EFFECT OF HOSPITALIZATION ON NUTRITIONAL STATUS IN PEDIATRICS PATIENTS ADMITTED IN D.Y. PATIL HOSPITAL, NAVI MUMBAI

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ABSTRACT

Background: The role of nutrition in the care of hospitalized malnourished patients is paramount, playing a crucial part in the overall management and recovery process. Malnutrition in hospitalized individuals is associated with a range of adverse outcomes, including delayed wound healing, increased susceptibility to infections, prolonged hospital stays, and a higher likelihood of readmission. Addressing malnutrition through appropriate nutritional interventions is essential for improving patient outcomes.

Objective: The primary objective is to assess the nutritional status of children at the time of admission and at the time of discharge.

Secondary objective focuses on analysing possible factors corresponding to changes in nutritional status and to identify associations between the length of hospital stay and changes in nutritional status.

Methodology: The study conducted was an observational study that included 100 children from D.Y. Patil Hospital, Navi Mumbai. The children were selected through convi sampling and according to the inclusion and exclusion criteria. The data of patients was collected after consents of the patients through personal interviews of the subject or the relatives of the subject with the help of a questionnaire. The questionnaire consisted of demographic details of the patients, and anthropometric measurements like height, weight and muac. Diagnosis, days in hospital, dietary information like food preferences, type of feed, reduced eating / feeding, uninetional weight loss or gain and plotting of growth chart is been done to check whether child is growing within normal ranges. The patient nutritional scoring was done through validated pediatric assessment form. The patient was reassessed at the time of discharge.

Result: Findings of the study showed that the maximum number of patients included in the study were male (63%) as compared to the females (37%). The food habits of the majority of the patients were non-vegetarian (85%), and the remaining (15%) were vegetarian. Out of 100 patients average age was 6.65 years, with a median of 7 years, indicating a diverse age range. Upon admission, 77% of children were normal weight, with notable variations in height and weight. During their 6.23-day hospital stay, there was a slight decrease in weight upon discharge, while the median weight remained stable. Age distribution showed 46% between 1 to 6 years and 54% between 6 to 12 years. Common diagnoses included fever (14%), abdominal pain (9%), and acute febrile illness (6%). Symptoms were reported by 46% of children, with diarrhea (12%), anorexia (30%), and vomiting (5%) being prevalent. Nutritional screening identified possible implications for 35% of children, indicating resource limitations or risk factors. Risk factors for malnutrition varied across demographics, hospital stay duration, symptoms, nutritional changes, and

growth centile spaces. Shorter stays (<5 days) correlated with 72% at low risk, while longer stays (>7 days) correlated with 66.7% at high risk. Falling within certain growth centile spaces, like >3, indicated a heightened risk, with 100% in this category being at high risk.

Conclusion: *Hospitalization significantly impacts pediatric patients' nutrition. Detailed assessments at admission and discharge reveal challenges, influenced by demographics, diets, and health. Males and non-vegetarian diets predominate, affecting outcomes. Most enter with normal weight but show variations in height and weight. Common symptoms like diarrhea and vomiting complicate nutrition. Screening reveals risk factors, necessitating early intervention. Longer stays correlate with higher nutritional risks, requiring tailored support. Some children experience weight loss despite improved growth.*

1. INTRODUCTION

According to WHO "Malnutrition refers to deficiencies or excesses in nutrient intake, imbalance of essential nutrients or impaired nutrient utilization". [1]

Malnutrition poses a twofold challenge, including both nutritional deficiencies and problems such as overweight, obesity, and other diet-related diseases. It's vital to assess the nutritional status of ill children and ensure they receive sufficient nourishment, as malnutrition can significantly impact their growth, development, overall health, and resource distribution.[2]

Inadequate nutrition upon admission or a deterioration in nutritional status during hospitalization is known to have negative impacts on clinical outcomes. Among other consequences, it disrupts the immune response, resulting in children experiencing poor wound healing and an elevated risk of infections and complications related to their underlying condition. Additionally, these adverse effects contribute to delayed recovery and prolonged hospital stays,thereby escalating the financial strain on the healthcare system, including increased in-patient day costs and treatment expenses, while also restricting the availability of hospital beds. [3]

Tools such as the Pediatric Yorkhill Malnutrition Tool help identify children at risk of malnutrition after hospital admission, enabling rapid assessment of nutritional status and targeted interventions. In 2012 STAMP tool, designed to assess nutrition in children over 2 years old and adolescents, comprised three key components: anthropometric measurements, dietary habits, and evaluation of medical condition-related risks. Anthropometric measurements included indicators such as low weight-for-age percentile, reported weight loss, or inconsistent weight-to-height ratio. Dietary habits encompassed factors like recent changes in appetite or insufficient food intake. Each component received a combined score of ≥4, signifying a high risk of malnutrition. [3]

Anthropometric measurements such as height, weight, mid-arm circumference (MUAC) and growth chart estimates provide valuable information about a child's nutritional status and growth patterns. MUAC is particularly effective in identifying acute malnutrition, while growth charts monitor long-term growth trends, facilitating early detection of nutritional problems. In paediatric care, it is crucial to evaluate a child's growth accurately using objective metrics such as weight, height/length, and BMI in order to assess nutritional health and identify growth deficiencies . [4]

Assessing and managing the nutritional status of pediatric patients is vital for mitigating the adverse effects of malnutrition and enhancing their overall well-being. By carefully evaluating their dietary intake, growth patterns, and nutritional needs, healthcare professionals can tailor interventions to provide adequate nutritional support. This proactive approach not only addresses immediate health concerns but also fosters optimal growth and development, promoting wellness throughout childhood.

This study endeavors to explore the impact of hospital admission on the nutritional health of pediatric patients by assessing their nutritional status at both admission and discharge. By tracking these measurements over the course of hospitalization, the study aims to discern any shifts or patterns in nutritional well-being. A primary focus is to address gaps in understanding regarding the prevalence of nutritional risk among pediatric patients upon admission. This

investigation is critical for establishing a baseline understanding of the nutritional conditions of hospitalized children and for promptly identifying those at risk of malnutrition. Furthermore, the research seeks to uncover the factors that contribute to changes in nutritional outcomes among pediatric patients. By identifying these underlying determinants, the study aims to provide insights that could potentially inform interventions aimed at improving nutritional care and outcomes in hospitalized children.

