EVALUATION OF TUBERCULOSIS IN MALNOURISHED CHILDRENNaresh Bajaj¹, B. K. Sharma², Garima Namdev³**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: Malnutrition is one of the leading problems, what India is facing from decades. The health care system is now facing challenges in combating this problem not only with nutrition point of view but with also various diseases associated with it, like Tuberculosis. Present study has included 100 children selected randomly from Anganwadi centers around Rewa city in Madhya Pradesh. Prevalence of malnutrition was found to be 37% and out of these 22% was having active tuberculosis.

KEYWORDS: Malnutrition, CHILDREN, TUBERCULOSIS, Nutrition.

INTRODUCTION: Malnutrition is like an iceberg, most developing countries live under the burden of malnutrition. Pregnant women, nursing women and children are most vulnerable. The adverse effect ranges from low birth weight to as high as morbidity and mortality. Morbidity too leads to many numbers of problems as in the form of diseases as ARI, Diarrhea, TB, and many more. All these cause due to low Cell Medicated Immunity. Now it has been realize that intrauterine period of life is a very important period from nutritional stand point.

During 2006-2012, more than 15% of the world's children under the age of 5 year were underweight for their age. This ranges from 1.4 % from developed countries to 24% from developing countries.⁽¹⁾In India, according to NFHS (National Family Health Survey) carried out in 2005-2006, and was found that both chronic and acute malnutrition were high in most of the states. Around 43.5 % children under 5 year are underweight. That also includes 43% moderate to severe and 16% severe malnutrition

OBJECTIVE:

1. To find out the prevalence of malnourished children.
2. To find out the prevalence of TB among malnourished children.
3. To detect pathological co morbid conditions in malnourished children.

MATERIAL AND METHODS: This is a community based cross sectional type of study, which was carried out over a period of 6 months from August 2013 to January 2014. The study subjects included children below 60 months of age group. The study was carried out in 5 Anganwadi centers, where these children were enrolled. The subjects for this study were the different children attending these Anganwadi centers regularly.

The questionnaire was developed by reviewing related Indian studies. This questionnaire was then pilot tested on individuals and the necessary changes were made. A total of 100 children were examined and their mothers were interviewed using this pre-tested questionnaire by one to one interview. Simple random sampling method was used. Out of the 100 children, malnourished cases were then shorted out and then classified as Mild, Moderate, and severe, according to IAP classification.

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Malnourished children were then subjected to undergo basic investigation for tuberculosis according to their sign and symptoms. The interview and basic procedure were explained and carried out in the local language. The purpose of the study was explained to them and oral informed consent was obtained. Privacy and confidentiality of the interview was maintained throughout the study. The data collected was tabulated and analysed using the Microsoft Excel and statistical package SPSS, Version 20.1. Findings were described using proportions and percentages.

PATHOLOGY: Tuberculosis is a bacillary infection caused by *M. Tuberculi*. The commonest route of infection is by inhalation where droplet infection from an infected person is inhaled by susceptible person. The person remain disease free until he becomes immune compromised via various reasons (e.g. HIV/AIDS, Immunosuppressant drugs, corticosteroid, transplant or weak person).

Mycobacterium in the hilar lymph nodes gets lodge, from there they start replicating. It is in the lymph node where mycobacterium antigen is first presented to CD4+ and CD8+ T-cells ^(2,3) There after mycobacterium leave the nodes, enters the blood stream via thoracic duct and appear in other organ.⁽⁴⁾ From the CD4+ cells, Th1 effector cell increases, this produces IFN alfa. This IFN alfa and TNF- alfa act combine and activate macrophages to inhibit growth of bacilli.⁽⁵⁾

RESULT:

	Charecterstics	Frequency
SEX	BOY	63
	GIRL	37
AGE	</12 months	47
	13-24 months	31
	25-36 months	10
	37-48 months	07
	49-60 months	05
BCG SCAR	Present	78
	Absent	22

Table 1: Frequency Distribution of Study Subjects

Age	Normal	Mild	Moderate	Severe	Total
</ 12 months	30	4	12	1	47
13-24 months	22	4	5	0	31
25-36 months	5	1	2	2	10
37- 48 months	4	1	2	0	7
49-60 months	2	2	1	0	5
TOTAL	63	12	22	3	100

Table 2: Distribution of Study Subjects According To Nutrition Status

Sex	Normal	Mild	Moderate	Severe	Total
BOY	47	7	9	0	63
GIRL	16	5	13	3	37
TOTAL	63	12	22	3	100

