American Journal of Pharmacy and Pharmaceutical Sciences
Vol. 4, No. 1, December 2019, pp. 1-14, e-ISSN: 2380 -7083
Available online at http://ajpps.com/index.php

Research article

Effect of Social Factors on Tuberculosis Patients in a Secondary care Hospital in Tirupur District

Dr. V. Ganesan[1*], Geethu S.[1], Rajalakshmi R.[1]

[1]Department of Pharmacy Practice, The Erode College Of Pharmacy, Erode 638 112, Tamil Nadu, India.
[2]Deputy Director of Medical services (TB), Govt. Head Quarters Hospital, Tirupur, Tamil Nadu, India.

Address for correspondence[*]:

Dr. V. Ganesan
Professor and Head
The Erode College Of Pharmacy, Erode 638 112, Tamil Nadu, India.
Phone no: 9442324397
E-mail: principalecp@gmail.com

ABSTRACT

Background: Tuberculosis is a highly infectious disease that primarily affects the lungs and it is the second leading cause of death among infectious diseases worldwide. **Aim:** The aim of the study was to determine the effect of social factors on Tuberculosis patients in Tirupur Government Head Quarters Hospital. **Study design:** A prospective study of six months duration was undertaken during February- August of 2018 in the Department of Tuberculosis. A total number of 100 patients (includes inpatients and outpatients) fulfilled the inclusion criteria were enrolled. Patient data relevant to the study was obtained from the inpatients case sheets, outpatient's medication chart and direct patient interview. **Results:** According to our study there were a total of 73 male and 27 female and highest number of patients were under the age group of 50. Out of 100 patients, 77were regular and 23patients were default. In regular Tuberculosis, maximum have no social habits (50.6%)

and co-morbidities (68.8%) but 18.1% having Diabetes mellitus and are non-vegetarian (97.4%). In default Tuberculosis, maximum have the habit of alcoholism and smoking (60.8%), non-vegetarian (100%) and 73.9% have no co-morbidities but 26.08% have Diabetes mellitus**. Conclusion:** Social factors have effect on Tuberculosis patients, majority of patients were regularly following the Tuberculosis treatment and some patients were under default due to their social habits, carelessness, having the symptom of nausea and vomiting after taking medication, and stopped taking medication soon after feeling better (wrongly perceiving it as cure).

Keywords: Tuberculosis, Social factor, Co-morbidities, Regular, Default.

INTRODUCTION

Tuberculosis, commonly known as TB, is a bacterial infection that can spread through lymph nodes and blood stream to any organ in your body. It is most often found in the lungs. Most people who are exposed to TB never develop symptoms because the bacteria can live an inactive form in the body. But if the immune system weakens, such as in people with HIV or elderly adults, TB bacteria can become active. In their active state, TB bacteria cause death of tissue in the organs they infect.

The World Health Organization (WHO) declared TB as a 'Global Emergence' in 1993. Every year almost two million people die worldwide due to TB and most deaths occur in low- and middle-income countries. Although TB is a curable disease, it ranks as the second leading cause of death among infectious diseases worldwide, after the human immunodeficiency virus (HIV). TB takes advantage of individual's with weakened immune systems, which is why it is called an opportunistic infectious disease[1]. India is highest tuberculosis (TB) burden country globally; accounting for more than one-fifth of the global incidence. India has approximately 2.8 million TB patients, a quarter of world's total TB cases. It is the leading infectious killer in India. In Tamil nadu 82,989 cases were reported in the public sector in 2017. [2]

There is increasing evidence of tobacco effect on TB. Recent studies indicate that active and passive tobacco smoking's are risk factors for latent tuberculosis infection, progression to active disease and lower rates of treatment success and higher TB-related death.[3] The causal relation between heavy alcohol use and TB has long been described, but only recently it has been possible to estimate the alcohol attributable disease burden. Alcoholism has also been linked to other socioeconomic determinants such as low socioeconomic status, homelessness and malnutrition, all of them independent risk factors for TB and treatment failure.[4]