2. METHODOLOGY

2.1- Setting /Site - The study was conducted in the D.Y. Patil Hospital Nerul, Navi Mumbai.

2.2- Study Design - The study conducted was Observational Study.

2.3- Study Duration – The study was for 6 months. The Ethical clearance was obtained from the Institutional Ethical Committee prior to data collection.

2.4- Sample Size – The sample size for this study consisted of 100 participants, selected according to the inclusion criteria established for the research.

2.5- Study Participants – All children in the age group of 1-12 years admitted in pediatric ward in D Y Patil hospital.

2.6- Selection Criteria –

INCLUSION CRITERIA	EXCLUSION CRITERIA
1.All children in the age group of 1-12 years admitted in pediatric ward in D Y Patil Hospital	1.Children transferred from PICU to pediatric ward
	2.Children above 12 years of age

2.7- Development of Tools

The following tools and materials were used to carry out the study:

1.Anthropometric Measurements
➢ **Height**- Height was measured using a measuring tape.
➢ **Weight**- Weight was assessed using a digital Weighing scale.
➢ **MUAC**- MUAC (Mid Upper arm Circumference) was assessed using MUAC Tape.
➢ **IAP Growth charts** (App) was used for assessing the type of Malnutrition (i.e. Height-for-age, Weight-for-age and Weight-for-height).

2. PYMS – It helps in assessing factors like weight, height, dietary intake, and underlying health conditions, PYMS helps in detectin early signs of malnutrition risk.

3. PNST – It's purpose is to identify malnutrition risk during routine healthcare visits.
Both PYMS and PNST utilize scoring systems to assess malnutrition risk based on factors like anthropometric measurements, dietary intake, and underlying health conditions.

4. Diagnosis - This is for recording the patient's primary reason for admission to the hospital.

5. Date of Birth - Includes fields for the patient's birth date, divided into day, month, and year.

6. Unintentional weight loss - Determine if the child has experienced recent involuntary weight reduction.

7. Poor weight gain over the last few months - Assessing if the child's weight has not increased adequately over a specified period.

8. **Decreased eating/feeding in the last few weeks:** Evaluating if the child has been consuming less food or experiencing reduced feeding frequency recently.

9. Obvious underweight status: Determine if the child's current weight falls below expected standards for their age and height.

2.8- Nutritional Screening

1. Step 1 – Diagnosis - This step involves determining if the child's diagnosis has any nutritional implications. It assesses whether the condition could affect the child's
nutritional status.

2. Step 2 - Nutritional Intake - This step evaluates the child's current nutritional intake. It considers whether there have been changes in eating patterns or if the child is experiencing poor nutritional intake.

3. Step 3 - Weight and Height - This step involves using growth charts, such as the IAP Growth Chart App referenced, to assess the child's weight and height relative to age. It determines if the child's measurements indicate potential malnutrition.

4. Step 4 – Overall Risk of Malnutrition - The scores from the previous steps are summed up to calculate the overall risk of malnutrition. The form provides categories of risk: High, Medium, and Low, based on the total score.

• **Score > 4: High Risk –** Patients falling in this category needs immediate nutrition intervention.
• **2-3: Medium Risk –** Patients falling in this score are referred to a healthcare provider for further assessment and dietary modifications, with regular monitoring.
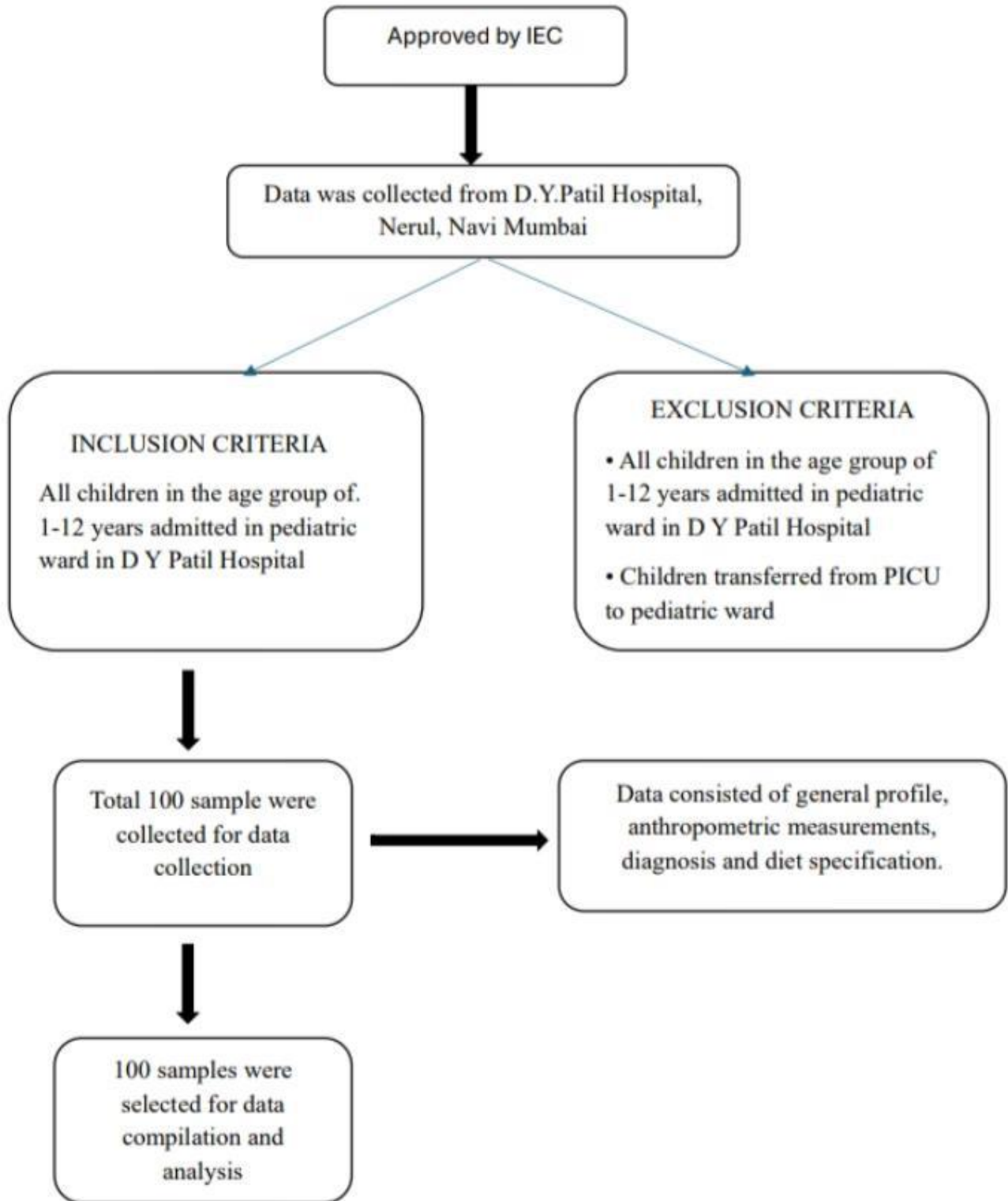• **0-1: Low Risk -** Patients falling in this score are considered to be at low risk of malnutrition.

