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# **O**riginal Research

# A study on assessment of Nutritional & Immunization status in undernourished children admitted in pediatric ward at RKDF Medical College, Bhopal (MP), India

<sup>1</sup>Dr. Deepak Kumar Uikey , <sup>2</sup>Dr. Umesh Patel, <sup>3</sup>Dr. Sanjay Singh

<sup>1</sup>Assistant Professor, Dept. of Paediatrics, Atal Bihari Vajpayee Government Medical College, Vidisha M.P; <sup>2</sup>Professor and Head, Department of Paediatrics, RKDF Medical College and Research Centre, Bhopal, M.P; <sup>3</sup>Demonstrator, Dept. of Microbiology, Atal Bihari Vajpayee Government Medical College, Vidisha M.P

#### ABSTRACT:

Background & Method: Globally, malnutrition continues to be a major health problem in developing countries and the most important risk factor for illnesses and death especially among young children. It has been estimated that in India ,65%, i.e. nearly 80 million children under five years of age suffer from varying degrees of malnutrition. Good nutrition is important in establishing and maintaining a good foundation that has implications on a child's future physical and mental health. This study was a hospital based case control study, conducted in the Dept. of Paediatrics RKDF Medical College and Research Centre, Bhopal, M.P. The children admitted in the department of Paediatrics, during the study period fulfilling the malnutrition criteria for admissions were included in the study. Result: In our study, 40% are male 60% females in cases whereas 35% males and 65% females in controls. Majority of children cases were in Severe Acute Malnutrition (SAM) as compared to Moderate Acute Malnutrition (MAM) while in the control group, an equal number of children had SAM & MAM. Maximum children were partially immunized i.e. 60% and in the control group, maximum children were Immunized i.e. 80%. Conclusion: Despite the introduction of various national programs at different levels for improvement of maternal and child health, we still have a significant number of children who are undernourished and unimmunized. Children are the future of our nation and their health is of paramount importance. It can only be achieved with strong political will, active participation of the community and by increased commitment of health care professionals. We need to start from birth, institutional delivery, exclusive breast feeding, immunization, and timely introduction of complementary feeds, marriages at appropriate age, proper antenatal visits and birth spacing. In children whose mothers were empowered reflecting the importance of educating and empowering a female child. Improvement in our education system among vulnerable communities and economic development might decrease the prevalence of SAM in India.

Keywords: Nutrition, Immunization, Breast feeding, SAM & correlation.

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**Corresponding author:** Dr. Sanjay Singh, Demonstrator, Dept. of Microbiology, Atal Bihari Vajpayee Government Medical College, Vidisha M.P

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# INTRODUCTION

Nutrition in the formative years of life plays a very important role in physical, mental, and emotional development of a child and permits the highest state of fitness. Children differ from adults because their nutritional intake must provide not only for the replacement of tissues but also for growth[1].Immunization is the most important cost effective strategy that has saved millions of children. Severe Acute Malnutrition is a nutritional deficiency resulting from either inadequate energy (calorie) or protein intake[2]. Nutritional status is often assessed in terms of Anthropometry. Anthropometry is a simple valuable tool and the gold standard for evaluating the nutritional status. International standards of normal child growth under optimum conditions from birth to 5 yr have been established by the World Health Organization (WHO). In children less than 2years of age, length is measured using an infantometer[3]. Weight is measured using an electronic weighing scale. Height is measured using a stadiometer in children more than 2years of age[4].

Children who have had a diet which is insufficient in energy and nutrients relative to their needs end up in severe acute malnutrition. Depending upon the duration of inadequacy, quantity and diversity of food taken, individual variation in requirements, presence of antinutrients and number & severity of coexisting infections and their duration, the magnitude of the deficits will differ[5].

The heterogeneity in the extent and nature of the deficits and imbalances among each child explains the differences in the clinical presentation and degree of metabolic disturbance, reflecting the diverse pathways which lead to severe acute malnutrition.

#### **MATERIAL & METHOD**

This was a hospital based case control study, conducted in the Dept. of Paediatrics RKDF Medical College and Research Centre, Bhopal, M.P. from March 2017 -March 2018. The children admitted in the Department of Paediatrics, during the study period fulfilling the criteria for admissions were included in the study. They were divided into two groups. The first group was a study group with 40 children admitted in the pediatric ward . Second was the control group with 20 children with the same age group came in out patient department. Consent was taken appropriately from parents.

#### **INCLUSION CRITERIA**

1. Cases were children between 06 months to 05 years of age admitted for malnutrition

### **EXCLUSION CRITERIA**

1.Children suffering from malabsorption syndrome, protein losing nephropathy.

2.Children with congenital anomalies.

3.Children with severe systemic illness.

