Original Research Article

A cross sectional study on factors affecting treatment outcome among TB patients

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ABSTRACT

Background: Many factors affect treatment outcome negatively. Study of these factors is essential to prevent relapse and treatment failure. The objective of the research was to study the factors affecting the treatment outcome among TB patients.
Methods: Patients diagnosed to have tuberculosis who are attending the DOTS centre at a tertiary care hospital, and fulfilling the inclusion and exclusion criteria were included in the present study. 50 patients who were being treated under DOTS regime were included in the present study. The study was conducted for a period of two years. The patients were followed for a period of six months to observe the treatment outcome among them.
Results: Maximum patient were in the age group of 21-40 years (50%) followed by 41-60 years (28.3%). Cough was present in 76.7% of the cases and was the most common presenting symptom of the cases. The cure rate was significantly more among non alcoholics compared to alcoholics. The cure rate was only 60% among smokers compared to 88.5% among non smokers. The non cure rate was high among smokers i.e. 40% compared to only 11.5% among those who never smoked. This difference was found to be statistically significant.
Conclusions: Smoking and alcohol were found to be important risk factors for treatment failure in the present study.

Keywords: Alcohol, Factors, Risk factors, Smoking

INTRODUCTION

Tuberculosis control targets have not yet been achieved by many countries. Although they have done and are doing a variety of efforts still TB continues to be a health problem. Tuberculosis still is a major public health problem.

It is an important cause of increased morbidity and mortality among the tuberculosis patients. Association of tuberculosis with HIV has complicated the situation. In the sub-Saharan Africa, more than 80% of the co-infection of TB-HIV is present. They potentiate each other. In the presence of HIV, due to deficient immune response, there is reactivation of the latent tuberculosis infection which was acquired during mostly in the childhood. Tuberculosis patients without HIV are more susceptible to develop HIV if they have high risk behavior.[1]

The co-infection poses a challenge in the diagnosis of tuberculosis. Due to deficient immune system, the antigen antibody response does not occur and the typical cavitations are not seen in tuberculosis patients. They also have less or scanty bacilli in the sputum making it difficult for sputum microscopy based diagnosis. Various

factors affect treatment outcome. The major are side effects of the therapy which demotivates even the most motivated patient.[2]

Tuberculosis is especially common in the developing countries. Many factors in these countries affect the treatment outcome adversely. Study of these factors is essential to prevent the relapse and treatment failure among the tuberculosis patients. The lessons learnt from these studies can be applied and incorporated in the counseling process of the new tuberculosis patients.[3]

Co-infection of TB-HIV is a major problem of public health importance. Thus, HIV is a major determinant in the treatment outcome among the tuberculosis patients. If they are infected with HIV also then the death rate increases by 25% more compared to those tuberculosis patients who are not infected with HIV. Among HIV patients also tuberculosis is the most common opportunistic infection.[4] HIV is acting as an important hurdle in the targets of TB treatment success. This is especially applicable for countries with high burden of HIV. Few factors like over diagnosis or under diagnosis, increased death rate and increased rate of complications, high rates of default are associated with low success rates.[5]

METHODS

Patients diagnosed to have tuberculosis who are attending the DOTS centre at a tertiary care hospital, and fulfilling the inclusion and exclusion criteria were included in the present study. 50 patients who were being treated under DOTS regime were included in the present study. The study was conducted for a period of two years. The patients were followed for a period of six months to observe the treatment outcome among them. Patients were included in the present study only after they gave the informed consent to be part of the present study.

All patients of tuberculosis attending DOTS centre and are on DOTS regime at the teaching hospital which is also a study site for the present study during the study period were included in the present study. Tuberculosis patients not on the DOTS regime were excluded from the present study. Patients not willing to be part of the present study were excluded from the present study.

Data was collected as per the pre tested study questionnaire designed for the present study and entered after taking detailed history from the patients. The history included age, sex, social class, religion, occupation, history of smoking and history of alcohol addiction were recorded and noted. Symptoms like cough, breathlessness, fever, hemoptysis, chest pain, night sweats, wheeze, and weight loss were recorded from the patients.

The treatment outcome of patients under DOTS regime was classified as cured or not cured. Not cured means default, failure or relapse. To know the treatment outcome, the patients were followed for six months. At follow up visits, the sputum microscopy and chest X ray was taken. The treatment outcome was compared between smokers and non smokers as well as between alcoholics and non alcoholics

The data was analyzed using proportions, chi square test was applied to study association between effect smoking on treatment outcome as well as effect of alcohol addiction on the treatment outcome, and if the p value was less than 0.05 then it was taken as positive effect of addiction on the treatment outcome. But if the p value was more than 0.05 then it was considered that there is no difference between the two groups of smokers and non smokers as well as between the alcoholics and non alcoholics.

RESULTS

Table 1: Age and sex wise distribution of study subjects.

Age (years)	Male		Female		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
< 20	4	12.5	5	17.9	9	15
21-40	14	43.8	16	57.1	30	50
41-60	11	34.4	6	21.4	17	28.3
> 60	3	9.4	1	3.6	4	6.7
Total	32	100	28	100	60	100

Table 1 shows Maximum patients were in the age group of 21-40years (50%) followed by 41-60 years (28.3%). Younger age group of less than 20years constituted 15% of the cases. Males were more than females. Age distribution was similar for males as well as females. Table 2 shows distribution of study subjects as per social

class. Maximum i.e. 60% belonged to poor social class. Remaining cases were from middle class. Cough was present in 76.7% of the cases and was the most common presenting symptom of the cases. Breathlessness was seen in 15% of the cases. 41.7% of the cases had fever. Hemoptysis was observed in 18.3% of the cases while

23.3% of the cases had chest pain. 23.3% of the cases complained of night sweats while 21.7% of the cases had weight loss. Wheeze was present in 20% of the cases as shown in Table 3.