Low socioeconomic status (SES) is generally associated with high psychiatric morbidity, more disability, and poor access to health care. Socio-economic status, whether measured by education, income or other indices of social class, has long been known to be associated with attitudes and health care practice. The low-income population also suffer from overcrowding and malnutrition, and therefore is predisposed to developing TB. Treatment of active TB requires prolonged therapy (at least 6 months) with multiple, potentially toxic drugs that can lead to adverse reactions in a significant number of patients.[2]

Malnutrition increases the susceptibility to disease; income constraints can limit the use of health care services. TB stigma, recognized as a social determinant of health and health inequalities, associated with lack of social support can potentially lead to non-compliance and poor treatment outcome.[4] Factors like socioeconomic status and poor living condition are the most important risk factors reported, since they are invariably associated with poverty, malnutrition, hygiene and illiteracy all of which have confounding effect on outcome.[5] Low level knowledge on TB can lead to complications and worse health outcomes increasing the transmission and delaying health seeking behaviour, lack of adherence, resulting in multi-drug resistance, treatment failure and disease complications and death.[6] TB is not only a medical problem, but the result of social problems in the society. Poor perception of health problems, distance, cost of care and other reasons have been reported as reasons for delay in seeking care among tuberculosis patients in many parts of the world. The impact of socioeconomic status on symptoms, respiratory morbidity and mortality is important because it may influence behaviour towards health seeking too.[7] Therefore the present study was designed to investigate the effect of social factors on Tuberculosis patients.

MATERIALS AND METHODS

Study design- A Prospective observational study.

Study site - Study was carried out in Government Headquarters Hospital, Tirupur, Tamil Nadu in the Department of TB headed by Dr. Dheena Dayal, M.B.B.S, D.T.C.D.

Study duration – Study was conducted for six months i.e. February to August 2018.

Study population – Total of 100 patients were enrolled for the study.

Study data – Patient data relevant to the study was obtained from the inpatients case sheets, outpatient's medication chart and direct patient interview.

Ethical consideration

The study protocol (IHEC/GH- Tirupur /ECP/PD-001) was approved by Institutional Human Ethics Committee of Government Head Quarters Hospital Tirupur, Tamil nadu. All the participants were informed about study details and informed consent was obtained before the initiation of study.

Inclusion criteria

1. TB patients receiving Category I, Category II and Category IV drugs.
2. Social factors like; Age, Gender, Family History, Economic background (Income),Co-morbidities, Alcoholic, Drug addiction, Smoking, Employment status, Family support and Nutritional status

Exclusion criteria

1. Pregnant patients
2. Patients unable to comply due to social factors.
3. Patients who are not willing to participate.

Evaluation of data

Data were entered and analysed by using Microsoft Excel (Windows 8; version 2007).Graphical representation is used for visual interpretation of the analysed data.

RESULTS

Table 1: Age wise Distribution of Tuberculosis Patients.

S. No	Age	No. of Patients (n=100)	Percentage
1	<50	64	64%
2	50-59	22	22%
3	>60	14	14%

Table 2: Gender wise Distribution of Tuberculosis Patients.

S. No	Gender	No. of patients (n=100)	Percentage)
1	Male	73	73%
2	Female	27	27%

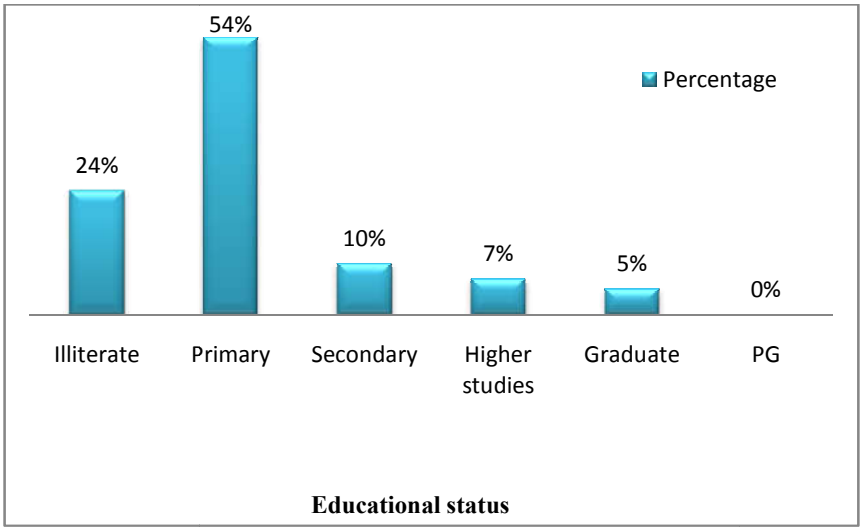

Figure 1: Educational status wise Distribution of Tuberculosis Patients (n=100)

Table 3: Employment status wise Distribution of Tuberculosis Patients.