2.9- Method of Data Collection

1. The study was carried out in D.Y. Patil Hospital Nerul, Navi Mumbai.
2. Patient who was admitted in the hospital and who met the inclusion and exclusion criteria was included in the study.
3. All the patients were given consent forms, and a model information sheet and explained about the study, subject of the study, study duration, location, etc
4. The data was collected by the investigator by using a validated pediatric form .
5. Patients were assessed at the time of admission and at discharge and changes were noted down.
6. All the data that was collected were coded and analyzed using SPSS.
7. The result and outcome were discussed to arrive at a conclusion.
8. The final report was prepared.

2.10- Method of Data Collection relevant to the Objective

The information was collected through personal interviews of the subject or the relatives of the subject with the help of a validated questionnaire. The questionnaire consisted of the demographic profile of the patients, anthropometric measurements like height, weight, MUAC, diagnosis. The form also included weight changes over a period of time and dietary information like food preferences, mode of feeding, type of feed. The Patient was monitored again at the time of discharge.

2.11- Logistics of Study Plan

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                   ┌─────────────────────────────────┐
                   │ Data was collected from D.Y.Patil│
                   │    Hospital, Nerul, Navi Mumbai  │
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INCLUSION CRITERIA

All children in the age group of.
1-12 years admitted in pediatric
ward in D Y Patil Hospital

EXCLUSION CRITERIA

• All children in the age group of
1-12 years admitted in pediatric
ward in D Y Patil Hospital

• Children transferred from PICU
to pediatric ward

Total 100 sample were
collected for data
collection

Data consisted of general profile,
anthropometric measurements,
diagnosis and diet specification.

100 samples were
selected for data
compilation and
analysis

3. RESULTS AND DISCUSSION

Nutrition plays an important role in patients admitted to hospital. For the present study, data of 100 subjects were collected. The study examined the findings of malnutrition risk using the validated pediatric assessment form. The following results were obtained from the study:

Table 3.1: Demography of children (n=100)

|	N	Mean	Median	SD	Min.	Max.
Age (yrs)	100	6.65	7.00	3.71	1	12
Height(cm)- Admission	100	112.03	115.00	23.71	45	154
Weight(kg)- Admission	100	19.45	17.50	9.33	6	60
Weight(kg)- Discharge	100	19.35	17.75	9.13	6	58
MUAC (cm.)	100	16.14	16.00	2.00	12	22
Days in hospital	100	6.23	6.00	3.03	1	21

N: No of children; MUAC: Mid upper arm circumference; Min: Minimum; Max: Maximum.
SD: Standard deviation

Table 3.1 represents onn average, the children were 6.65 years old, with a median age of 7 years and a standard deviation of 3.71 years, indicating a diverse age range. Upon admission, their average height was 112.03 cm, ranging from 45 to 154 cm, reflecting considerable variability. The mean weight upon admission was 19.45 kg, with notable differences in initial weights among the children. Throughout their hospital stay, averaging 6.23 days, there was a slight decrease in weight upon discharge to 19.35 kg, though the median weight remained relatively stable at 17.75 kg.

Table 3.2: Age group of Children (n=100)

|	No.	%
• >1 to 6 yrs	46	46.00%
• <6 to 12 yrs	54	54.00%
Total	**100**	-

No.: No of count
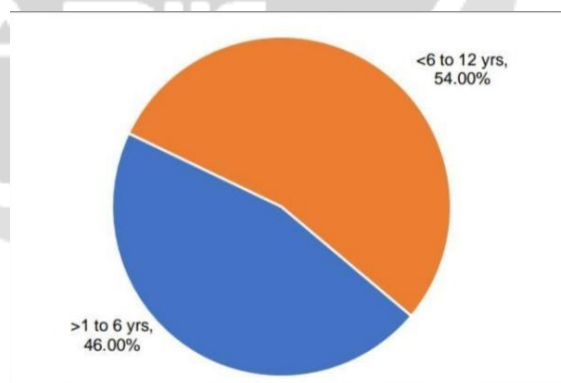
Chart 1: Age group of Children (n=100)

Table 3.2 and chart 1 presents the distribution of children of the total sample size of 100 children, 46% fell within the age range of greater than 1 to 6 years, while 54% were between the ages of less than 6 to 12 years. This distribution indicates a relatively balanced representation across the two age groups**.**

Table 3.3: Gender distribution of children (n=100)

