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Nutrition Education for Care and Support of Tuberculosis Patients

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Abstract: ***Tuberculosis is one of the most fatal disease in the world, in human caused mostly "by the gram-positive acid-fast bacilli under the genus mycobacterium. The relation between tuberculosis and undernutrition has long been known.***
In this study, data of patients suffering from tuberculosis was collected and thereby was statistically studied. Information, Education and communication material was prepared to design an awareness program regarding role of nutrition in patients suffering from tuberculosis. It was seen in the present study that among the patients suffering from tuberculosis, inadequate intake of important food groups has lead them to the condition of malnutrition. There was a constant lack in the intake of essential food products including macro as well as micronutrients.
Thereby we can see that there is an urgent need to fix nutritional requirements of these patients apart from their medical prescriptions from the doctor.
Keywords: Tuberculosis, Malnutrition, Nutritional support, Diet, Patients

I. INTRODUCTION

"Annually approximately 2 million people die from tuberculosis" all over the globe [1-2] and India has a major share of global incidence of the disease. The old mechanisms of medicine have stated that malnutrition plays a vital role in onset of tuberculosis. It mainly affects cell-mediated immunity (CMI), and CMI is the main host which performs mechanisms against Tb. Nutrition deprivation and inadequacy of food are both responsible for causing active TB [3]. A balanced diet, containing all essential macronutrients as well as micronutrients, is extremely important for the people suffering from Tb. Apart from the medical course and injections at the hospital, this is what has to be introduced in their daily routine. [4]

A. Nutrition and Tuberculosis

Nutrient is a basically the matter that human being needs to consume for their healthy growth, for sustaining a healthy life and live happily [5]. They are therefore needed to function all the mechanisms going on in the body [6]. "Macronutrients (protein, carbohydrate, fat)" and "Micronutrients (Vitamins &Minerals)" work together to make an individual healthy and disease free.

B. Malnutrition and Tuberculosis

Malnutrition is said to be the state of either over nutrition or under nutrition or both. Undernutrition is a condition in which the person has inadequate supply of nutrition and the growth remains stunted. [7]
The link which connects TB and nutrition inadequacy has long been known. TB makes undernutrition even worse and thereby weakening the immunity, which leads to increasing the likelihood that latent TB will develop into active disease. Weight loss among those with TB can be caused by several factors, including reduced food intake due to loss of appetite, nausea and abdominal pain, nutrient losses from vomiting and diarrhea. [8]

C. Role of Nutrition in curing Tuberculosis

Body weight of a person is basically made up of fat free mass (muscle) and fat mass. Nutrient dissolution is defined as the distribution of weight loss or gain between fat and fat free stores. During drug treatment of active TB without the adequate nutrition, the nutritional status usually improves. It is not known whether nutritional supplementation, as an addition to standard care, improves health outcomes among people with TB, or prevents progression from TB infection to active disease. Owing to a lack of evidence that people with TB should receive nutritional care and support that is different from that which should be provided to others, the recommendations in this guideline are fully consistent with WHO's general recommendations on nutritional care and support." [19]

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II. METHODOLOGY

"Research methods are ways of studying something in order to find more about it an attempt to be familiar with it. A well planned and laid out research method is scientific and systematic providing specific knowledge required."

A. Locale of the Study

The study was carried out among the tuberculosis patients, of Delhi NCR region.

B. Sample Size of the Study

The total sample size for the study was 30 patients. 15 of the patients were male other 15 patients were females from Delhi NCR region.

C. Sampling

Selection of patients was done through purposive or purposeful sampling. We contacted Tuberculosis Demonstration Centre in Delhi as well as in other district regions and a list of patients was prepared, 15 samples each were selected for both males and females. Total number of samples summed up to 30 from Delhi NCR region.

D. Development of Tools

A questionnaire was prepared for data collection, comprising of four different sections ie. Demographic profile, Tuberculosis Diagnosis, Physical activity pattern and Dietary pattern. Further more Information, education and communication material was prepared.