S.No	Employment status	No. of patients (n=100)	Percentage
1	Employed	74	74%
2	Unemployed	26	26%

Table 4: Income wise Distribution of Tuberculosis Patients.

S. No	Income in Rupees (Per annum)	No. of patients (n=100)	Percentage
1	Below 1 lakh	27	27%
2	Between 1-2lakhs	35	35%
3	Above 2 lakhs	13	13%
4	Nil (No income)	25	25%

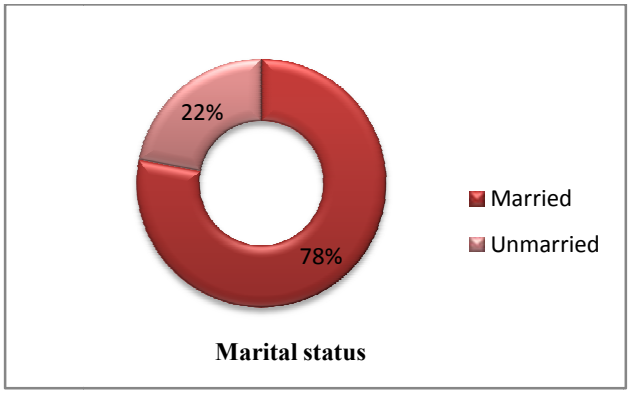

Figure 2: Marital status wise Distribution of Tuberculosis Patients (N=100)

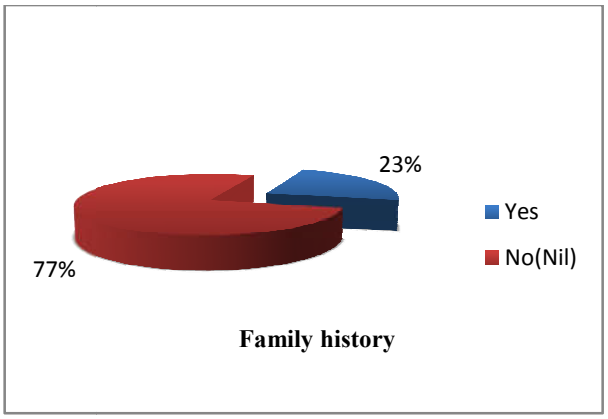

Figure 3: Family history wise Distribution of Tuberculosis Patients (N=100)

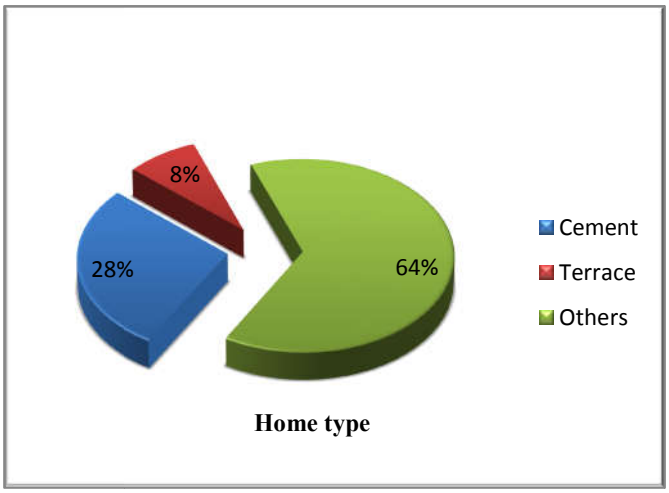

Figure 4: Home type wise Distribution of Tuberculosis Patients (n=100)