	No.	%
• Male	63	63.00%
• Female	37	37.00%
Total	**100**	-

No.: No of count
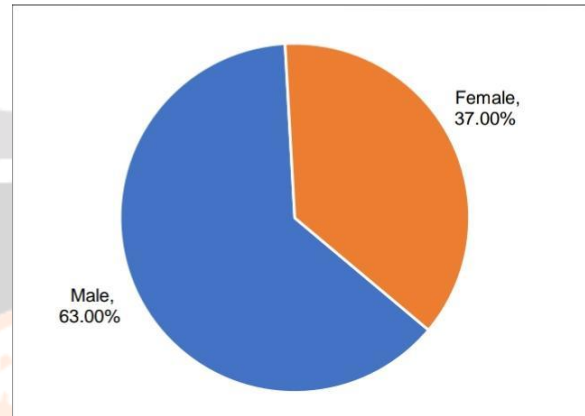
Chart 2: Gender distribution of children (n=100)

Table 3.3 and chart 2 illustrates the gender distribution of the 100 children included in the study, 63% were male, while 37% were female. This distribution indicates a higher representation of male patients in the pediatric ward.
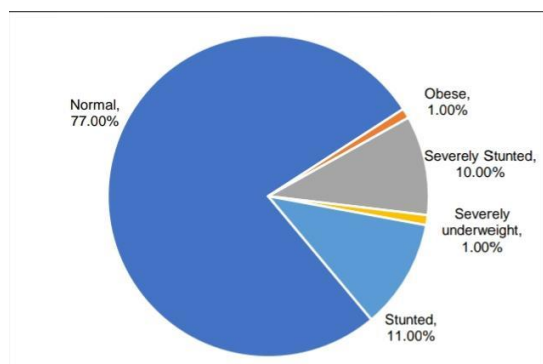
Primary Objective
To assess the nutritional status of children at the time of admission and at the time of discharge.

Table 3.4: Nutritional status at the admission and time of discharge of children (n=100)

	Admission (n=100)		Discharge (n=100)		Chi-square test	
	No.	%	No.	%	χ^2	p
Nutritional status						
• Underweight	0	-	15	15.00%	151.853	<0.0001
• Normal	77	77.00%	70	70.00%		
• Overweight	0	-	1	1.00%		
• Obese	1	1.00%	1	1.00%		
• Severely Stunted	10	10.00%	0	-		
• Severely underweight	1	1.00%	13	13.00%		
• Stunted	11	11.00%	0	-		

No.: Number; χ^2:Chi-square test

Chart 3: Nutritional status at the admission (n=100)   **Chart 4: Nutritional status at the discharge (n=100)**
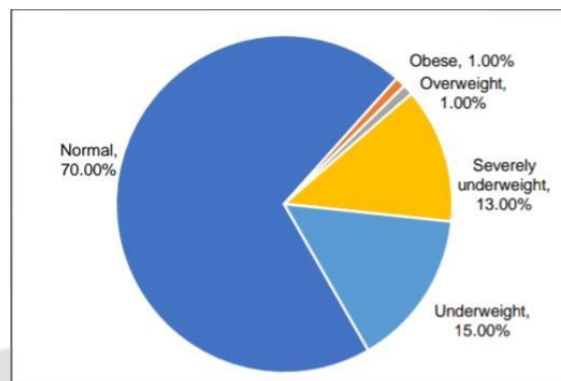

Table 3.4 and chart 3,4 represents out of the 100 children studied, significant changes were observed across various nutritional categories. At admission, 15% of children were underweight, but by discharge, none remained underweight, reflecting a substantial decrease (Chi-square test = 151.853, P < 0.0001). Conversely, the majority of children (77%) were initially classified as normal weight, a percentage that decreased slightly to 70% by discharge, indicating a minor shift in distribution within this category (Chi-square test = 0). There were minimal changes in the proportions of overweight and obese children, with each remaining at 1% throughout their hospital stay. Notably, severe stunting, observed in 10% of children at admission, decreased to 0% at discharge (Chi-square test = 13.000, P < 0.0001), highlighting a significant improvement in growth outcomes. Additionally, both severely underweight and stunted categories showed complete resolution by discharge, with no children falling into these classifications at the end of their hospitalization.

Table 7.5: Diagnosis of children (n=100)

Diagnosis	No.	%
• Abdominal Pain	9	9.00%
• Acute appendicitis, appendicular lumpectomy	1	1.00%
• Acute febrile illness	6	6.00%
• Acute Gastritis	3	3.00%
• Acute gastroenteritis	6	6.00%
• Acute gastroenteritis, Nutritional anemia	1	1.00%
• Acute suppurative otitis media	2	2.00%
• Anemia	3	3.00%
• Appendicitis	3	3.00%
• Ascites	1	1.00%
• Asthma	2	2.00%
• Back injury fib trauma	1	1.00%
• c/o abscess in axillary region on right side	1	1.00%
• c/o mixed hemangioma	1	1.00%
• Constipation	1	1.00%
• Dehydration	4	4.00%
• Dermoid cyst of right eyelid	1	1.00%
• Diabetic ketosis	1	1.00%
• Extra trophy of bladder	1	1.00%
• Face trauma with clavicular fracture	1	1.00%
• Febrile Seizures	1	1.00%
• Fever	14	14.00%
• Fever Without focus, lymphadenitis	1	1.00%
• Head Trauma	2	2.00%
• Headache under evaluation	1	1.00%
• Hirschsprung's disease	2	2.00%
• Hypertensive Emergency with convulsions	1	1.00%
• Hypocalcemia tetany	2	2.00%
• Hypoglycemia under evaluation	1	1.00%
• Left PVT obstruction c/o left pyeloplasty	1	1.00%
• LRTI	3	3.00%
• Malformation of calf	1	1.00%
• Nasal dermoid cyst	1	1.00%
• Nephrotic syndrome	3	3.00%
• Operated case of congenital heart disease	1	1.00%
• Oral burns 2° to hot water ingestion	1	1.00%
• Paraphimosis	1	1.00%
• Presumptive TB	2	2.00%
• Right knee joint with lupus vulgasis	1	1.00%
• Scalp abscess	1	1.00%
• Seizures	3	3.00%
• URTI	1	1.00%
• UTI	2	2.00%
• Viral infection	4	4.00%
Total	**100**	**-**

No.: No of count

Table 7.5 outlines the diagnoses of children. The most common diagnoses were fever (14%), abdominal pain (9%), and acute febrile illness (6%). Other prevalent conditions included acute gastroenteritis (6%), dehydration (4%), and viral infections (4%). Additionally, various other conditions such as asthma, anemia, seizures, and urinary tract infections were observed among the admitted children, each representing a smaller percentage of the total cases.

