart Review Method" which is well suited. All necessary and relevant baseline information were collected on a "Patient Data Collection Proforma". To assess the Knowledge, Attitudes, and Practices (KAP) of the patients towards the disease management, a suitably designed and content of KAP questionnaire was administered on all the enrolled patients before and after interventional study.

The answer knows also considered a "YES" only. The answer do not know also was considered "No" only. The subjects were asked to complete the Proforma containing the questions by themselves, but for illiterate persons the proforma were filled up by asking the questions verbally and recording their answers.

An intervention-based study was designed to evaluate the effect of patient counseling in the study population. On an average 20-30 minutes was spent with each patient depending on their educational level and understanding capability. The patient was provided verbal and pictorial information related to disease, risk factors, adherence to treatment and life style modifications.

Statistical analysis

Student T-test was performed to calculate the P-value for the purpose of comparison of results by using software namely "Graph pad prism".

those people who compiled the study were analysed. The results are shown in table 4.

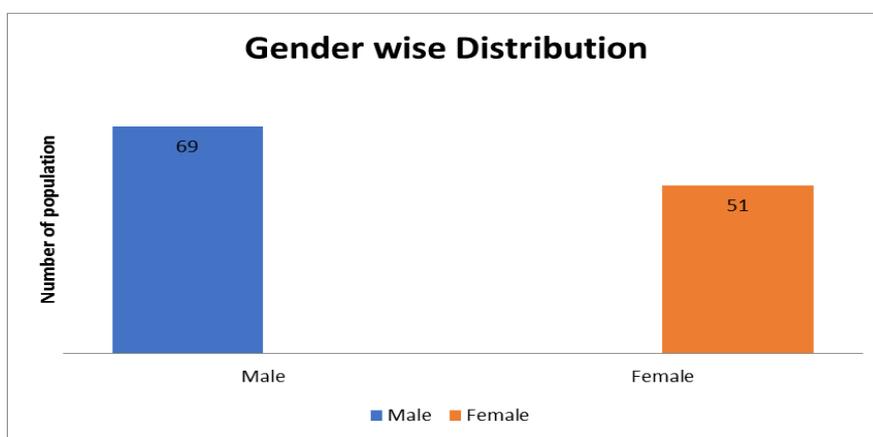


Figure-5

Table 5: Details of Age-wise distribution of Population.

AGE (Years)	Total Population	Percentage
Below 10	11	9.16%
11-20	15	12.5%
21-30	19	15.8%
31-40	25	20.8%
41-50	22	18.3%
51-60	14	11.6%
ABOVE 60	14	11.6%

The age-wise distribution of population under study where individuals falling

were 22 (18.3%), 51-60 were 14 (11.6%), above 60 were 14 (11.6%). The results are shown in table 5.

In Below 10 were 11 (9.16%), 11-20 were 15 (12.5%), 21-30 were 19 (15.8%), 31-40 were 25 (20.8%), 41-50

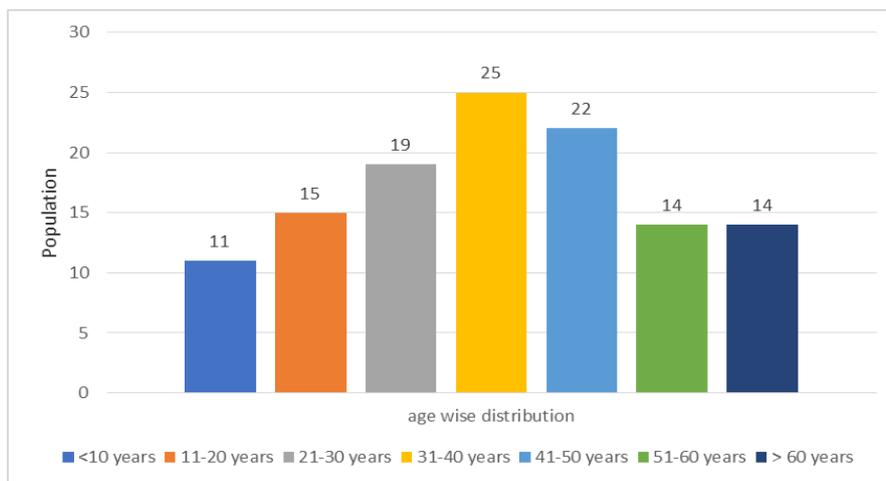


Figure -6 Age Wise Distribution.