1) Demographic Profile
2) Anthropometric Measurements
3) Tuberculosis Diagnosis
4) Physical Activity Pattern
5) Dietary Pattern

E. Data Collection

1) *Interview Schedule:* Each patient was enquired about the study and its requirements before filling the questionnaire. Any doubts about the study were cleared and the patients will be assured that their privacy will be our main priority. Most of all the participation will be voluntary.
2) *Discussion and Observation:* Discussion and observation are two vital data collection methods, as communication with patients lead to enough information which was documented. Observing the patients after filling of questionnaire and later on after distribution of IEC material, the pamphlet- which gives nutritional information to aware the patient.
3) Development of Information, Education(IEC) and Communication material and Behavior Change Communication material (BCC)

To implement change in behavior and diet IEC and BCC materials was prepared. Information, education, and communication (IEC) is a process of working with individuals, communities and societies to develop communication strategies to promote positive behaviors which are appropriate to their settings. Behavior change communication (BCC) is a process of working with individuals, communities and societies to develop communication strategies to promote positive behaviors which are appropriate to their settings and provide a supportive environment which will enable people to initiate and sustain positive behaviors.

F. Statistical Analysis

Analyzing the results after various stages of intervention and applying statistical mean and standard deviations to bring out the percentage graphs and the results.

1) Percentage analysis
2) Mean
3) Standard Deviation

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III. RESULTS AND DISCUSSION

TABLE 4.1 Demographic table

DEMOGRAPHIC PROFILE			
Particular	N(30)	(%)	MEAN±SD
AGE			38.56±7.43
Below 40	18	60%	
Above 40	12	40%	
SOCIO-ECONOMIC STATUS			
Lower Income Group	22	74%	
Middle Income Group	8	26%	
High Income Group	-	0%	
FAMILY INCOME			
≤Rs.1,00,000	22	73.3%	
Rs.1,00,000-10,00,000	8	26.6%	
≥Rs.10,00,000	-	0%	

This table depicts that 60% of patients were below the age of 40 while 40% were above the age of 40 and mean and S.D. for the same is 38.56±7.43. Out of 30 patients 74% belonged to the Lower income group and the rest 26% belonged to Middle income group while there was none from higher income group the mean and S.D. turned out to be 1.16±0.37. Out of 30 patients 77% patients had a family income below Rs. 1,00,000 and the other 26% had family income between Rs. 1,00,000 to 10,00,000 per annum, so the mean and S.D. were 1.26±0.45 .

TABLE 4.2 Physical Activity Pattern

Variable	N30	(%)
Life Style Pattern		
Sedentary	1	3.3%
Moderate	15	50%
Heavy worker	14	46.6%
Physical Activity		
Yes	11	36.6%
No	19	63.3%

This table depicts that out of 30 patients 50% are moderate workers while 46% are heavy workers and the rest 4% are sedentary. On the basis of physical activity pattern only 36 patients do physical workout regularly and rest don't

Table 4.3 Dietary Pattern

Variable	N30	(%)
Water consumption		
1-3 glasses a day	7	23%
4-6 glasses a day	14	47%
7-9 glasses a day	9	30%
More than that	-	-
Number of meals		
1-2 meals a day	12	40%
3-4 meals a day	18	60%
5-6 meals a day	-	-
More than 6 meals a day	-	-
Tea / Coffee Intake		
None- 1 cup a day	12	40%
2-3 cups a day	18	60%
More than that	-	-

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This table depicts that out of 30 patients 23% consume up to 3 glasses of water a day while 47 % consume 4 to 6 glasses of water day and only 30% of patients consume 7 to 9 glasses of water a day. Coming to number of meals taken per day we concluded that 40% patients take 1-2 meals a day and 60% of patients take 3-4 meals a day. Also calculating the tea and coffee intake out of 30 patients, 40% patients drink at least 1 cup of tea /coffee whereas 60% of patients drink 2-3 cups of tea / coffee.

IV. SUMMARY AND CONCLUSION

The study was concluded among the patients lately diagnosed with tuberculosis and represents the data on the basis of Nutritional care and support of Tuberculosis patients.
The results can be summarized under the headings:

A. Tuberculosis Diagnosis

From the above results, it is seen that the patients lately diagnosed with the disease were mostly in contact with person with active tuberculosis either in surroundings or in their family. The patients have repeatedly faced symptoms like a constantly increasing cough for greater than 3 weeks, unexplained blood loss and weight loss, high fever cycles, chills or sweating during the night for no known reason, periodic shortening of breath, fatigue and chest pain.

B. Physical Activity pattern

It was seen in the general information that most of the patients belonged to lower income group and had low income thereby residing in rural area, but earn a living they turned out to be moderate and heavy workers but except that most of them didn't any extra time as a result for physical activity except for few.

