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Prevalence of Malnutrition in Tuberculosis Patients on Treatment in A Tertiary Care Hospital

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ABSTRACT

Introduction : Association between TB and malnutrition is bidirectional. Under nutrition increases the risk of progression of TB infection to active TB and further increases metabolism leading to weight loss. Hence the current study was taken up

Methodology : Descriptive cross sectional study was done among 65 TB patients who were started on anti tuberculosis treatment in April- June,2022 for the first time. Sample size was calculated based on prevalence of malnutrition among TB patients that is 21% (n= 4pq/L2). Study population was selected by simple random sampling. The data was collected by interviewing the patients with pretested semi structured questionnaire.

The data was entered and analyzed using SPSS Software

RESULTS : 65 participants were taken into study mean age was 48.31± 15.9 years; 70.77% were men; mean BMI was 18.8± 0.39 kg/m2; 70.8% were pulmonary TB and 29.2% were extra pulmonary TB; 9.23% were diabetics; 6.15% were reactive to HIV ;prevalence of malnutrition among study subjects was 46.2% with BMI<18.5 kg/m2

Discussion :The study revealed that 46.2% of study population are malnourished and was comparable to the study done by Berhanu Elfu Et Al where 57.17% were malnourished

Conclusions : High proportions(46.2%) of TB patients were malnourished so high priority to be given to improve nutrition among TB patients in NTEP

SUMMARY : Malnutrition is a serious problem among TB patients , and high priority should be given to improve nutrition among TB patients , thus contributing to treatment success rate.

Key Words: *malnutrition , tuberculosis.*

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INTRODUCTION

The incidence of TB in the world is about 127 cases per 1,00,000 population according to WHO in 2020 and the incidence is about 188 per 1,00,000 population in India according to Global TB report 2021(1). Association between TB and malnutrition is bidirectional. Under nutrition increases the risk of progression of TB infection to active TB infection and infection further increases metabolism leading to weight loss. Active TB needs high energy requirement. Under nutrition not only risk factor for progression of latent TB infection into active disease but it increases the risk of drug toxicity, relapse and even death (2). The present study aims to find the prevalence of malnutrition in TB patients on treatment and factors associated in them with malnutrition

MATERIALS &METHODS

A. Study design: A descriptive cross sectional study
B. Sample size: Calculated using and assuming confidence level as 95%
n = 4pq/L^2 where n is sample size
p is prevalence
q is 1-p
L is error

Taking p= 21% according to(3)
q= 78% ; L = 10%
n = 65

C. Sampling frame: All new TB patients who were started on treatment in second quarter(April-June) 2022 in a tertiary care hospital in Srikakulam district were taken as the sampling frame
D. Sampling Method: Simple random sampling method was used here
E. Inclusion criteria: All new pulmonary and extra pulmonary TB patients who were started on treatment in second quarter(April-June) 2022 in the tertiary care hospital and given consent were included in the study
F. Exclusion criteria: All the TB patients on retreatment were excluded from the study
All the patients who were not willing to participate in the study were excluded
G. Study Tools : Tools for the data collection were
Pretested structured questionnaire was used to interview the patient , patient treatment card, weighing machine for weight measurement , stadiometer for height measurement , locally available cups ,plates , glasses for measuring the amount of food consumed for diet survey using 24 hour recall method
H. Data Collection Method : Primary data collection was performed by making phone call to the patients and asking them to come to District TB Centre whenever feasible to them and when they turned up at TB Centre a comfortable place for both the patient and the interviewer was chosen and the interview was taken by using the pretested structured questionnaire
Operational definitions used were from(4,5,6)

- Smoker : An adult who has smoke at least 100 cigarettes in his/her life and / or who now smokes everyday
- Alcoholic :An adult who is taking more than 60 ml alcohol per day is considered as an alcoholic
- Malnutrition : For this study malnutrition is defined as those with BMI ≤ 18.5 Kg/m2
- Calorie deficit : Considering the age, gender and work and comparing to reference adult male and female calorie deficit is calculated using 24 hour recall method in this study

I. Data Analysis: Data was analyzed using Microsoft Excel and SPSS software

RESULTS

- Among 65 participants , mean age was found to be 48.31 years , median weight of males was 45 kg, median weight of females was 46 kg
- Majority (70.77%) of the study participants were male, 40% belonged to lower middle class and 33.84% belonged to upper lower class, 73.85% of the subjects were married (table 1)
- Majority (70.77%)of the study participants were suffering from pulmonary Tuberculosis (figure 1)
- Participants with BMI ≤18.5 kg/m^2 were 46.2%(table 2)
- Calorie deficit was found in 93.8% (figure 2)
- There was no significant association found in our study for socio economic status , overcrowding , smoking , alcohol usage, HIV status , DM ,calorie deficit and malnutrition but for site of disease and malnutrition (pulmonary Tuberculosis and malnourishment are associated) (table 3)

Table 1-Distribution of sociodemographic factors

Variable		Frequency	Percentage
Gender	Male	46	70.77
	Female	19	29.23
	Total	65	100
Socio economic status	Lower	6	9.23
	Upper lower	26	40.00
	Lower middle	22	33.85
	Upper middle	11	16.92
Marital status	Married	48	73.85
	Separated	3	4.62
	Unmarried	6	9.23
	Widowed/widower	8	12.31