Table 6: Details of educational status of population.

Illiterate	41	34.16%
School	60	50%
Education	Total population	Percentage
Pre-University	09	7.5%
University	10	8.3%

The Educational status of the total 120 population under study, where 41(34.16%) were Illiterate, 60 (50%) were those who completed Primary and Higher Primary, 09

(7.5%) were those who completed their High school and Intermediate and 10 (8.3%) of them were Graduates. The results are shown in table 6.

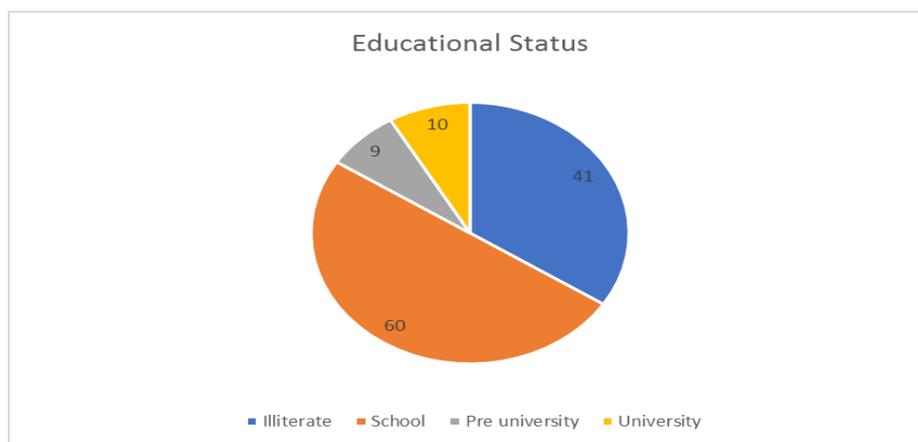


Figure-7

Table 7: Patient Distribution Based On Duration, Occupation and Regional Status.

S. NO	Demographic factors	No. of patients	Percentage
1	Duration of TB		
	Newly Diagnosed	64	53.3%
	Less than 1 year	35	29.1%
	More than 1 year	21	17.5%
2	Occupational Status		
	Agriculture	26	21.6%
	House-wife	18	15%
	Old aged	05	4.16%
	Students	29	24.16%
	Private services	17	14.16%
	Govt. services	03	2.5%
	Business	14	11.6%
	Others	08	6.6%
3	Regional Status		
	Urban	12	10%
	Rural	108	90%

PATIENT DISTRIBUTION BASED ON RISK FACTORS**Table 8: Patient distribution based on Family History.**

Family History	Total Population	Percentage
YES	27	22.5%
NO	93	77.5%

Among 120 patients 27 (22.5%) have family history of disease and rest have no family history. The results are shown in table 8.

Table 9: Patient Distribution Based on Social Habits.

Social Habits	Total Population	Percentage
Smoking	21	17.5%
Drinking alcohol	13	10.8%
Cooking with sticks	0	0%
Chewing Tobacco	16	13.3%
Betal nut chewers	06	5%
Smoking + Drinking	19	15.8%
None	45	37.5%