Table 3: Sex Wise Distribution of Study Subjects According To Sex

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Malnourishment	TB Cases		Total
	Number	Percent	
Mild	7	58%	12
Moderate	13	59%	22
Severe	2	66%	3
Total	22	59.4%	37

Table 4: Tuberculosis among Malnourished Children

Presenting Complaint	Cases of TB
Fever	22
Cough	18
Fast breathing	12
Vomiting	12
Not gaining weight	20
Swelling	15

Table 5: Distribution of Presenting Complaints among TB Cases

Fig.1: Distribution of Under 5 Children According To Nutritional Status

The present cross sectional study done in children in 5 anganwadi centres located at periphery of city Rewa. A total of 100 children, in the age group of 0-5 years, were randomly taken for study. Out of 100 study subjects, 63 were boys whereas 37 were girls and maximum number of under 5 children belonged to age group less than 12 months, while only 5 children belongs to age group of 49-60 months. According to IAP classification the percent of malnutrition among under five children is 37%. Out of 37%, 12% children categorised as mild malnutrition, 20% as moderate and only 3% as severe malnutrition.

Mild malnutrition was found maximum among boys (58.3%) as compared to girls that are 41.7%. Whereas moderate and severe type of malnutrition were more prevalent among girls. The age group 25-36 months presented with very high percent of severe malnutrition i.e.66.6%. While no cases of severe malnutrition was found among age group of 13-24, 37-48 and 49-60 months. Moderate malnutrition was found to be highest among age group of less than 12 months that is 54.5%. 4.5% was found among 49-60 months. The maximum percent of mild malnutrition was found

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in children under 2 years of age and children 2-4 year of age. In the present study, maximum number 66% of Tuberculosis positive cases were from severe malnutrition, followed by moderate 59% and then mild 58%.

DISCUSSION: In the present study out of 100 children 63 were boys and rest were girls. Prevalence of malnutrition was found out to be 37%, out of which maximum number of under five children belongs to age group less than 12 months. Whereas Warkade S.K. had 57% of severely malnourished children age 1-3 years.⁽⁶⁾ Under age and sex distribution our study shows maximum percentage that is 33%, of mild malnutrition was found among age group of less than 12 months and 13-24 months. Whereas maximum percent of moderately malnourished children were 54.5% found in less than 1 year age.

Under severe malnutrition 66.6% were found under 25-36 months. Study by Mangotra et al.⁽⁷⁾ found maximum number of severe malnutrition, 41.7%, were from age group of 1-3 years. Present study shows maximum cases of mild malnutrition were from boys, 58.3%, but moderate and severe malnutrition was found maximum among girls, 60.0% and 100% respectively. In a study done by Singh M. [2004] shows distribution of severe malnourished children among both sexes were nearly equal.

In the present study maximum number 66% of Tuberculosis positive cases were from severe malnutrition. Study done by Rajesh K. shows 2/3rd of the cases were from age less than 24 months. BCG scar, in present study, were seen in 78 percent were as study done by Benakppa.⁽⁸⁾ found it to be 60.6%. In the present study the most common presenting complain was fever in 22 cases followed by not gaining weight and cough. Study by Maitland K, shows fever 63% followed by loose stool and cough as main complaint by malnourished children.

CONCLUSION: The overall prevalence of malnutrition was found out to be 37%, among under five children. Maximum numbers of mild malnutrition cases were present among boys but moderate and severe cases were seen maximum among girls. Likewise maximum numbers of tuberculosis cases were from severe malnourished group. Thus we can conclude that provision of proper nutrition along with counseling and training of mother about child rearing practices will not only improves the morbidity pattern in these children, but also will result in progression in proper growth and development.

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AUTHORS:

1. Naresh Bajaj
2. B. K. Sharma
3. Garima Namdev

PARTICULARS OF CONTRIBUTORS:

1. Associate Professor, Department of Paediatrics, S. S. Medical College, Rewa, (M. P.)
2. Associate Professor, Department of Pathology, S. S. Medical College, Rewa, (M. P.)

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3. Assistant Professor, Department of Community Medicine, S Chirayu Medical College, Bhopal (M. P.)

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. B. K. Sharma,
7/320, 2nd row,
Murlidhar Colony,
Rewa, M.P-486001.
E-mail: bk_drsharma@rediffmail.com

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