

ORIGINAL ARTICLES

NUTRITIONAL STATUS OF PATIENTS WITH TUBERCULOSIS ATTENDING AT TERTIARY MEDICAL CENTER IN BANGLADESH

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Abstract:

Background: Tuberculosis (TB) is a common communicable disease in Bangladesh. Treatment of TB sometimes depends on nutritional status of the patient. Both in developed and developing countries TB has been found to coexist with malnutrition among patients at the beginning of treatment. So it would be very important to evaluate the nutritional assessment of a patient before starting treatment. If malnutrition exists in a patient of TB than nutrition supplementation can play an important role in improving the disease condition to reduce further morbidity and mortality.

Method: It was a descriptive study, conducted on eighty-seven adult TB participant attending at medicine department, Bangabandhu Sheikh Mujib Medical University (BSMMU), where nutritional status (Body-Mass Index or BMI) was measured by keeping records of patient's height in meters and weight in kilogram.

Result: A total 87 participants were included in this study where 45 (52 percent) were males and 42 (48 percent) were females. Most of the participants were healthy 56 percent (n=49) participants. However, under-nutrition was present in 36 percent (n=31) participants and over-nutrition were only 8 percent (n=7). Most of the participant takes more than three meals 54 percent (n=47) participants. However, three meals were taken by 45 percent (n=39) participants and two meals were taken only 1 percent (n=1).

Conclusion: In this study almost 36% participants of tuberculosis were in under-nutrition. So Nutrition supplementation could be needed in improving the disease condition to reduce further morbidity and mortality. On the other hand large scale study should be needed for taking proper steps to know the overall situation of the country.

Key words: Tuberculosis, Nutrition Status, Malnutrition.

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Introduction

Malnutrition in tuberculosis (TB) patients is common in both developed and developing countries.¹⁻⁴ TB and malnutrition are major public health problems in Bangladesh where Bangladesh still ranks among the top ten countries in the world with the highest TB burden.⁵ Here in Bangladesh, around 186 people die of TB every day and around 68 000 per year.⁶ In 22 high tuberculosis-burden countries Bangladesh is one of them. The incidence, prevalence and mortality

estimates for tuberculosis (TB) are 225/100 000, 434 per 100 000 and 45/100 000 respectively and 1.4% statistics of multidrug resistant cases.⁷ For TB patients nutrition is the key point. TB treatment may be complicated when malnutrition also coexists in that particular patients. TB has been found to coexist with malnutrition among participants at the beginning of treatment in both developed and developing countries.^{8,9,10,11} Malnutrition is frequently observed in patients with pulmonary TB. Several studies

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reported that patients with active pulmonary TB are malnourished, as indicated by reductions in the level of visceral proteins, anthropometric indexes and micronutrient status^{12,13} Nutrition support is necessary for malnourished TB patients. Nutrition risk assessment is important in providing nutrition support. Even, in Bangladesh we don't have much information about the nutritional situation of TB patient to formulate nutrition intervention. This study was designed to fill-in this knowledge gap.

Methodology

This study was a cross-sectional study conducted on eighty-seven adult TB patients were taken from medicine department, Bangabandhu Sheikh Mujib Medical University (BSMMU), where the participants regularly visit for the treatment. At first Eighty-seven patients with suspected pulmonary tuberculosis were taken for pathological test. The diagnosis of pulmonary TB was made on the basis of symptoms and the presence of *M. tuberculosis*. Then by face to face interview a semi-structured questionnaire filled-up where height of the patient's was recorded in meter and weight was recorded in kilogram. Medical officers were played as data collector of this study. Patient age ranged from 18 to 91 years (mean, 64.9 years). This study was approved by the institutional review board of Bangabandhu Sheikh Mujib Medical University, Shahbagh, Dhaka. Data variables were collected from indoor and outdoor of Department of Internal Medicine, Bangabandhu Sheikh Mujib Medical University from January 2017 to December 2017 in relation to the objectives of the study.