Secondary Objective
To identify associations between the length of hospital stay and changes in nutritional status

Table 3.6: Descriptives of length of stay in hospital (n=100)

	No	Mean	SD	95% C.I Lower	95% C.I Upper	Min	Max
• <5 days	25	1.36	0.49	1.16	1.56	1	2
• 5 to 7 days	57	1.39	0.49	1.26	1.52	1	2
• >7 days	18	1.33	0.49	1.09	1.57	1	2
Total	100	1.37	0.49	1.27	1.47	1	2

No.: No of count; SD: Standard deviation; C.I: Confidence interval; Min: Minimum; Max: Maximum

• Table 3.6 represents children who stayed in the hospital for less than 5 days, the average length of stay was 1.36 days, with a standard deviation of 0.49 days. This indicates that the majority of children in this category had relatively consistent lengths of stay close to the mean. The 95% confidence interval for the mean length of stay ranged from 1.16 to 1.56 days, providing a range within which we can be confident the true population mean lies. The shortest stay was 1 day, while the longest was 2 days among these children.

• Children who stayed in the hospital for 5 to 7 days had a slightly longer mean length of stay of 1.39 days, with a similar standard deviation of 0.49 days. This suggests comparable variability in length of stay to the previous category. The 95% confidence interval for the mean length of stay ranged from 1.26 to 1.52 days, indicating relatively tight bounds around the estimated mean. The minimum and maximum lengths of stay were consistent with the other categories, ranging from 1 to 2 days.

• For children who stayed in the hospital for more than 7 days, the mean length of stay was 1.33 days, with a standard deviation of 0.49 days. Despite a slightly lower mean, the variability in length of stay remained similar across categories. The 95% confidence interval for the mean length of stay ranged from 1.09 to 1.57 days, indicating a wider range compared to the other categories, likely due to the smaller sample size. The minimum and maximum lengths of stay were consistent with the other categories, ranging from 1 to 2 days.

Table 3.7: No. of days stay in hospital of children (n=100)

| No. of days	No.	%
• Day 1	2	1.0%
• Day 3	7	3.0%
• Day 4	16	4.0%
• Day 5	20	5.0%
• Day 6	22	6.0%
• Day 7	15	7.0%
• Day 8	3	8.0%
• Day 9	5	9.0%
• Day 10	4	10.0%
• Day 11	1	11.0%
• Day 12	1	12.0%
• Day 13	2	13.0%
• Day 20	1	20.0%
• Day 21	1	21.0%
Total	**100**	-

No.: No of count

Table 3.7 provides a breakdown of the number of days children stayed in the hospital. The data reveal that the majority of children had relatively short hospital stays, with the highest proportions observed for stays of 6 days (22%), 5 days (20%), and 7 days (15%). Additionally, significant percentages of children stayed for 4 days (16%) and 3 days (7%). Longer hospitalizations were less common, with only a few children staying beyond 7 days, including 8 days (3%), 9 days (5%), and 10 days (4%). Furthermore, single cases were recorded for stays of 11, 12, 13, 20, and 21 days, respectively, representing the minority of the sample. These findings suggest that while the majority of pediatric patients experienced relatively short hospital stays, a small proportion required more extended periods of care.

Table 3.8: Food preference (n=100)

	No.	%
• Veg	15	15.00%
• Nonveg	85	85.00%
Total	**100**	-

No.: No of count
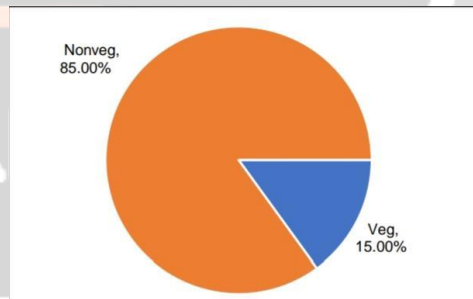

Chart 5: Food preference (n=100)

Table 3.8 and chart 5 presents the food preferences of children. The data indicate that the majority of children, comprising 85%, preferred non-vegetarian food, while the remaining 15% preferred vegetarian options.

Q1. Has the child unintentionally lost weight lately?

Table 3.9: Weight loss in children (n=100)

		No.	%
•	Yes	12	12.00%
•	No	88	88.00%
Total		**100**	-

No.: No of count
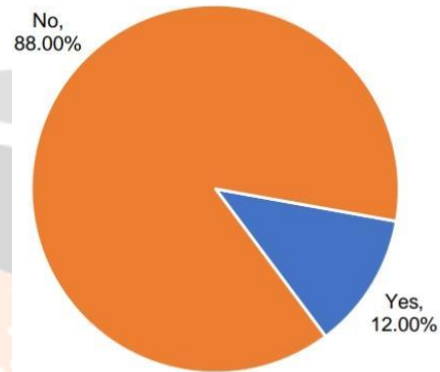
**Chart 6: Weight loss in children (n=100)**

Table 3.9 and chart 6 outlines the incidence of weight loss among children. The data show that 12% of the children experienced weight loss during their hospital stay, while the majority, comprising 88%, did not.

Q2. Has the child had poor weight gain over the last few months?

Table 3.10: Weight gain in children (n=100)

		No.	%
•	Yes	0	0.00%
•	No	100	100.00%
Total		**100**	-

No.: No of count
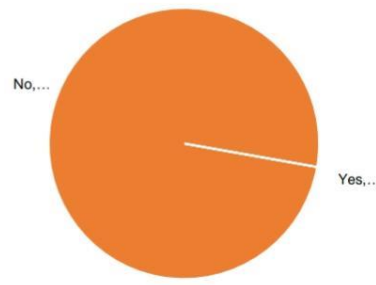

Chart 7: Weight gain in children (n=100)

Table 3.10 and chart 7 indicates the occurrence of weight gain among children . The data reveal that none of the children experienced weight gain during their hospital stay, with 100% of the sample reporting no instances of weight gain.

