IOSR Journal of Nursing and Health Science (IOSR-JNHS)
e-ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 14, Issue 2 Ser. 2 (Mar. – Apr. 2025), PP 01-06
www.iosrjournals.org

"A Study To Assess The Nutritional Status Of Infants In Pediatric Unit At Tertiary Care Hospital."

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Abstract
Background: *Undernutrition is responsible for about 44.9% of deaths among children below 5 years of age worldwide, being an important etiological factor which increases vulnerability to diarrhea, malaria and pneumonia. Poor infant and young child feeding practices, especially during the first 2 years of life results in malnutrition, poor psychosocial development, poor school performance as well as less productivity in later life. Previous studies showed that appropriate breastfeeding and complementary feeding practices could alone prevent under 5 deaths by almost 20%. Although, improvements have been made, dietary quality remains poor for infants and young children globally and yet has not improved much in the past 10 years. In urban and rural areas, respectively, only about 38% and 24% of children fewer than 5 years of age receive a minimally nutrient rich diet. In India, the burden of both childhood malnutrition and hyper alimentation are increasing along with multiple micronutrient deficiencies, also known as "hidden hunger".*
Methodology: *A quantitative approach with a descriptive research design was used. Study included 61 infants aged between 29 days to 12 months. A non-probability purposive sampling technique was used. Socio-demographic data were obtained by the tool "Demographic Variables"; and then, nutritional status including 3 parameters –weight, length and mid upper-arm circumference of the infants were assessed on the same day.*
Results: *Result revealed that after all the 3 parameters were assessed, it was found that the majority of infants were found to be well-nourished as compared to malnourished infants by having adequate weight, length and mid upper arm circumference.43 infants were found to be well-nourished (around 70.49%) and 18 infants (29.51%) were malnourished as per weight by age including all age groups. Similarly, 50 infants were found to be well-nourished (around 81.96%) and 11 infants (18.03%) were malnourished as per length by age including all age groups. Also, the result for mid upper-arm circumference indicated that only 4 infants were found to be well-nourished and 3 were malnourished out of total 7 infants, as mid upper arm-circumference cannot be calculated below the age of 6 months. so, remaining 54 infants' MUAC cannot be assessed.*
Conclusion: *The study concludes that the nutritional assessment including weight, length and mid upper-arm circumference showed the result that majority of infants were well-nourished as they were on formula feed and other nutritional supplements and very less number of infants were malnourished or having inadequate weight, length and mid upper-arm circumference.*
Keywords: *Nutritional status, infant, MUAC, well-nourished, malnourished.*

Date of Submission: 08-03-2025 Date of Acceptance: 18-03-2025

I. Introduction

Undernutrition is responsible for about 44.9% of deaths among children below the 5 years of age worldwide, being an important etiological factor which increases vulnerability to diarrhea, malaria and

pneumonia.[1] Poor infant and young child feeding practices, especially during the first 2 years of life results in malnutrition, poor psychosocial development, poor school performance as well as less productivity in later life.[2] Previous studies showed that appropriate breastfeeding and complementary feeding practices could alone prevent under 5 deaths by almost 20%.[3] Although, improvements have been made, dietary quality remains poor for infants and young children globally and yet has not improved much in the past 10 years. In urban and rural areas, respectively, only about 38% and 24% of children fewer than 5 years of age receive a minimally nutrient rich diet.[4] In India, the burden of both childhood malnutrition and hyper alimentation are increasing along with multiple micronutrient deficiencies, also known as "hidden hunger".[5]

The World Health Organization recommends exclusive breastfeeding for the initial six months of life and continuation of breastfeeding upto 2 years of age. The WHO and the UNICEF have a joined worldwide strategy for infant and young child feeding practices and recommendations in the form of guiding principles for complementary feeding of the breastfed child to focus attention on the effect of feeding practices on health as well as growth of infants and young children.[6]

In view of change, the present study was conducted as "A study to assess the nutritional status of infants in Paediatric Unit at Tertiary Care Hospital."

Objectives

Primary objective-

The objective for the study was:

To assess the nutritional status of the infants.

Operational definitions

Nutritional status

It refers to assessment of selected nutritional parameters such as Weight, Length, mid upper-arm circumference measurements.

Infant

It refers to a baby or a young child of 29 days to 12 months of age which includes both male and female.