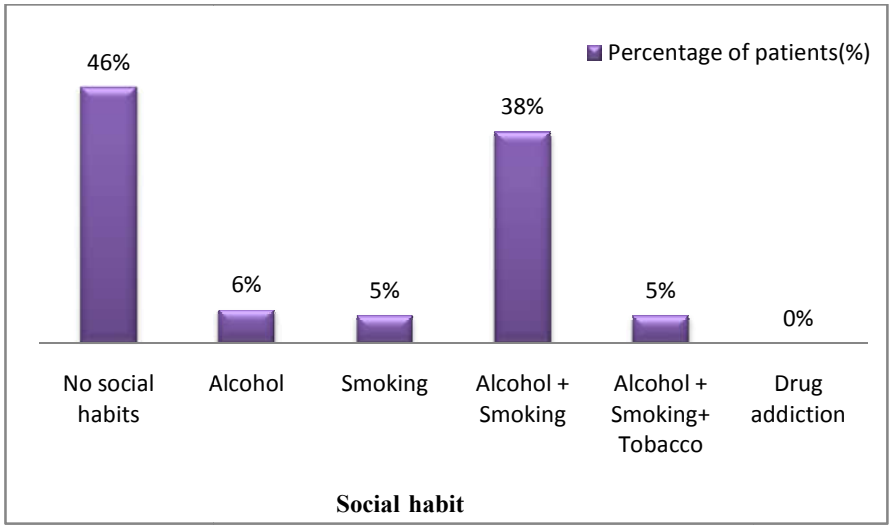

Figure 5: Social habits wise Distribution of Tuberculosis Patients (n=100)

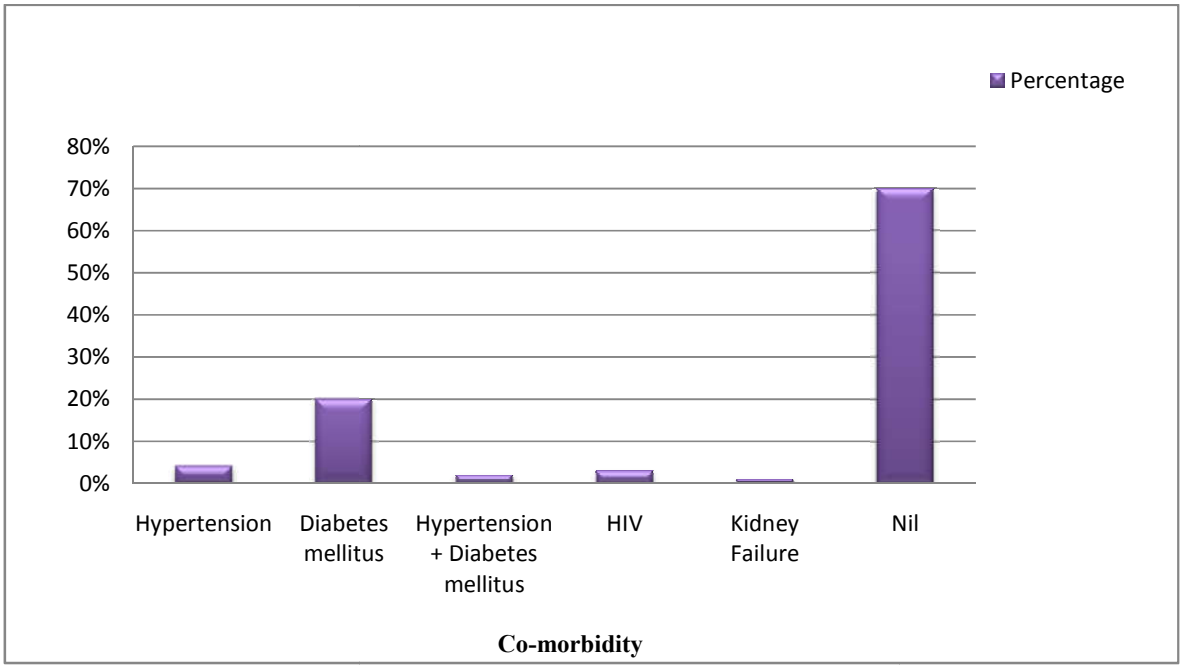

Figure 6: Co-morbidities wise Distribution of Tuberculosis Patients (n=100)

Out of 100 patients, 38 patients (38%) were tailors, 3 patients (3%) were painters, 11 patients (11%) have own business, 4 patients (4%) were doing ironing work, 10 patients (10%) were building workers, 5 patients (5%) were drivers, 7 patients (7%) were housewives, 8 patients (8%) were unemployed and 14 patients (14%) belong to other various occupation. In this study population, TB is more prevalent among Tailors.