Q3. Has the child been eating/feeding less in the last few weeks?

Table 3.11. Children's feeding or dietary routine over the past few weeks (n=100)

	No.	*%*
• Yes	46	46.00%
• No	54	54.00%
Total	**100**	-

No.: No of count
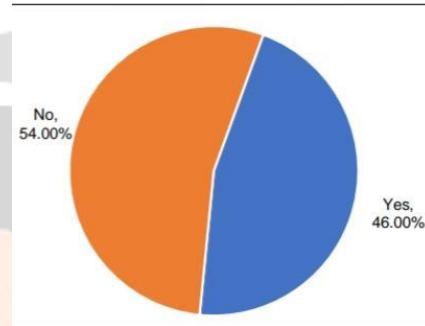
**Chart 8: Children's feeding or dietary routine over the past few weeks (n=100)**

Table 3.11 and chart 8 presents data on the feeding or dietary routine of children . The findings indicate that 46% of the children followed a consistent feeding or dietary routine during this period, while 54% did not. This suggests that nearly half of the children maintained regular eating habits leading up to their hospitalization, while the other half experienced some degree of disruption or variability in their feeding patterns.

Q4. Is the child obviously underweight?

Table 3.12: No. of children underweights (n=100)

	No.	*%*
• Yes	27	27.00%
• No	73	73.00%
Total	**100**	-

No.: No of count
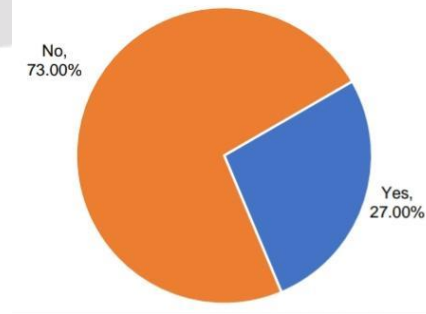
Chart 9: No. of children underweights (n=100)

Table 3.12 and chart 9 provides data on the number of underweight children. The findings indicate that 27% of the children were underweight, while the majority, comprising 73%, were not. This suggests that a considerable proportion of pediatric patients admitted to the hospital had lower-than-average body weights compared to standard growth norms for their age and height.

Q5. Are one of the following symptoms present diarrhoea or vomiting in the last 1-3 days?

Table 3.13: The following symptoms present in children's (n=100)

	No.	%
• Yes	46	46.00%
• No	54	54.00%
Total	**100**	
If yes,		
• Diarrhea	12	12.00%
• Anorexia	30	30.00%
• Not liking hospital food	17	17.00%
• Vomiting	5	5.00%
• Constipation	3	3.00%
• Nausea	10	10.00%
• NBM	2	2.00%
• IV fluid	0	0.00%
• NA	53	53.00%

No.: No of count

Table 3.13 presents data on the presence of symptoms among children . Of the 100 children surveyed, 46% reported experiencing one or more symptoms, while 54% did not report any symptoms. Among those who reported symptoms, various issues were documented:

• Diarrhea was reported by 12% of the children, indicating gastrointestinal disturbance.
• Anorexia, noted in 30% of the children, suggests decreased appetite, potentially impacting their nutritional intake.
• Not liking hospital food was expressed by 17% of the children, which could affect their dietary adherence during their stay.
• Vomiting was experienced by 5% of the children, indicating potential gastrointestinal discomfort.
• Constipation was observed in 3% of the children, suggesting potential digestive issues.
• Nausea was reported by 10% of the children, indicating feelings of unease in the stomach.
• 2% of the children were placed on nil by mouth (NBM), meaning they couldn't consume anything orally.
• None of the children required intravenous (IV) fluid treatment.
• Additionally, 53% of the children did not report any of the specified symptoms.
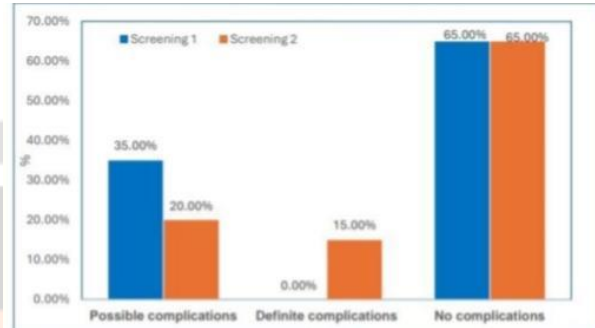
Diagnosis

Q1. Does the child have a diagnosis that has any nutritional implications?

Table 3.14. Nutritional implication in children (n=100)

	Screening 1		Screening 2	
	No.	%	No.	%
• Possible Complications	35	35.00%	20	20.00%
• Definite Complications	0	0.00%	15	15.00%
• No Complications	65	65.00%	65	65.00%
• Total	100		100	

No.: Number.

**Chart 10: Nutritional implication in children (n=100)**

Table 3.14 and chart 10 represents out of the 100 children screened, 65% were identified as having definite complications related to their nutritional status upon admission. This includes 35% who already had definite complications and another 30% who developed such complications during their hospital stay. The absence of complications upon admission was observed in 15% of cases, indicating a minority of patients who entered the hospital without pre-existing nutritional issues. Notably, none of these patients developed complications during their hospitalization period.

Q2. What is the child's nutritional intake?