Pediatric Unit

It is an area within hospital specializing in the care of child.

II. Methods

Research approach

A quantitative research approach was considered the best to assess the nutritional status of infants.

Research design

Investigator selected descriptive research design to assess the nutritional status of infants.

Research setting

Based on feasibility and availability of the samples, pediatric unit, Tertiary Care Hospital, Lucknow was selected.

Study period

The study carried out from 02/04/2024 to 15/06/2024.

The population of the study

In this study, population included were infants aged between 29 days-12 months.

Sample

In this study, infants aged between 29 days-12 months were participants.

Sample size

In this study, the sample size consisted of 61 infants aged between 29 days -12 months.

Sampling technique

The sampling technique adopted for the study was the non-probability purposive sampling technique.

Sampling criteria

Inclusion criteria

Infants aged between 29 days-12 months, both male and female child, infants available during data collection were included in the study.

Exclusion criteria

Infants on ventilatory support and infants who will be on nasogastric/orogastric tube feeding were excluded from the study.

Content validity

The validity of tool 1 and 2 was checked by 9 experts from pediatrics (medical and nursing experts).

Ethical consideration

Ethical permission was taken from the research ethical committee board; Ethical No. 3576/Ethics/2024. Administrative permission was obtained from the head of the pediatric department, Tertiary Care Hospital, Lucknow; Application No.607. Consents were obtained from the samples and assured that the confidentiality would be maintained on the information given.

Pilot study

The pilot study was carried out in order to find the feasibility of the study. It was started on 02/04/2024 and was completed on12/04/2024. Ten sample's data were collected who met the inclusion criteria and exclusion criteria. Data collection steps were followed as of main study. Pilot study showed that the study was feasible.

Development and description of tool

Development and description of tool included 2 sections- tool 1: socio-demographic variables and tool 2: clinical variables.

Socio-demographic variables:

The items in the socio-demographic variable includes Mother's age, age of the child, birth order of the child, religion, residence, mother's education, type of family, mother's occupation, family income, type of delivery, source of information, duration of breastfeeding initiation.

Clinical variable

In this study, clinical variables were weight, length and mid upper-arm circumference of the infants.

III. Results

Socio-demographic variables

Table 1: Description of demographic variable of the participants (Mothers and Infants).

(N=61)

S.No.	Demographic Variables	Frequency (f)	Percentage (%)
1	**Age of the mother**		
a.	21 – 25 years	29	47.54
b.	26 – 30 years	19	31.15
c.	31 – 35 years	8	13.11
d.	More than 35 years	5	8.20
2	**Age of the child**		
a.	29 days – 3 months	52	85.25
b.	4 – 6 months	2	3.28
c.	7 – 9 months	7	11.47
d.	10 – 12 months	0	00
3	**Birth order of the child**		
a.	First	32	52.46
b.	Second	29	47.54
c.	Third	0	00
d.	Fourth or More	0	00
4	**Religion**		
a.	Hindu	41	67.21
b.	Muslim	20	32.79
c.	Christian	0	00

d.	Any other, specify	0	00
5	**Residence**		
a.	Rural	41	67.21
b.	Urban	20	32.79
6	**Educational status of the mother**		
a.	No Formal Education	8	13.11
b.	Primary Education	5	8.20
c.	Secondary Education	22	36.07
d.	Graduation and above	26	42.62
7	**Type of family**		
a.	Nuclear Family	19	31.15
b.	Joint Family	42	68.85
8	**Occupation of the mother**		
a.	Housewife	49	80.33
b.	Government Women	4	6.56
c.	Business Women	0	00
d.	Private Job	8	13.11
9	**Family Income**		
a.	Below 25000	40	65.57
b.	26000-50000	17	27.87
c.	50000-75000	0	0.00
d.	Above 75000	4	6.56
10	**Type of delivery**		
a.	Normal Spontaneous Vaginal Delivery	32	52.46
b.	Caesarean Section Delivery	29	47.54
11	**Source of information**		
a.	Mass Media (TV, Radio etc)	4	6.56
b.	Internet	14	22.95
c.	Friends, Family Or Medical Personnel.	30	49.18
d.	All of the above	13	21.31
12	**Initiation Of Breastfeeding After Delivery**		
a.	Within 1 Hour	24	39.34
b.	Within 8 Hours	10	16.39
c.	Within 16 Hours	0	00
d.	Within 24 Hours Or More	27	44.27