It clearly shows, 78% of married patients and 22% of unmarried patients were enrolled during this study period. 23% patients (23%) were having the family history of TB, 77 patients (77%) were not having the history of TB.13 patients (13%) have social support, 87 patients (87%) do not have social support.

out of 100 patients, 62 patients (62%) were with Good nutritional status, 34 patients (34%) were with Average nutritional status and 4 patients (4%) were with Poor nutritional status. In this study population, maximum numbers of TB patients have Good nutritional status.

Dietary habits in this study population show that nearly 98% of Non-vegetarian patients were enrolled in this study period.

It is observed that out of 100 patients, 61 patients (61%) were old patients, under the treatment of TB for several months and 39 patients (39%) were new patients. It was known that, maximum number of patients (91%) have Pulmonary TB, 9% of patients are less likely to have Extra Pulmonary TB. Also 71 patients (71%) were receiving Category I type of treatment, 27 patients (27%) were receiving Category II type of treatment and 2 patients (2%) were receiving Category IV type of treatment. Majority of TB patients were under the treatment of Category I.

In this study population, 77 patients (77%) were regularly following TB treatment and 23 patients (23%) have not regularly followed TB treatment. So they were under the Default (stopped taking medications for more than 2 consecutive months) condition.

It was known that 2 patients (2%) were mentally depressed and maximum numbers of patients (98%) were not depressed.

Table 5: Social habits, diet, co-morbidities wise distribution in Regular TB patients.

(n=77)	**Habits**	**No of patients**	**Percentage**
Social habits	Alcohol	6	7.7%
	Smoking	5	6.4%
	Alcohol + Smoking	24	31.1%
	Alcohol + Smoking +Tobacco	3	3.8%
	Drug addiction	0	0%
	Nil	39	50.6%

Diet	Vegetarian	2	2.5%
	Non- Vegetarian	75	97.4%
Co - morbidities	HTN	4	5.1%
	DM	14	18.1%
	HTN +DM	2	2.5%
	HIV	3	3.8%
	Kidney Failure	1	1.2%
	Nil	53	68.8%

Table 6: Social habits, diet, co-morbidities wise distribution in Default TB patients.

(n=23)	**Habits**	**No of Patients**	**Percentage**
Social Habits	Alcohol	0	0%
	Smoking	0	0%
	Alcohol + Smoking	14	60.8%
	Alcohol + Smoking +Tobacco	2	8.6%
	Drug addiction	0	0%
	Nil	7	30.4%
Diet	Vegetarian	0	0%
	Non- Vegetarian	23	100%
Co - morbidities	HTN	0	0%
	DM	6	26.08%
	HTN + DM	0	0%
	HIV	0	0%
	Kidney Failure	0	0%
	Nil	17	73.9%

DISCUSSION

A total of 100 patients were analysed during 6 months period. Results pointed out that the TB is predominant among male patients 73 (73%) than in females 27 (27%). Nathalia Franca *et al* (2013) stated in their study that, the predominance of males detected, follows the morbidity data in which a higher incidence of TB in men is observed. The reason why more men than women get TB is because they work and live in crowded and unsanitary condition (Ali M *et al* 2013).

In the age group less than 50 years, the number of patients were found significantly higher 64 (64%) compared to the number of patients in the age group above 50 years.

Educational level of the participants was found to be significantly associated with the default rate Participants with educational level lower than secondary school tended to default more frequently compared to those having educational level of secondary school and above. In our study, majority of the TB patients were found to have Primary level education 54 (54%), 24 (24%) patients were Illiterate, 10 (10%) patients have Secondary level education, 7 (7%) patients have completed Higher secondary and 5 (5%) patients were Graduate (Mohammed El Muttalut *et al* 2017).