Table 2: Distribution of study subjects as per social class.

Social class	Number	Percentage
Middle	24	40
Poor	36	60
Total	60	100

Table 3: Distribution of study subjects as per the presenting symptoms.

Symptoms		Number	Percentage
Cough	Yes	46	76.7
	No	14	23.3
Breathlessness	Yes	9	15
	No	51	85
Fever	Yes	25	41.7
	No	35	58.3
Hemoptysis	Yes	11	18.3
	No	49	81.7
Chest pain	Yes	14	23.3
	No	46	76.7
Night sweats	Yes	14	23.3
	No	46	76.7
Weight loss	Yes	13	21.7
	No	47	78.3
Wheeze	Yes	12	20
	No	48	80

Table 3 shows the cure rate was only 37.5% among alcoholics compared to 87.9% among non alcoholics. The non cure rate was high among alcoholics i.e. 62.5% compared to only 12.1% among those who never consumed alcohol. This difference was found to be statistically significant.

Table 4: Effect of alcohol addiction on treatment outcome.

Alcohol addiction	Cured		Not cured	
	Number	%	Number	%
Yes	3	37.5	5	62.5
No	29	87.9	4	12.1
Total	32	78	9	22

$X^2 = 6.825$, p = 0.004495, Highly significant

The cure rate was only 60% among smokers compared to 88.5% among non smokers. The non cure rate was high among smokers i.e. 40% compared to only 11.5% among those who never smoked.

This difference was found to be statistically significant as shown in Table 5.

Table 5: Effect of smoking on treatment outcome.

Smoking	Cured		Not cured	
	Number	%	Number	%
Yes	9	60	6	40
No	23	88.5	3	11.5
Total	32	78	9	22

$X^2 = 2.99$, p = 0.04191, Significant

DISCUSSION

Maximum patients were in the age group of 21-40years (50%) followed by 41-60years (28.3%). Maximum i.e. 60% belonged to poor social class. Remaining cases were from middle class. Cough was present in 76.7% of the cases and was the most common presenting symptom of the cases. Breathlessness was seen in 15% of the cases. 41.7% of the cases had fever. Hemoptysis was observed in 18.3% of the cases while 23.3% of the cases had chest pain. 23.3% of the cases complained of night sweats while 21.7% of the cases had weight loss. Wheeze was present in 20% of the cases. The cure rate was only 37.5% among alcoholics compared to 87.9% among non alcoholics. The non cure rate was high among alcoholics i.e. 62.5% compared to only 12.1% among those who never consumed alcohol. This difference was found to be statistically significant. The cure rate was only 60% among smokers compared to 88.5% among non smokers. The non cure rate was high among smokers i.e. 40% compared to only 11.5% among those who never smoked. This difference was found to be statistically significant.

Sinshaw Y et al found that the cure rate was 77.3% in their study.[6] The author found that the factors responsible for treatment failure were their residence outside the hospital area, being underweight at the start of the treatment, condition of bedridden among the patients, and side effects occurrence. The author recommended that more factors should be identified to improve success rate.

Zenebe Y et al noted that the cure rate was 80.8%.[7] The author observed that 26% of the patients were co-infected with HIV. The treatment failure rate was 4 times more among those who were HIV positive compared to those who were HIV negative. The treatment failure rate was 5 times more among those who were on re-treatment compared to those who were not re-treatment. The treatment failure rate was 5.3 times more among those who were from rural areas compared to those who were from urban areas. The treatment failure rate was 2.9 times more among those who were of 15-24years of age compared to those who were older. The author regrets that the cure rate was still below the target level set by WHO.

Gebregziabher G et al found that males were more than the females.[8] This finding is similar to the finding of the present study. We also observed that males were more than females. They noted that maximum were from rural areas. Contrarary to the finding of the other studies, the

author found that sputum positive patients were less in number than the sputum negative patients. They found that 85% of the patient s was cured. The treatment failure rate was 1.63 times more among those who were from rural areas compared to those who were from urban areas. The treatment failure rate was 1.77 times more among those who were having pulmonary tuberculosis compared to those who were having extra pulmonary tuberculosis. The author believes that DOTS has definitely improved the treatment success rates.

Shaweno D et al found that the survival rate among tuberculosis patients with HIV was lesser compared to those tuberculosis patients without HIV.[9] Thus presence of HIV infection in tuberculosis patients affects the survival rate among the tuberculosis patients. Dangisso MH et al the treatment failure rate was 1.11 times more among those who were from urban areas compared to those who were from rural areas.[10] The treatment success rate was higher in extra pulmonary cases compared to pulmonary cases. Males lost to follow up more than females. Pulmonary TB cases also lost to follow up more than extra pulmonary tuberculosis cases. Mortality was more among pulmonary cases.

CONCLUSION

Smoking and alcohol were found to be important risk factors for treatment failure in the present study. Hence tuberculosis patients should be advised not to take alcohol or not to smoke during the period of DOTS therapy for better treatment outcomes. Special counseling sessions should be organized for newly diagnosed tuberculosis patients so that they can be explained to follow certain guidelines to have good treatment outcomes.

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