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ASSESSMENT OF NUTRITIONAL STATUS OF CHILDREN BETWEEN 6 MONTHS – 5 YEARS OF AGE IN A TERTIARY CARE HOSPITAL

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INTRODUCTION

Good nutrition in infancy and childhood is essential for normal growth and development[1]. Malnutrition is a serious medical condition marked by a deficiency of energy, essential proteins, fats, vitamins, and minerals in a diet[2]. According to WHO, malnutrition is defined as a "pathological state resulting from a relative or absolute deficiency or excess of one or more essential nutrients"[3]Evaluation of nutritional status in this vulnerable age group can provide significant information, some of which will be applicable to the entire community. Findings can provide suggestions for measures that can be instituted to alleviate the problems observed and to improve nutritional status.[1]

Malnourished children are more likely to become malnourished adults and they face increased risks of morbidity and mortality.[4,5] On an average, a child dies every 5 seconds as a direct or indirect result of malnutrition –700 every hour –16,000 each day –6 million every year[6] Under nutrition puts children at greater risk of dying from common infections, increases the frequency and severity of such infections and contributes to delayed recovery. In addition, the interaction between under nutrition and infection can create a potentially lethal cycle of worsening illness and deteriorating nutritional status. Poor nutrition in the first 1,000 days of a child's life can also lead to stunted growth, which is irreversible and associated with impaired cognitive ability and reduced school and work performance.[7] Hence, It is essential to pay more attention to correlate between children's nutritional status and their capability to attain the required physical growth and mental development.[8]

The three main indicators used to define under nutrition, are underweight, stunting and wasting, represent different histories of nutritional status to the child. That occurring primarily in the first 2–3 years of life in children. Linear growth retardation (stunting) is frequently associated with repeated exposure to adverse economic conditions, poor sanitation, and the interactive effects of poor energy and nutrient intakes and infection. Low weight-for-age indicates a history of poor health including recurrent illness and/or starvation, while a low weight-for-height is an indicator of wasting (i.e., thinness) and is generally associated with recent illness and failure to gain weight or a loss of weight.[9]

Globally, 150.8 million children under five years are stunted and 50.5 million are wasted. According to the Global Nutrition Report 2018, India is facing a major malnutrition crisis as it holds almost a third of world's burden for stunting.With 46.6 million children who are stunted, **India tops the list of countries followed by Nigeria (13.9 million) and Pakistan (10.7 million).[10]**

OBJECTIVES OF STUDY

The proposed study" Assessment of nutritional status of children aged between 6 months-5 years in a tertiary care hospital" is planned with the below mentioned specific objectives:
1. To rapidly identify children who are at high nutritional risk or have poor nutritional status at hospital admission.
2. To compare the result of this study with IAP classification for grading malnutrition.
3. Provide feedback of obtained results to clinicians and other relevant groups.

MATERIALS AND METHODS

Inclusion Criteria
- Children between 6 months-5 years of age admitted in hospital and whose mothers who gave consent.

Exclusion Criteria
- Participants whose parents were not willing to give consent for the study.

METHODS OF DATA COLLECTION
A Prospective observational study was carried out for 108 patients in the pediatric department of a tertiary care teaching hospital, Raichur for six months. The proposed study was conducted in NMCH & RC after obtaining

permission and ethical clearance certificate. I reviewed case records of eligible patients on daily basis till the patient get discharged from the hospital.

Nutritional assessment study of children involves the evaluation of a thorough history including personal history, past history, family history, birth history, immunization history, development history, anthropometry details, feeding pattern including breast feeding practices and complimentary feeding practices was taken from the Pediatrics department of Navodaya Medical College Hospital & Research Centre, Raichur.

During the study period, self designed data collection form was used for the collection of all the necessary details from the case sheets of the patients and knowledge of mothers of children in pediatric department about feeding practices and health care activities were evaluated using questionnaire and documented.

RESULTS

Table 1: Socio-Demographic Characteristics Of Study Participants.

Demographic Variables	Frequency (f)	Percentage (%)
Age in years		
a. 18-22	38	35.18
b. 23-27	40	37.03
c. 28-32	22	20.37
d. 33-38	8	7.40
Education		
a. Illiterate	35	32.40
b. Primary school	47	43.51
c. High school	24	22.2
d. Graduate and above	2	1.85
Occupation		
a. House wife	75	69.4
b. Self employed	31	28.70
c. Government Employed	2	1.85

The study participants comprised of 108 mothers who had children between 6 months-1 year of age. The analysis of demographic variables of mothers is tabulated in **Table 1**

Table-2 Distribution of Children Taken in Study According to Gender (n=108).