74 patients (74%) were employed because majority of the patients were male in our study and 26 patients (26%) were unemployed. In this 26 patients, some of them were unemployed due to TB. Patients reported losing their job when their diagnosis was known, were too ill to continue working, or were unable to find daily work because of the time consuming treatment arrangements.

It was observed that significantly higher prevalence of TB in labourers than in business people and professionals[(11)] which relates with our study that higher number of the employed patients were found to be Tailors (38%) because Tirupur is the major city for textile industries (Soham Gupta *et al* 2011) .

In our study, maximum number of TB patients 35 (35%) income were between 1- 2 lakhs annually. According to RNTCP Report, TB is most prevalent in low income peoples and they concluded that TB is most common in patients who have family income below 1 lakh than in patients who have income above 2 lakhs (Munsab Ali *et al* 2012).

TB is more in married patients as compared to unmarried patients. This may be evident that married person has more liability as compared to unmarried and give less attention toward their health We observed that most of

the TB patients 78 (78%) were Married . About 77% of patients do not have family history of TB but 23% patients have family history of TB (Ali M *et al* 2013).

Housing condition can affect the risk of exposure through poor ventilation or the quality of the indoor air. This study reveals that, (64%) were living in kutcha houses (small house) (R.Duarte *et al* 2018).

The study revealed that the majority of the patients did not receive social or financial support from their family or their community. 87% of patients do not have social support (Frezghi Hidray Gebreweld *et al* 2018).

Nutritional support plays an important role in treatment of TB . Here, out of 100 patients 62 patients (62%) were with Good nutritional status, majority of them were Non- vegetarian 98 (98%) .

Smokings, Alcoholism are one of the risk factors for developing pulmonary TB. In our study, 38 patients (38%) have both alcohol and smoking habit (Soham Gupta *et al* (2011).

It is observed that out of 100 patients, 61 patients (61%) were old patients, and maximum number of patients (91%) have Pulmonary TB, 9% of patients are less likely to have Extra Pulmonary TB.

Treatments for TB patients are given according to three categories. Majority of TB patients were under the treatment of Category I.

Default is one of the unfavourable outcomes for TB patients and represents an important challenge for the control programme. Older age, the male sex, inadequate knowledge, ignorance on need for treatment compliance and stigma are among reported patient-related factors that influence default in the region. In this study population, 77 patients (77%) were regularly following TB treatment and 23 patients (23%) have not regularly followed TB treatment. So they were under the Default condition. One of the reasons for default condition explained by the patients that they discontinued treatment at the start of continuation phase soon after feeling better (wrongly perceiving it as cure). This finding might be related to lack of awareness or inadequate knowledge about TB infections and its treatment (Bernard N Muturel *et al* 2011).

70 patients (70%) have no Co-morbid conditions because most of the TB patients in our study population were under the age group of 50. So this may be one of the reasons for less co-morbidity. The most common co-morbid condition was the Endocrine disorder, Diabetes Mellitus 20 (20%). Even an systematic review of 13 observational studies from various parts of the globe suggests that DM was associated with an increased risk of TB regardless of study design and population (Soham Gupta *et al* 2011).

In our study, 2 patients (2%) were mentally depressed and maximum numbers of patients (98%) were not depressed.

In Regular TB, out of 77 patients, 39 (50.6%) patients have no Social habits and 24 (31.1%) patients were Alcoholic and smokers. Majority of regular TB patients were non- vegetarian 75 (97.4%). 53 (68.8%) patients do not any other co-morbid condition and 14 (18.1%) patients have DM.

In Default TB, out of 23 patients, 14 (60.8%) patients were Alcoholic and smokers and 7 (30.4%) patients were not having any other social habits. Here all the 23 patients (100%) were non- vegetarian. 6 (26.08%) patients were Diabetic and remaining 17 (73.9%) patients have no co-morbidities.