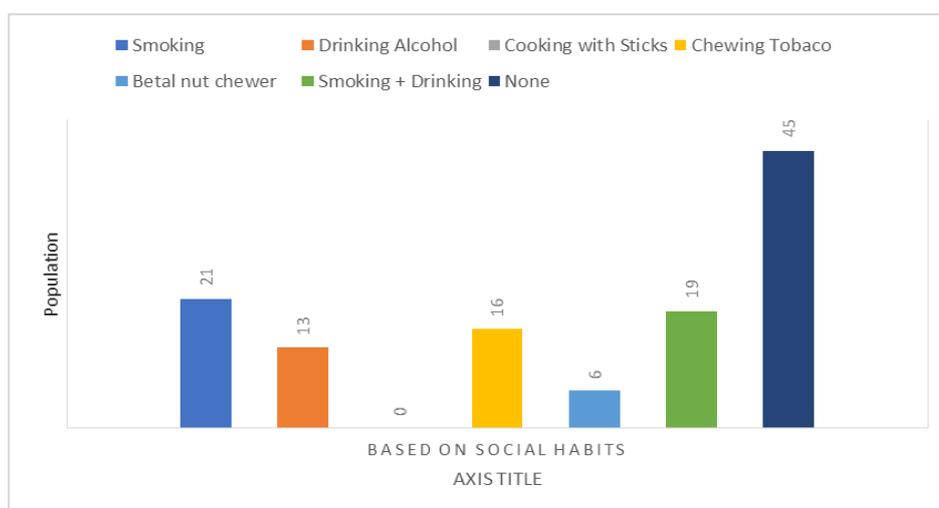
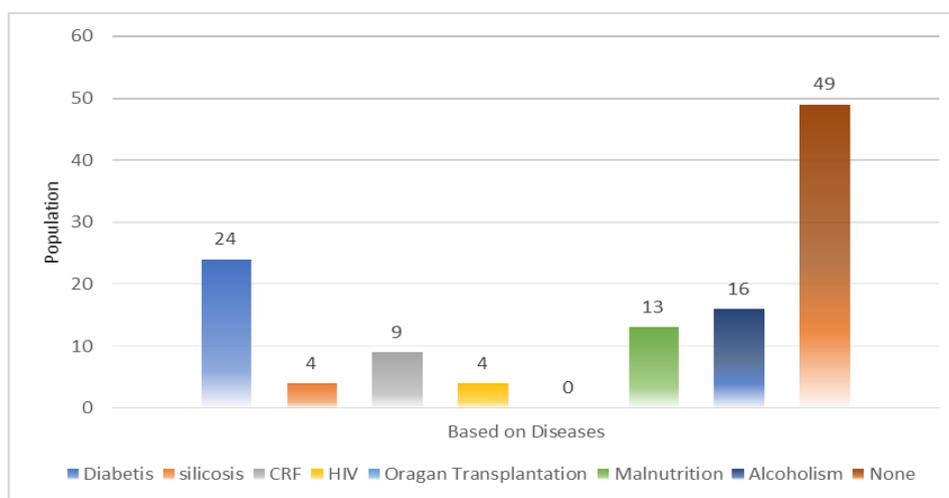
**Figure-8 Distribution Based Social Habits.**

Table 10: Patient Distribution Based on Disease History.

Disease History	Total Population	Percentage
DM	24	20%
Silicosis	04	3.3%
CRF	09	7.5%
HIV	04	3.3%
Organ transplantation	0	0%
Malnutrition	13	10.8%
Alcoholism	16	13.3%
None	49	40.8%

Risk factors of TB are above conditions and among 120 patients as per our study DM24 (20%), Silicosis4 (3.3%), CRF9 (7.5%), HIV4 (3.3%), Malnutrition13 (10.8%),

Alcoholism16 (13.3%), and 49 (40.8%) in patients alone with T.B. The results are shown in table 10.

**Figure-9 Patient Distribution Based On Disease History.****Table 11: Patient Distribution Based On Knowledge.**

Knowledge	Total Population	Percentage
Signs & Symptoms		
Cough	26	21.6%
Cough more than 2weeks	1	0.83%
Fever	0	0%
Do not know	93	77.5%
Mode of Acquiring TB		
Through air droplets	15	12.5%
Shaking Hands	0	0%
Sharing Dish	3	2.5%
Do not know	102	85%
Prevention		
Covering mouth & nose	13	10.83%
Sharing dish	1	0.83%
Through good nutrition	0	0%
Do not know	106	88.3%

Among 120 patients, 102(85%) do not have knowledge about disease and rest have little knowledge about signs

and symptoms and prevention of TB. The results are shown in table 11.

Table 12: Morisky Adherence.

Adherence	Total Population	Percentage
Low Adherence	30	25%
Medium Adherence	37	30.9%
High Adherence	53	44.1%

In our study Patients showed Comparatively High Adherence 53(44.1%) which is statistically more

significant than Medium 37(30.9%) & Low adherence 30(25%). The results are shown in table 12.