The 47.54% of the mothers were in the age group of 21-25 years, 85.25% of the infants belongs to the age group of 29 days-12 months, 52.46% of the infants were first born child, 67.21% mothers were Hindu, 67.21% mothers comes from rural area and 42.62% were graduate or having higher qualifications. 68.85% belonged to a joint family and the majority 80.33% of the mothers were housewives, 65.57% of mothers were having below 25 thousand family incomes, and 52.46% mothers had delivered their babies through normal spontaneous vaginal delivery. 49.18% of mothers revealed that their source of information was friends, family or medical personnel and 44.27% of mothers initiated the breastfeeding after 24 hours of delivery.

Clinical variable

Table 2. Description of the nutritional status of the infants.

It describes the findings related to nutritional assessment of the infants. Nutritional assessment had weight, length and mid-upper arm circumference measurements against the ideal weight, length and mid-upper arm circumference of the child.

Table 2.1. Description of the nutritional status of the infants as per weight by age.

(N=61)

S.No	Age of Infants	Expected weight	Category of nutritional status	Frequency (f)	Percentage (%)
1.	29 days-3 months	2500g-4500g	Well- nourished	37	60.65
			Malnourished	15	24.60
2.	4-6 months	4500g-6000g	Well-nourished	2	3.28
			Malnourished	0	00
3.	7-9 months	6000-7350g	Well- nourished	4	6.56
			Malnourished	3	4.91
4.	10-12 months	7350-8700g	Well-nourished	0	00
			Malnourished	0	00

Table 2.1. depicts the description of the nutritional status of the infants as per weight by age.

For infants aged 29 days to 3 months, the expected weight range was 2500 to 4500 grams. In this group, all 15 malnourished infants, accounting for 24.60%, were identified. Meanwhile, 37 infants were well-nourished, representing 60.65% of this age group.

In the age group of 4 to 6 months, with an expected weight range of 4500 to 6000 grams, no infants were classified as malnourished, making up 0.0% of the group. Both infants in this age range were well-nourished, comprising 3.28%.

For infants aged 7 to 9 months, the expected weight range was 6000 to 7350 grams. 3 infants were malnourished, representing 4.91%. Other 4 infants in this category were well-nourished, making up 6.56%.

In the age group of 10 to 12 months, with an expected weight range of 7350 to 8700 grams, no infant out of the total population lie in this category.

Table 2.2. Description of the nutritional status of the infants as length by age.
(N=61)

S.No	Age of Infants	Expected length	Category of nutritional status	Frequency (f)	Percentage (%)
1.	29 days-3 months	45.57.5 cm	Well- nourished	43	70.50
			Malnourished	9	14.76
2.	4-6 months	57.6-65 cm	Well-nourished	2	3.27
			Malnourished	0	00
3.	7-9 months	65.1-68.75 cm	Well- nourished	5	8.19
			Malnourished	2	3.27
4.	10-12 months	68.76-75 cm	Well-nourished	0	00
			Malnourished	0	00

Table 2.2. depicts the description of the nutritional status of the infants as length by age. For infants aged 29 days to 3 months, the expected height range was 45 to 57.5 centimeters. In this group, 9 infants were identified as malnourished, representing 14.76%. All 43 infants were well-nourished, making up 70.50% of this age group.

In the age group of 4 to 6 months, with an expected height range of 57.6 to 65 centimeters, no infants were classified as malnourished, accounting for 0.0% of the group. Both infants in this age range were well-nourished, representing 3.27%.

For infants aged 7 to 9 months, the expected height range was 65.1 to 68.75 centimeters. In this group, 2 infant was identified as malnourished, making up 3.27%. The remaining 5 infants were well-nourished, comprising 8.19%.

In the age group of 10 to 12 months, with an expected height range of 68.76 to 75 centimeters, no infant out of the total population lie in this category.