Table 3.15. Nutritional intake of children (n=100)

	Screening 1		Screening 2	
	No.	%	No.	%
• No Change	1	1.00%	0	0.00%
• Recently Decreased	34	34.00%	35	35.00%
• No Nutritional intake	0	0.00%	0	0.00%
• NA	65	65.00%	65	65.00%
Total	100	-	100	-

No.: Number.
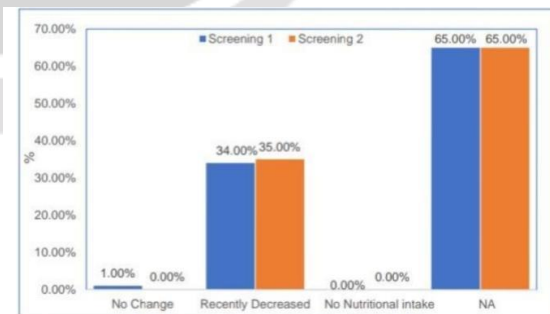
Chart 11: Nutritional intake of children (n=100)

Table 3.15 and chart 11 provides insights into the nutritional intake of children admitted to a pediatric ward, reflecting changes observed between two screenings. Among the 100 children analyzed, a small percentage (1%) showed no change in their nutritional intake from Screening 1 to Screening 2. In contrast, a significant portion (34%)

experienced a recent decrease in nutritional intake, which increased slightly to 35% by Screening 2. Notably, a substantial majority (65%) of the children were not applicable at both screenings.

Q3. Use IAP growth chart apps for the references and calculations?

Table 3.16. Weight and Height of children (n=100)

	Screening 1		Screening 2	
	No.	%	*No.*	%
<1 Centile space	9	9.00%	9	9.00%
>2 Centile space	3	3.00%	3	3.00%
>3 Centile space	23	23.00%	23	23.00%
NA	65	65.00%	65	65.00%
Total	100	-	100	-

No.: Number.
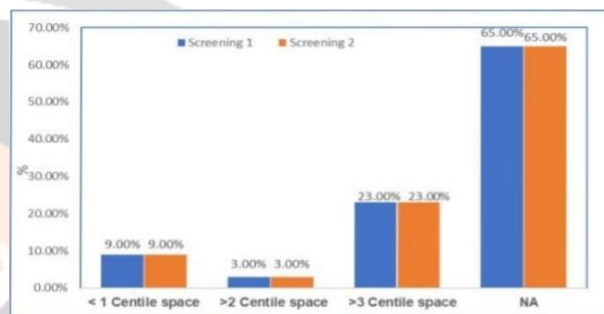

Chart 12: Weight and Height of children (n=100)

Table 3.16 and chart 12 provides data on the weight and height measurements of 100 children.The table indicates that 65% of the children were not applicable (marked as NA) during both Screening 1 and Screening 2. Among the children whose nutritional status was assessed, the distribution across different centile spaces is as : 9% of children were below the 1st centile space for both screenings, 3% of children were above the 2nd centile space for both screenings, 23% of children were above the 3rd centile space for both screenings**.**

Q4. Add up the score from the boxes in the steps one-3 to calculate the overall risk of malnutrition?

Table 3.17: Overall risk of malnutrition of children (n=100)

	Screening 1		Screening 2	
	No.	%	*No.*	%
Low risk	0	0.00%	0	0.00%
Medium risk	0	0.00%	0	0.00%
High risk	35	35.00%	35	35.00%
NA	65	65.00%	65	65.00%
Total	100	-	100	-

No.: Number.
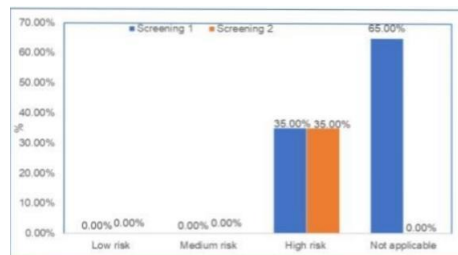
Chart 13: Overall risk of malnutrition of children (n=100)

Table 3.17 and chart 13 summarizes the overall risk of malnutrition among 100 children. It indicates that 65% of the children were not applicable during both Screening 1 and Screening 2 (marked as NA). Among the children who were

assessed: None were categorized as low risk for malnutrition, None were categorized as medium risk for malnutrition.35% were categorized as high risk for malnutrition in both screenings.

Q5 . Diet Specification?

Table 3.18: Diet Specification of children (n=100)

Diet Specifications	No.	%
Full diet	86	86.00%
Full diet Breastfeeding	14	14.00%
Total	**100**	-

No.: No of count.

Table 3.18 provides insights into the diet specifications of 100 children within the study sample. The majority, constituting 86%, are on a full diet, indicating that they are consuming solid foods. Additionally, 14% of the children are on a full diet while still breastfeeding, signifying that they are receiving both solid foods and breast milk. This group may include infants who have initiated complementary feeding alongside continued breastfeeding, which is recommended by health experts for optimal nutrition during infancy.

Secondary Objectives
To analyze possible factors corresponding to changes in nutritional status.

Table 3.19: Factors corresponding to changes in nutritional status at the time of discharge (n=100)

		Normal No.	%	Obese No.	%	Severely Stunted No.	%	Severely underweight No.	%	Stunted No.	%	Chi-square test X^2	$P**$
Age (yrs.)	>1 to 6 yrs	35	45.45%	0	0.00%	5	50.00%	1	100.00%	5	45.45%	2.101	0.717
	<6 to 12 yrs	42	54.55%	1	100.00%	5	50.00%	0	0.00%	6	54.55%		
Gender	Male	51	66.23%	1	100.00%	5	50.00%	1	100.00%	5	45.45%	3.698	0.448
	Female	26	33.77%	0	0.00%	5	50.00%	0	0.00%	6	54.55%		
Days in hospital	<5 days	20	25.97%	0	0.00%	3	30.00%	0	0.00%	2	18.18%	6.606	0.580
	5 to 7 days	44	57.14%	0	0.00%	6	60.00%	1	100.00%	6	54.55%		
	>7 days	13	16.88%	1	100.00%	1	10.00%	0	0.00%	3	27.27%		
Food Preference	Veg	13	16.88%	0	0.00%	1	10.00%	0	0.00%	1	9.09%	1.064	0.900
	Nonveg	64	83.12%	1	100.00%	9	90.00%	1	100.00%	10	90.91%		
Unintentional weight loss	Yes	9	11.69%	0	0.00%	1	10.00%	0	0.00%	2	18.18%	0.716	0.949
	No	68	88.31%	1	100.00%	9	90.00%	1	100.00%	9	81.82%		
Poor weight gain	Yes	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	-	-
	No	77	100.00%	1	100.00%	10	100.00%	1	100.00%	11	100.00%		
Symptoms	Diarrhoea	10	12.99%	0	0.00%	0	0.00%	1	100.00%	1	9.09%	8.993	0.061
	Not liking hosp. food	12	15.58%	0	0.00%	1	10.00%	0	0.00%	4	36.36%	3.789	0.435
	Anorexia	22	28.57%	0	0.00%	5	50.00%	0	0.00%	3	27.27%	2.876	0.579
	Vomiting	3	3.90%	0	0.00%	0	0.00%	1	100.00%	1	9.09%	20.164	<0.001
	Constipation	2	2.60%	0	0.00%	1	10.00%	0	0.00%	0	0.00%	2.129	0.712
	Nausea	4	5.19%	0	0.00%	4	40.00%	0	0.00%	2	18.18%	13.016	0.011
	NBM	1	1.30%	0	0.00%	1	10.00%	0	0.00%	0	0.00%	3.724	0.445
	IV fluid	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	-	-
Diagnosis of complications													
Screening 1	No complications	57	74.03%	1	100.00%	3	30.00%	0	0.00%	4	36.36%	38.585	<0.001
	Possible	18	23.38%	0	0.00%	7	70.00%	0	0.00%	6	54.55%		