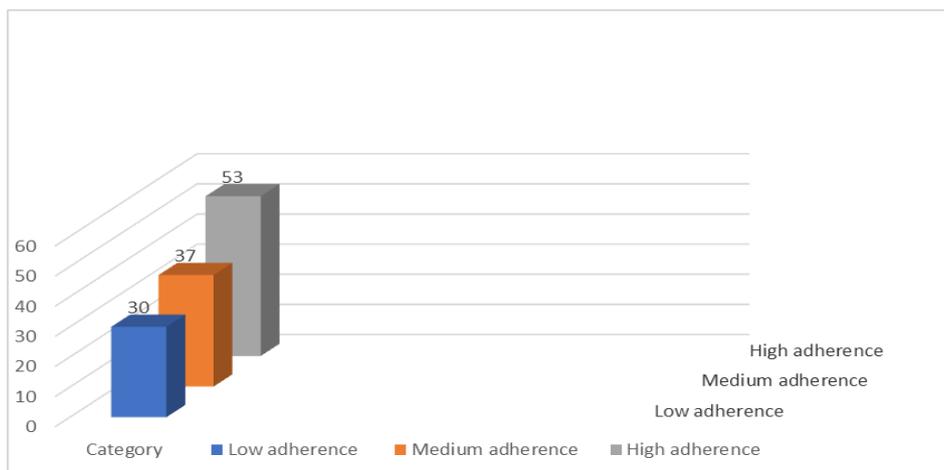


Figure-10 Morisky Adherence Chart.

Table 13: Assessment of Patient Counselling by Kap Questionnaire.

S.NO	Questionnaire	Pre-Counselling		Post-counselling		Total no. of patients	P value
		Yes	No	Yes	No		
1	Do you know what Tuberculosis is?	27 (22.5%)	93 (77.5%)	100 (83.3%)	20 (16.7%)	120	<0.0001
2	Do you know how TB spreads?	18 (15%)	102 (85%)	84 (70%)	36 (30%)	120	
3	Do you know about complications of TB?	09 (7.5%)	111 (92.5%)	55 (45.9)	65 (54.2%)	120	
4	Do you have any other co-morbid diseases?	71 (59.1%)	49 (40.8%)	71 (59.2%)	49 (40.8%)	120	
5	Do you know the risk factors of TB?	01 (0.83%)	119 (99.2%)	46 (38.3%)	74 (61.7%)	120	
6	Do you have any past history of TB?	56 (46.7%)	64 (53.3%)	56 (46.7%)	64 (53.3%)	120	
7	Do you think TB can be cured?	79 (65.85%)	41 (34.2%)	109 (90.8%)	11 (9.2%)	120	
8	Are you visiting physician for regular checkup?	56 (46.7%)	64 (53.3%)	98 (81.6%)	22 (18.3%)	120	
9	Do you know how to take medication?	93 (77.55%)	27 (22.5%)	113 (94.2%)	7 (5.8%)	120	
10	Do you have any difficulties in taking medications?	66 (55%)	54 (45%)	72 (60%)	48 (40%)	120	
11	Are you using medicines regularly?	42 (35%)	78 (65%)	90 (75%)	30 (25%)	120	
12	Do you know the medication adherence to control TB?	37 (30.9%)	83 (69.2%)	87 (72.5%)	33 (27.5%)	120	
13	Do you the complications of missing dose?	19 (15.9%)	101 (81.2%)	88 (73.3%)	32 (26.7%)	120	
14	Are you following precautions given by physician? (wearing mask)	70 (58.3%)	50 (41.7%)	105 (87.5%)	15 (12.5%)	120	
15	Was the patient counselling provided by clinical pharmacist helpful to improve your quality of life?	-	-	116 (96.7%)	4 (3.3%)	120	