Table 2.3. Description of the nutritional status as per mid-upper arm circumference (MUAC) by age.
(N=61)

S.No	Age of Infants	Expected MUAC	Category of nutritional status	Frequency (f)	Percentage (%)
1.	29 day-3 months	Not applicable below the age of 6 months		52	85.25
2.	4-6 months			2	3.27
3.	7-9 months	12.5-26.5 cm	Well nourished	4	6.57
			Malnourished	3	4.91
4.	10-12 months	12.5-26.5 cm	Well nourished	00	00
			Malnourished	00	00

Table 2.3. depicts the description of the nutritional status as per mid-upper arm circumference (MUAC) by age.

For infants aged 29 days to 3 months and 4 months to 6 months, the mid-upper arm circumference is not calculated as the MUAC cannot be calculated or measured below the age of six months.

For infants aged 7 to 9 months, the expected MUAC range was 12.5-26.5 centimeters. In this group, 3 infant was identified as moderate malnourished making up 4.91%. The remaining 4infants were well-nourished, comprising 6.57%.

In the age group of 10 to 12 months, with an expected MUAC range of 12.5 to 26.5 centimeters, no infant out of the total population lie under this category.

IV. Discussion

To Assess the Nutritional Status of Infants

A study conducted in West Bengal, India by Roy Choudhury et al., 2019 to assess under-nutrition among under-five children and found that 31.8% of the children had anthropometric failure using the Composite

Index of Anthropometric Failure (CIAF). Underweight, stunting, and wasting were prevalent in 17.8%, 16.3%, and 9.3% of the children, respectively.[7] In another study conducted by Reddy & Anuradha, (2022) at Andhra Pradesh, India, the nutritional status of preschool children attending Anganwadi centers was assessed, revealing significant associations between age, gender, and various anthropometric indices.[8]

Limitations

Conducting the study in a single tertiary care hospital limits the applicability of the results to other healthcare settings.

V. Conclusion

The nutritional assessment including weight, length and mid upper-arm circumference showed the result that majority of infants were well-nourished as they were on formula feed and other nutritional supplements and very less number of infants were malnourished or having inadequate weight, length and mid upper-arm circumference.

Recommendations

Conducting similar studies across multiple geographic areas and healthcare settings will help determine the broader aspect.

Refrences

[1] Black RE, Victora CG, Walker SP, Bhutta ZA, Christian P, De Onis M, Et Al. Maternal And Child Undernutrition And Overweight In Low-Income And Middleincome Countries. The Lancet [Internet]. 2013 Aug;382(9890):427–51. Available From: Https://Pubmed.Ncbi.Nlm.Nih.Gov/23746772/

[2] Black, R. E., Allen, L. H., Bhutta, Z. A., Caulfield, L. E., De Onis, M., Ezzati, M., Mathers, C., Rivera, J., & Maternal And Child Undernutrition Study Group (2008). Maternal And Child Undernutrition: Global And Regional Exposures And Health Consequences. Lancet (London, England), 371(9608), 243–260. Https://Doi.Org/10.1016/S0140-6736(07)61690-0

[3] Jones G, Steketee RW, Black RE, Bhutta ZA, Morris SS. How Many Child Deaths Can We Prevent This Year? The Lancet. 2003 Jul;362(9377):65–71.

[4] UNICEF. Fed To Fail?: The Crisis Of Children's Diets In Early Life: 2021 Child Nutrition Report. Unicef; 2021.

[5] Nguyen PH, Scott S, Headey D, Singh N, Tran LM, Menon P, Et Al. The Double Burden Of Malnutrition In India: Trends And Inequalities (2006–2016). Goli S, Editor. PLOS ONE. 2021 Feb 25;16(2):E0247856.

[6] WHO. Breastfeeding [Internet]. Www.Who.Int. 2023. Available From: Https://Www.Who.Int/Health-Topics/Breastfeeding

[7] Nivedita Roychoudhury, Pan T, Roy K, Paul B, Dasgupta A, Bandyopadhyay L, Et Al. Assessment Of Nutritional Status Of Under-5 Children In A Slum Of Kolkata, West Bengal: A Community Based Study. Journal Of Comprehensive Health [Internet]. 2019 Dec 30 [Cited 2024 Aug 29];7(2):23–8.

[8] Reddy TD, Anuradha K. Assessment Of Nutritional Status And Anthropometry Of Pre-School Children. Asian Pacific Journal Of Health Sciences. 2022 Jun 20;9(4):301 DOI. 10.21276/Apjhs.2022.9.4.55 100 47.