After coding and editing, data were analyzed by using Statistical Package for Social Science or SPSS (version 21 IBM). According to variable and mean, standard deviation were calculated and presented by table. The BMI will be calculated as body weight (kg) divided by height in meter square ($BMI = \text{wt (kg)} / \text{height m}^2$). BMI $\leq 18.5 \text{ kg/m}^2$ taken as cut-off points for malnutrition (1. Severe Under nutrition (BMI: <16), 2. Moderate Under nutrition (BMI: 16-17), 3. Mild Under nutrition (BMI: 17-18.4), 4. (BMI: 18.5-24.9), 5. Over weight (BMI: 25-29.9), 6. Moderately Obese (BMI: 30-34.9), 7. Severely Obese (BMI: 35-39.9), 8. Morbid Obese (BMI : >40)

Result

Age distribution of participants are shown in Table-1 which represents 20 percent participant were '14-20 years' (n=18) and '21-35 years' (44 percent, n=39). On the other hand, '36-50 years' (21 percent, n=19) and '51 above' (15 percent, n=24).

Table-1
Age of participant

Age of Participant	Percent (n)
14-20 years	20(18)
21-35 years	44 (39)
36-50 years	21(19)
51 years & above	15(24)

Table II shows that among 87 participants, 45 (52 percent) were males and 42 (48 percent) were females.

Table-II
Sex of Participants

Sex of Participants	Percent (n)
Male	52 (45)
Female	48 (42)

Most of the participants were married (76 percent, n=66) and unmarried were (24 percent, n=21).

Table-III
Marital Status of participant

Marital Status	Percent (n)
Married	76 (66)
Unmarried	24(21)

Findings related to education of patients are presented in Table-IV. Data show that illiterate was 11 percent, (n=10), primary was 21 percent, (n=18), secondary-higher secondary was 54 percent (n=47) and graduation & above was 14 percent (n=12).

Table-IV
Education of participant

Participant's education level	Percent (n)
Illiterate	11 (10)
Primary	21(18)
Secondary-Higher secondary	54(47)
Graduation & above	14(12)

Table-V reveals that 23 percent (n=20) participants were student, 21 percent (n=18) were house wife, 14 percent (n=12) were service holder, 11 percent (n=10) were day labor, 9 percent (n=8) were doing business, 8 percent (n=7) doing agriculture and 14 percent (n=12) had other occupation.

Table-V
Occupation of participant

Occupation	Percent (n)
Agriculture	8(7)
Business	9(8)
Day labor	11(10)
Service holder	14(12)
Student	23(20)
House wife	21(18)
Others	14(12)

Monthly income of participants displayed in Table-VI. Most of the participant's monthly income (<20000 taka) were (59 percent, n=68), (20000-39000 taka) were (25 percent, n=29) and (40000-59000 taka) were (3 percent, n=3).

Table-VI
Monthly income of participant

Monthly income(in Taka)	Percent (n)
<20000	68 (59)
20000-39000	29 (25)
40000-59000	3(3)

Table-VII shows that own house were present in 44 percent (n=38) participants. However, rented house were present in 54 percent (n=47) participants and homeless were only 2 percent (n=2).

Table-VII
Housing status of participant

Housing status	Percent (n)
Own house	44 (38)
Rented house	54(47)
Home less	2(2)

Table-VIII shows that Smear positive (+ve) TB were 14 percent (n=12), Smear -ve were 11 percent (n=10), Tubercular Pleural Effusion 13 percent (n=11), Tubercular Lymphadenitis 42 percent(n=37), Intestinal TB, Disseminated TB & others were 19 percent(n=17).