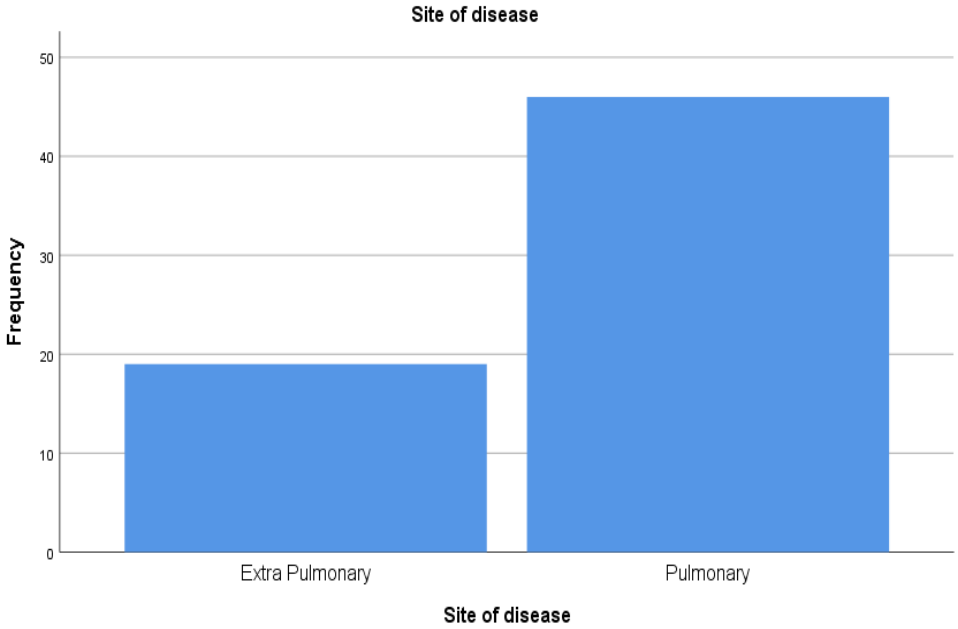

Fig 1- Site of Tuberculosis

Table 2-Burden of malnutrition

Variable		Frequency	Percentage
BMI	<=18.5	30	46.2
	>18.5	35	53.8
	Total	65	100

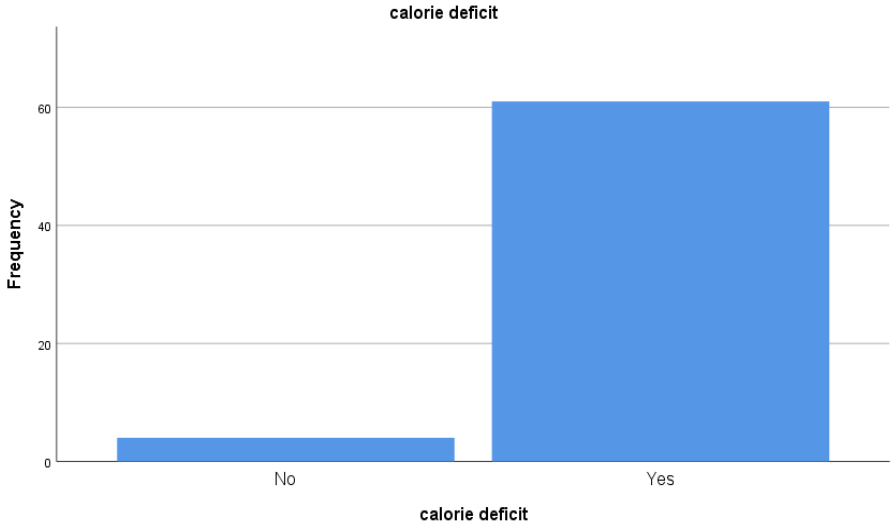

Fig 2-Calorie deficit distribution of the study population

Table 3- Association between various factors and malnutrition

		<=18.5 kg/m2	>18.5 kg/m2	Chi square value, p value
Socio economic status	Lower	3(50%)	3(50%)	Chi square = 1.323, p = 0.724
	Lower middle	14(53.84%)	12(46.15%)	
	Upper lower	9(40.90%)	13(59.09%)	
	Upper middle	4(36.36%)	7(63.63%)	
Overcrowding	Yes	8(47.05%)	9(52.94%)	Chi square = 0.021, p = 0.885
	No	22(45.83%)	26(54.16%)	
Smoker	Yes	5(38.46%)	8(61.53%)	Chi square = 0.387, p= 0.534
	No	25(48.07%)	27(51.92%)	
Alcohol usage	Yes	11(45.83%)	13(54.16%)	Chi square = 0.023, p = 0.968
	No	19(46.34%)	22(53.65%)	
HIV Status	Non reactive	28(46.66%)	32(53.33%)	Chi square=0.887,p=0.642
	Reactive	2(50%)	2(50%)	
	Unknown		1(100%)	
Diabetes status	Diabetic	3(42.85%)	4(57.14%)	Chi square= 0.443,p= 0.801
	Non diabetic	27(47.36%)	30(52.63%)	
	Unknown	1(50%)	1(50%)	
Calorie deficit	Yes	29(47.54%)	32(52.45%)	Chi square = 0.767, p = 0.618
	No	1(25%)	3(75%)	
Site of disease	Pulmonary	25(54.34%)	21(45.65%)	Chi square = 4.252, p = 0.039
	Extra pulmonary	5(26.31%)	14(73.68%)	

DISCUSSION

- The study revealed that 46.2% of study population were malnourished and is comparable to the study done by Berhanu Elfu Et Al where 57.17% were malnourished
- The high prevalence of malnutrition was attributed to the socio economic status in the study population where 40% belong to upper lower and 33.85% belong to lower middle socio economic class
- Association between type of TB and malnutrition was present and it is comparable to the study done by Berhanu Elfu Et Al

CONCLUSION

- 46.2% of the study population had malnutrition which need to be taken care of to reduce the prevalence of tuberculosis
- Association between pulmonary tuberculosis and malnutrition is reestablished in the study

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