Total No of Patients	Males		Females	
108	68	62.9%	40	37.03%

Table 3: Distribution of Children Taken in Study According To Iap Classification.

ACCORDING TO IAP CLASSIFICATION (n = 108)									
Normal		**Grade 1**		**Grade II**		**Grade III**		**Grade IV**	
5	4.62%	14	12.96%	30	27.77%	51	47.225%	8	7.40%
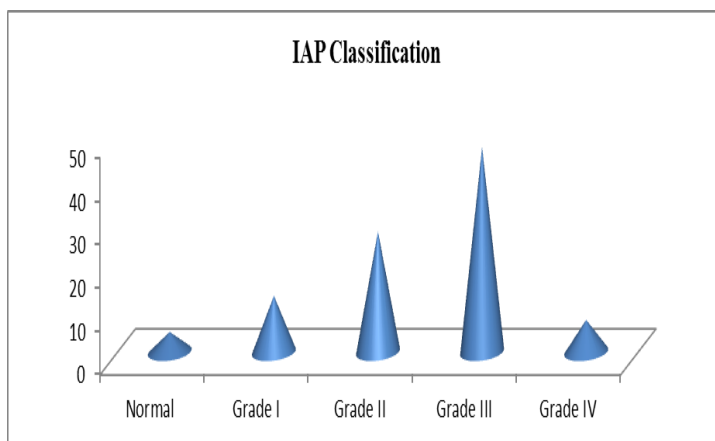
Figure 1.

Table 4: Distribution According To Nutritional Indicators.

Indicators	Boys (%)		Girls (%)		Total (%)	
Wasting	27	58.69 %	19	41.30 %	46	32.39 %
Stunting	36	66.6 %	18	33.3 %	54	38.02 %
Underweight	20	46.5 %	23	54.7 %	42	29.57 %
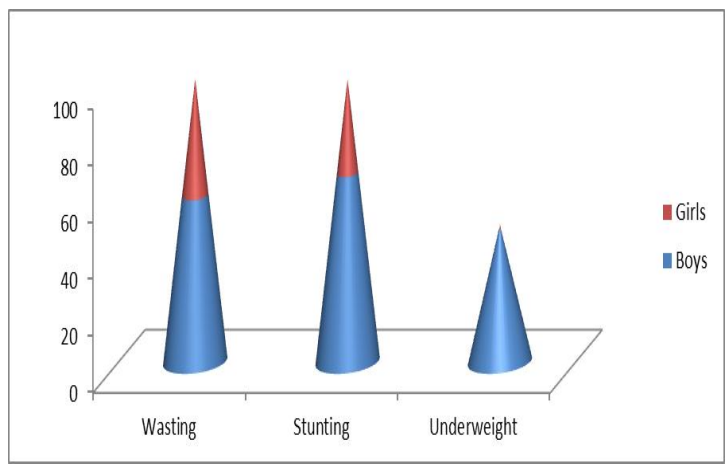
Figure-2.

Table 5: Questionnaire.

	Result Of Questionnaire Study		
SI.No.		**Percentage of correct answer**	**Percentage of incorrect answer**
1	Do you know the importance of nutrition?	64.81 %	35.18 %
2	Do you know the rich sources of proteins and nutrients?	48.14 %	51.85 %
3	Do you know the complications of nutritional deficiency?	85.18 %	14.81%
4	Do you know the signs and symptoms of anemia?	22.22 %	77.77 %
5	Do you think under-nutrition impairs the child's health, growth and development?	62.03%	37.96 %
6	Do you know what current expert dietary recommendations are?	11.11 %	88.88 %
7	Do you know soaking and germination of pulse enhance the nutrient content?	20.37 %	79.6 %
8	Do you believe under-nourished children are highly susceptible for infection?	87.96 %	12.03 %
9	Do you know infections can be prevented by well balanced diet?	20.37 %	79.62 %
10	Can you choose between different foods to identify the healthiest ones?	9.25 %	90.74 %

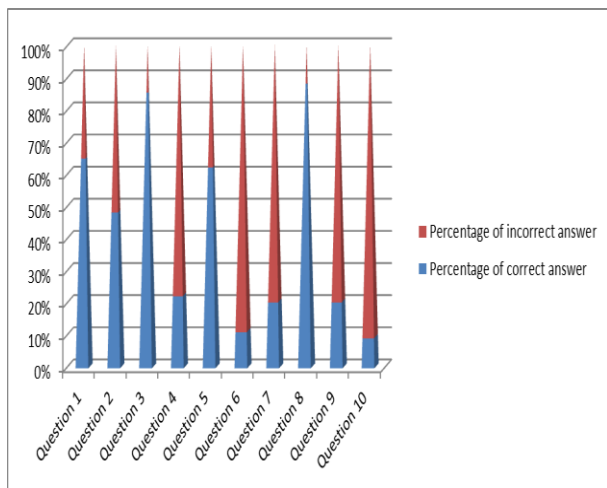Result Of Knowledge Of Mother Taken In The Study (N=108)

Figure-3.