Data collected from the mothers included age, sex, birth order, birth weight, years of formal schooling of both parents, and occupation of father. This information was then recorded in predesigned proforma. Dietary intake was studied by 24-h recall method. Breast-feeding practices and duration of exclusive breastfeeding, as well as age of introduction of complementary feeding were also questioned. Average intake of fruit, poultry, and meat were noted.

Using standard methods, a single observer measured children's weight and head and mid-arm circumferences. Venous blood of both mother and child was drawn under aseptic precautions after due consent. Autoanalyzers were used to measure blood counts. Blood smear, serum ferritin vitamin B12, and folic acid levels were recorded for all patients with anemia. Bone marrow aspiration was performed in those patients whose hematologic parameters were suggestive of megaloblastic anemia. Mother's hematologic profile was studied in all cases.

Classification of anemia based on hemoglobin levels

- 1. Mild anemia: 9-11 g/dL
- 2. Moderate anemia: 7–9 g/dL
- 3. Severe anemia: <7 g/dL

#### RESULTS

Table 01: Age Distribution

Age	Cases	Control	Total
< 1 yr	11(27%)	04(20%)	15(25%)
1-3 yr	26(65%)	13(65%)	39(65%)
3-5 yr	03(08%)	03(15%)	06(10%)

Table 02: Sex Distribution

	Cases	Control
Males	16(40%)	07(35%)
Females	24(60%)	13(65%)

In our study, 40% are male 60% females in cases whereas 35% males and 65% females.

Table 03: Nutritional Status

Nutritional Status	Cases	Control	Total
Severe Acute Malnutrition	30(75%)	10(50%)	40(66.66%)
(SAM)			
Moderate Acute	10(25%)	10(50%)	20(17%)
Malnutrition (MAM)			
Total	40	20	60

In the study group, the majority of children cases were in Severe Acute Malnutrition as compared to Moderate Acute Malnutrition while in the control group, an equal number of children had SAM & MAM.

Table 04: Immunization Status

Immunization status	Cases	Control	Total
Immunized	12(30%)	16(80%)	28
Unimmunized	04(10%)	01(05%)	05
Partially immunized	24(60%)	03(15%)	27
Total	40	20	60

In the case group, maximum children were partially immunised i.e. 60% and in the control group, maximum children were immunised i.e. 80%.

# DISCUSSION

In children with (Severe Acute Malnutrition) SAM serum proteins and serum albumin became low. Fall in serum albumin is seen only after about 3 weeks of malnutrition, various adaptations during this period are shift from extravascular pool to intravascular pool, decreased catabolism, decreased urine excretion of nitrogen. Total serum globulin remains in normal limits. Amino acid pool gets decreased to 50% of normal [6].

Severe acute malnutrition is a preventable and treatable cause of childhood morbidity and mortality. There is no difference in the incidence of SAM, between male & female children which shows gender inequality which was previously told as the cause of Severe Acute Malnutrition does not exist these days. Creating awareness about simple measures that could prevent infections such as hand washing, avoiding bottle feeds, and improving environmental sanitation will help us to reduce the incidence of diarrhea[6]. Educating the parents, especially mothers about the importance of breastfeeding, timing of weaning, nutritive diets, birth spacing, family planning and sensitizing them regarding the consequences of malnutrition and focusing on regular followup of this children will help us win the battle against malnutrition[7].

Undernutrition is one of the most concerning health and developmental issues in India, as in other parts of the world. Malnourished children are more susceptible to infection, especially sepsis, pneumonia and gastroenteritis. They can also have deficiencies of vitamins, minerals, trace elements[8].

In our study most of the children with SAM were from urban populations. In studies conducted by Das et al[9] and Sharma R et al[10] SAM was more prevalent in children coming from rural areas.

In our study, malnutrition was less common in children of mothers who were graduates / post graduates and who were working. Sara et al in her study reported that low maternal education status is the most important step towards eliminating malnutrition. She also said that promoting women health and education is the most important step to decrease mortality from SAM, worldwide. Desia N et al[11] claimed that malnutrition is not associated with maternal educational status and employment.

# CONCLUSION

Despite introduction of various national programs at different levels for improvement of maternal and child health, we still have a significant number of children who are undernourished and unimmunized. Children are the future of our nation and their health is of paramount importance. It can only be achieved with strong political will, active participation of the community and by increased commitment of health care professionals. We need to start from birth, institutional delivery, exclusive breast feeding, immunization, and timely introduction of complementary feeds, marriages at appropriate age, proper antenatal visits and birth spacing.

In children whose mothers were empowered reflecting the importance of educating and empowering a female child. Improvement in our education system among vulnerable communities and economic development might decrease the prevalence of SAM in India.

Prevalence of malnutrition is very low in children whose mothers were empowered reflecting the importance of educating and empowering a female child. Improvement in our education system among vulnerable communities and economic development might decrease the prevalence of SAM in India.

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