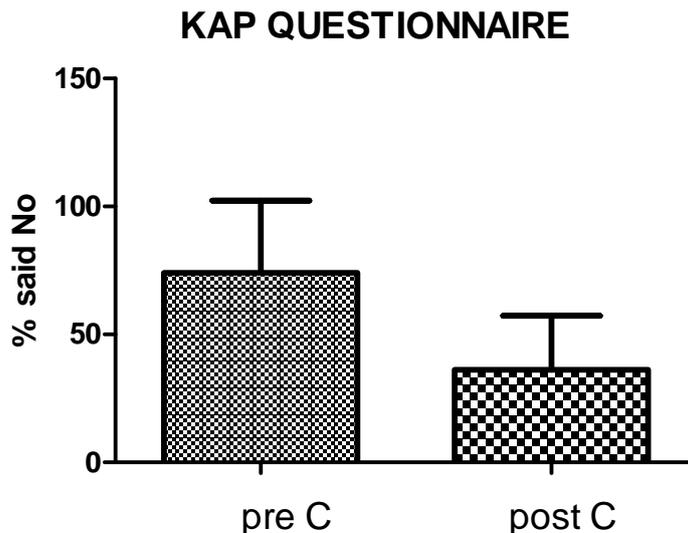


Figure- 11

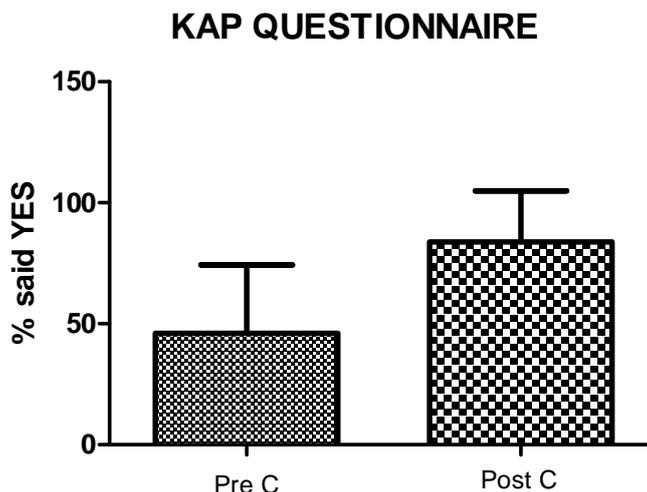


Figure-12

The knowledge of the patients about the TB was assessed at baseline and after counseling with structured KAP questionnaire containing 15 questions related to disease, causative factors, medications and life style modifications. At the end of the study it was found that there was an improvement in knowledge about TB in patients and results are shown in table-5, figure-5.1, 5.2 with P value < 0.0001 (< 0.05 is statically significant).

DISCUSSION

Tuberculosis is one of the diseases with large number of people affected around the world, even in India; 300 million people worldwide were affected by TB. The global prevalence of TB ranges from 1-18% of the population in different countries. Our study found that the prevalence of TB was more in males 69 (57.5%) than in females 51 (49.1%)

Evaluation of age group

The age group distribution of patients (figure-) revealed that most patients infected with the disease belong to middle age group. There were less patients below 10years and above 90years of age. Significant numbers of patients (Table) were observed among the age groups of 31-40years (20.8%) and 41-50years (18.3%).

Literacy: The prevalence of pulmonary tuberculosis was shown to be more in primary education 60 (50%) and illiterate 41 (34.16%) patients; this may be due to lack of knowledge about their disease, medication and support.

Duration of TB: The prevalence of TB is more in Newly diagnosed 64 (53.3%) than in Less than 1year 35 (29.1%) and in More than 1year 21 (17.5%).

Occupational status: The prevalence of TB is significant in students 29(24.16%) and less in unemployed 8 (6.6%), Agriculture, housewife, old aged, private and GOVT servants and business were considered.

RISK FACTORS: The factors like DM, Silicosis, CRF, HIV, Organ transplantation, Malnutrition, and Alcoholism were considered. As per our study DM24 (20%), Silicosis4 (3.3%), CRF9 (7.5%), HIV4 (3.3%), Malnutrition13 (10.8%), Alcoholism16 (13.3%), and 49 (40.8%) in patients alone with T.B.

SOCIAL HABBITS: As per our study among 120 patients, 45(37.5%) were smokers, 19(15.8%) were smokers and alcoholics, 16(13.3%) chews tobacco, 13(10.8%) were alcoholics, 21(17.5%) were the persons not having any social habits.

KNOWLEDGE ABOUT TB

Among 120 patients, 102(85%) do not have knowledge about disease and rest have little knowledge about signs and symptoms and prevention of TB, our study revealed that majority of patients had lack of knowledge about disease, precautions and management before counseling.

CONCLUSION

In this study, the results show an impact of clinical pharmacist in improving the tuberculosis patient's knowledge towards their disease and medication and also adherence to prescribed therapy by means of structured counseling.

The study concludes that pharmacist provided patient education found to have significant influence on improvement in the patient's knowledge towards their disease and medication, and adherence to prescribed therapy which helps to improve the clinical outcome TB patient's i.e., conversion rate of sputum positive to negative.

Further the study suggests that, the pharmacist intervention is essential in the management of chronic diseases. Clinical pharmacist can educate the patients regarding their disease and medication. Pharmacist provided patient education helps in better understanding of their disease and medication, which will improve the health care outcome of the patient.

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