CONCLUSION

In our study population (100 patients), majority of the patients were regularly following the course of TB treatment. But some of the patients were under the default conditions due to their social habits like alcoholism and smoking, carelessness, non compliance with treatment, having the symptoms of nausea and vomiting after taking medication, and stopped taking medication soon after feeling better (wrongly perceiving it as cure). From the results, it may be evident that social factors have effect on Tuberculosis patients. Also other factors like education level, low income, nutritional status, employment status, living conditions (crowding) and social habits have influence on TB patients. In order to overcome the default condition, the clinical pharmacist can help the patients in regularly following the TB treatment by creating awareness about the disease, educating the patients on the treatment and medication which helps in the improvement of medication compliance along with patient quality of life. Patient counselling enhances the treatment adherence and improves treatment outcomes.

During counselling, the patients were educated that TB is fully curable and treatable disease.

1. They were informed about TB, how the disease spreads, its severity, proper use of medications, course of treatment and nutritional needs to improve the treatment adherence.
2. The patients were encouraged about self efficacy and motivated to achieve a complete care.
3. Advised for regular follow up of treatment and completion of course of treatment.
4. Counselled about healthy rich diet to improve their nutritional status.

5. Advised to stop social habits like alcohol consumption, smoking and tobacco use which affects the therapeutic outcome of treatment and leads to disease severity.

6. Also they were advised to avoid discontinuation of medication and thereby preventing from default TB.

7. Health education were provided to decrease the non- adherence among TB patients on treatment.

8. Provision of psychological counselling.

After counselling, the patients reported that they were regularly taking the medication and following proper nutritional diet. Also reported that they stopped consuming alcohol and smoking habit. This shows that the patients have compliance towards the treatment.

ACKNOWLEDGEMENT

It is the pleasure and privilege to express our deep sense of thanks and indebtedness to the management of The Erode College of Pharmacy and Research Institute, Hospital management for giving permission and facilities to carry out the study.

CONFLICT OF INTEREST

Authors declare no conflict of interest.

ABBREVIATIONS

TB: Tuberculosis; **WHO:** World Health Organisation; **HIV:** Human Immuno deficiency Virus; **SES:** Socio Economic Status; **DM:** Diabetes Mellitus; **IHEC:** Institutional Human Ethics Committee.

REFERENCE

1. M N I Mondal , Hoque M. Nazrul, M R K Chowdhury1, J Howard, Socio-demographic factors affecting knowledge level of Tuberculosis patients in Rajshahi City, Bangladesh, African Health Sciences,14.,4.,2014,855- 865.,
2. Munsab Ali, Manju S, Abul Kalam Najmi, Faisal I, Santanu M, Ravinder K M, Associated socioeconomic status with illness behavior in tuberculosis patient undergoing DOTS therapy, Indian Journal of Pharmacy Practice, 5.,3.,2012,:45-48.,

3. Mohammed El -Muttalut* and Mustafa Khidir Elnimeir, Factors contributing to non-compliance with treatment among tuberculosis patients-Kassala State- Sudan-2016, International Journal of Public Health and Epidemiology, 6., 3.,2017,333-338.,
4. R.Duarte, K. Lönnrothd, C. Carvalhof, F. Limaa, A.C.C. Carvalhog,M. Mu˜noz-Torricoh, R. Centisi,Tuberculosis, social determinants and co-morbidities(including HIV),Pulmonol,24.,2.,2018,115-119.,
5. Rajpal S Kashyap, Amit R Nayak, Aliabbas A Husain, Seema D Shekhawat, Ashish R Satav, Ruchika K Jain et al, Impact of socioeconomic status and living condition onlatent tuberculosis diagnosis among the tribal population of Melghat: A cohort study, Lung India,33., 4.,216, 372-38.,
6. Sifrash Meseret Gelaw, Socioeconomic Factors Associated with Knowledge on Tuberculosis among Adults in Ethiopia, Tuberculosis Research and Treatment, Article ID 6207457, 2016,1-11.,
7. Ali M*, Imam F, Mallik S, Mehra RK, Kumar P, Garg A, Effect of Social Factors on Tuberculosis Patients, A Comprehensive Illness Behaviour Study, Indian Journal of Pharmacy Practice,6., 2.,2013, 61-64.,