DISCUSSIONS

Table- 1 revealed that majority 40(37.03%) of the mothers belonged to the age group of 23-27 years.About half of the women 47(43.51%)were not completed primary school. And about 35(32.40%) were illiterates and the least were government employed 2(1.85%).

The present study was supported by a study conducted by Berhanu G et al.among 771 mothers in Ethiopia. The study showed that a high proportion of the mothers belonged to the age group of 23-27 and majority of the women were primary school drop outs[11]

Table-2 shows that out of 108 patients 68 (62.9%) were males and 40 (37.03%) were females. Hence distributions of males are more than females.

Pathak S, Yadav T, Joshi C, Sharma N, Gulabani S studied nutritional assessment of 200 children admitted

in pediatric ward and NRC of Dhiraj Hospital Piparia. Out of 200 children studied, 54% were male and 46% were female.[12]

Harishankar, Shraddha Dwivedi, Dabral SB and Walia DK conducted the study of nutritional status of children under 6 years of age in rural areas of Allahabad district of Uttar Pradeshand found out that majority of children were male (58.1%) as compared to female children (41.9%).[13]

Table-3 shows that 47.22% children came under PEM grade III according to IAP classification by weight for age criteria, 27.7% were in grade II, 7.40% were in grade IV, 4.62% in grade I of IAP classification.IAP classification diagnosed more children in grade III & II PEM (moderate under nutrition).

IAP is the largest and most representative association of Pediatricians in India as compared with other organizations of medical specialities. IAP has classified Protein energy malnutrition into four grades based on weight for age.

Stage of Malnutrition	Weight for age (%)	
Normal	> 80 %	
Grade I	70 – 80 %	Mild
Grade II	60 – 70 %	Moderate
Grade III	50 – 60 %	Severe
Grade IV	< 50 %	

Pathak S et al.conducted the study of nutritional status of childrenbetween 6 months to 5 years and found out that among 200 children 9 (4.5%) came under normal grade, 34 (17%) came under grade 1, 103 (51.5%) came under grade 2, 39 (17.5%) came under grade 3 and 15 (7.5%) came under grade 4. Result interprets that 51.5 % of the total children came under grade II of IAP classification.[14]

Table-4 shows that out of total study population, 32.39 % were wasted, 38.02 % children were stunted and 29.57 % children were underweight. Males were comparatively more malnourished than females.

Nutritional indicators are used to measure nutritional imbalance resulting in undernutrition (assessed from underweight, wasting and stunting) and overweight.
• Underweight: being underweight for one's age (Weight for age)
• Stunting: height: being too short for one's age (Height for age)
• Wasting: being dangerously thin (Weight for height)
• Overweight: being overweight for one's height (weight for height)

Shreyash J Gandhi et al.conducted the assessment of nutritional status of outpatient department at a tertiary care hospital. The study revealed that out of total study population, 17.5 % were wasted, 46.7% children were stunted and 39.3% children were underweight.[15]

Table - 5 shows the percentage of correct and incorrect answers. 10 questions were asked to 108 mothers of children in pediatric department. Result shows that mothers had less knowledge regarding what to be given in complementary feed, importance of nutritious food and the complications regarding the malnutrition.

Singh MB et al. carried out a study on infant feeding and weaning practices in a survey of 325 mothers living in 38 villages, Jaipur District, Rajasthan in India. The study revealed that 81% mothers were illiterate and 65% were engaged in the agriculture.

Only 23% of mothers had the knowledge regarding breast-feeding within 24 hours of delivery and 77% discarded colostrums, depriving their infant of important nutrients. The study recommended village level education programs on infant nutrition.

CONCLUSION
Maternal knowledge was low regarding pulse incorporating complementary food, importance of nutritious food and complications of malnutrition. In addition, there were high undernutriton rates where 38.02% of children were stunted, 32.39% of children were wasted and 29.57% children were under weight as per IAP and waterlow classification. Maternal knowledge have an impact in changing the child's nutritional pattern. The strong associations between maternal knowledge on nutrition and undernutriton, as well as low nutritional status of the study participants, indicates a gap in nutrition intervention. Educating and creating awareness among the mothers on good dietary practices will help reduce the rate of malnutrition and thereby, contributing to the millennium development goals.

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