Table-VIII
Tubercular status of patient's suspected for TB

Tubercular status	Percent (n)
Smear +ve TB	14 (12)
Smear -ve TB	11(10)
Tubercular pleural effusion	13(11)
Tubercular lymphadenitis	42(37)
Intestinal TB	3(3)
disseminated TB	8(7)
Others (Bone T3B/Spinal TB/ Tubercular Meningitis/Miliary TB)	8(7)

In Table-IX symptoms of TB arrived more than 2 months back for 68 percent (n=59), within 1-2 months 30 percent (n=26) and less than 1 month 2.3 percent (n=2). Most of the participant's duration of tuberculosis diagnosis was less than 2 months in 83 percent (n=72) and treatment was started less than 1 month in 77 percent (n=67).

Table-IX
Symptoms arrival duration, duration of diagnosis & treatment duration of TB participants

Duration	Percent (n)
<1month	2.3 (2)
Symptoms Duration	
1-2months	30(26)
>2months	68(59)
Duration of TB Diagnosis	
<2months	83(72)
>2 months	17(15)
	not yet started 6(5)
Treatment	started <1month 77(67)
Duration	started >1month 17(15)

Daily food intake of participant's is shown in Table-10. Most of the participant takes more than three meals 54 percent (n=47) participants. However, three meals were taken by 45 percent (n=39) participants and two meals were taken only 1 percent (n=1).

Table-X
Daily food intake of participant

Daily meal number	Percent (n)
Two meal	1(1)
Three meal	45(39)
more than three meal	54(47)

Nutritional status of participant is shown in Table XI. Most of the participants were participants. However, under-nutrition was present in 36 percent (n=31) participants and over-nutrition were only 8 percent (n=7).

Table-XI
Nutritional status of TB patients before starting treatment

Nutritional status of TB participant (according to BMI)	Percent (n)
Under-nutrition/malnutrition	36(31)
Normal nutritional status	56(49)
Over-nutrition	8(7)

Discussion

This study was conducted to assess the nutritional status of TB patients who had attended at OPD and were admitted of Bangabandhu Sheikh Mujib Medical University. Malnutrition is frequently observed in patients with pulmonary TB though normal nutritional status was more. Several studies reported that patients with active pulmonary TB are malnourished, as indicated by reductions in the level of macronutrient and micronutrient status^{14,15}.

There is so many evidence which shows poor nutrition is a risk factor for developing TB¹⁶ is result of the wide prevalence of malnutrition among newly diagnosed TB patients which also found in this study, consistent with findings from other studies.^{17-19,20,21}. So special attention should be needed for TB patients when distributing food within the family. Every TB patient need baseline nutritional assessment prior to the commencement of treatment. This would help in the planning of nutritional supplementation according to individual needs and habits.

Nutritional knowledge is essential, particularly for the improved management of patient nutrition and treatment.²² Like so many country lack of knowledge on nutrition is a common phenomenon in our country²³⁻²⁵. Nutritional requirements of TB patients is therefore essential, and programme policy makers need to consider this issue. But not only knowledge or awareness could develop the scenario, sometimes poverty prevent the application process, which could observe in this study too. Education on nutrition alone will not sufficient if food price hikes²⁶. To reduce long-term prevalence of TB infection, the underlying social determinants of under nutrition need to be addressed.

Ethical Consideration

Ethical permission of this study was taken from the Institutional Review Board (IRB) of BSMMU. The purpose and procedure of the study were properly explained to the patients and consent was taken. The study was not involving any additional burden to the participants. All participants in this research study had a right to have the information they provide to be kept confidential. Additionally, in order to conduct a research study, it is imperative to consider any harm that might occur to participants. Furthermore, the purpose of the study was clearly indicated to participants prior to the study being conducted. An informed consent section was included as the first page of the study.

Conclusion

Tuberculosis (TB) is a common communicable disease in Bangladesh. In this study almost 36% participants of tuberculosis were in under-nutrition. So Nutrition supplementation could be needed in improving the disease condition to reduce further morbidity and mortality. On the other hand large scale study should be needed for taking proper steps to know the overall situation of the country.

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