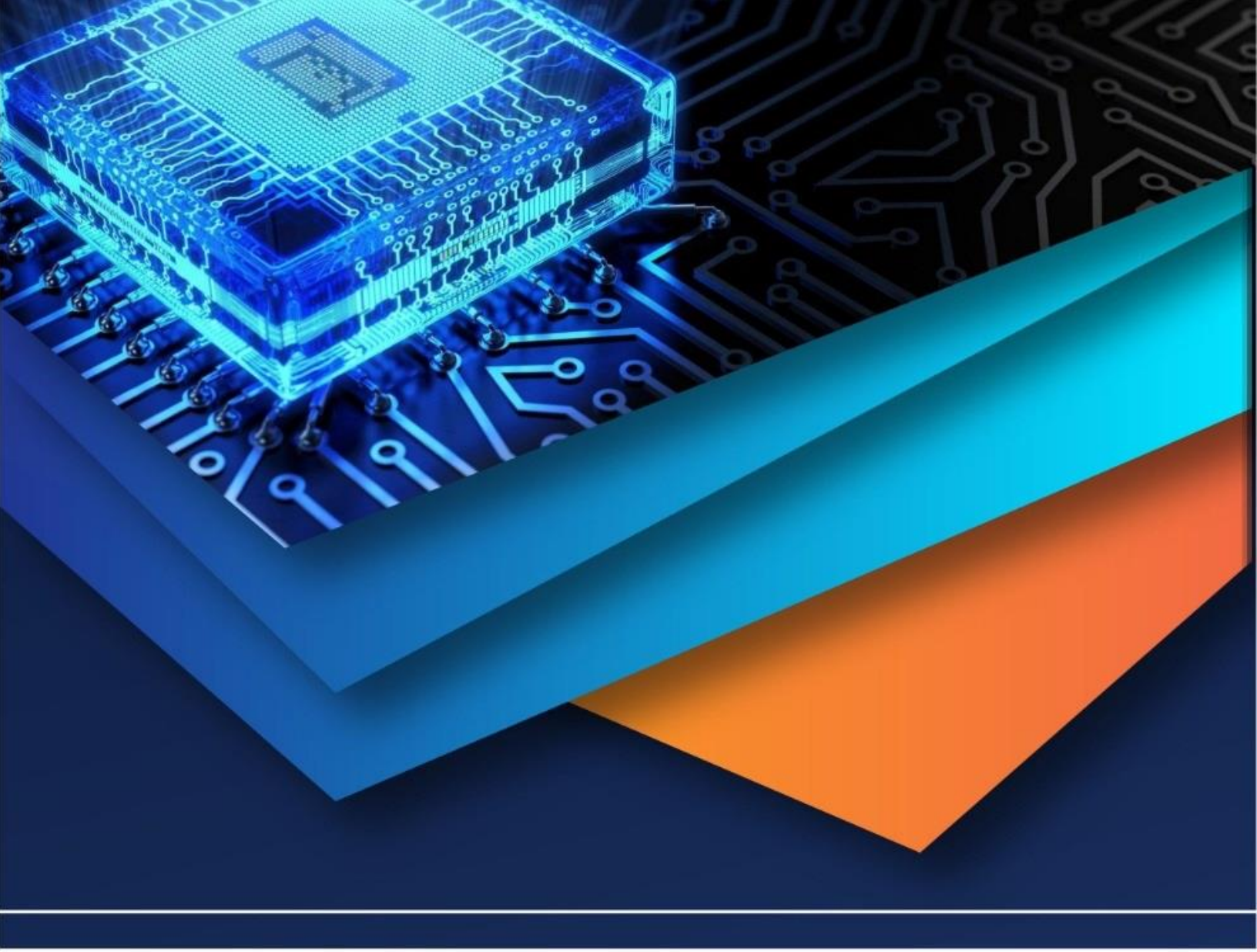
C. Dietary Pattern

The result shows that most of the patients are malnourished and do not have efficient dietary intake due to various reasons. It seen that even the consumption of water is lower than expected, also number of meals in a day are not as per then dietary requirement, moreover consumption of tea and coffee per day is more than required essential dietary foods.
Therefore, it can see that there is an urgent need to fix nutritional requirement of these patients apart from their medical course of prescription from the doctors. The IEC materials prepared had appropriate guidelines for them to follow.

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