		Normal No.	%	Obese No.	%	Severely Stunted No.	%	Severely underweight No.	%	Stunted No.	%	Chi-square test X^2	$P**$
Screening 2	Definite	2	2.60%	0	0.00%	0	0.00%	1	100.00%	1	9.09%	19.507	0.012
	No complications	57	74.03%	1	100.00%	3	30.00%	0	0.00%	4	36.36%		
	Possible	11	14.29%	0	0.00%	5	50.00%	0	0.00%	4	36.36%		
	Definite	9	11.69%	0	0.00%	2	20.00%	1	100.00%	3	27.27%		
Child's nutritional intake-													
Screening 1	No Change	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	9.09%	21.424	0.006
	Recently Deceased	20	25.97%	0	0.00%	7	70.00%	1	100.00%	6	54.55%		
	No Nutritional intake	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
Screening 2	No Change	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	14.503	0.006
	Recently Deceased	20	25.97%	0	0.00%	7	70.00%	1	100.00%	7	63.64%		
	No Nutritional intake	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
IAP growth chart													
Screening 1	<1 Centile space	9	11.69%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	28.437	0.005
	>2 Centile space	1	1.30%	0	0.00%	1	10.00%	0	0.00%	1	9.09%		
	>3 Centile space	10	12.99%	0	0.00%	6	60.00%	1	100.00%	6	54.55%		
Screening 2	<1 Centile space	9	11.69%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	28.437	0.005
	>2 Centile space	1	1.30%	0	0.00%	1	10.00%	0	0.00%	1	9.09%		
	>3 Centile space	10	12.99%	0	0.00%	6	60.00%	1	100.00%	6	54.55%		
Risk of malnutrition													
Screening 1	Low risk (0-1)	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	14.503	0.006
	Medium risk (2-3)	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
	High risk (>4)	20	25.97%	0	0.00%	7	70.00%	1	100.00%	7	63.64%		
Screening 2	Low risk (0-1)	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	14.503	0.006
	Medium risk (2-3)	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
	High risk (>4)	20	25.97%	0	0.00%	7	70.00%	1	100.00%	7	63.64%		
Diet Specifications													
	Full diet	68	88.31%	1	100.00%	8	80.00%	0	0.00%	9	81.82%	7.106	0.130
	Full diet +Breastfeeding	9	11.69%	0	0.00%	2	20.00%	1	100.00%	2	18.18%		

No.: Number; x^2: Chi-quare test

Table 3.19 presents a detailed analysis of factors influencing the nutritional status of 100 children upon admission to a pediatric ward. The study focuses on severity of stunting and underweight, categorized by age, gender, duration of hospital stay, food preferences, unintentional weight loss, symptoms such as anorexia, vomiting, and constipation, as well as specific dietary specifications.Among the findings, 16% of the children were severely underweight, indicating a significant nutritional concern. Age and gender distribution revealed that 45.45% of males were aged 1 to 6 years and 54.55% were under 12 years old, while for females, 25.97% had hospital stays of less than 5 days and 44% stayed 5 to 7 days. Food preferences showed a high preference for non-vegetarian food at 83.12%.A notable observation was that 65% of the children experienced unintentional weight loss, highlighting potential underlying health issues upon admission. Symptoms such as anorexia (28.57%), diarrhea (15.58%), and constipation (12.99%) were also prevalent among the admitted children. Intravenous (IV) fluid administration was not required for any of the cases.Regarding complications, 74.03% of the children had no complications according to screening 1, whereas 23.38% did have complications. Screening 2 showed that 74.03% had no complications and 14.29% had possible complications, suggesting a varying degree of health status among the admitted children.The nutritional intake assessment indicated that 88.31% of children received a full diet, with 11.00% receiving breastfeeding support.

Table 3.20: Factors corresponding to changes in nutritional status at time of discharge (n=100)

		Normal No.	%	Obese No.	%	Severely Stunted No.	%	Severely underweight No.	%	Stunted No.	%	Chi-square test χ^2	P
Age (yrs.)	>1 to 6 yrs	33	47.14%	0	0.00%	0	0.00%	6	46.15%	7	46.67%	1.743	0.783
	<6 to 12 yrs	37	52.86%	1	100.00%	1	100.00%	7	53.85%	8	53.33%		
Gender	Male	46	65.71%	1	100.00%	1	100.00%	6	46.15%	9	60.00%	3.036	0.552
	Female	24	34.29%	0	0.00%	0	0.00%	7	53.85%	6	40.00%		
Days in hospital	<5 days	20	28.57%	0	0.00%	0	0.00%	3	23.08%	2	13.33%	22.000	0.005
	5 to 7 days	44	62.86%	0	0.00%	0	0.00%	7	53.85%	6	40.00%		
	>7 days	6	8.57%	1	100.00%	1	100.00%	3	23.08%	7	46.67%		
Food Preference	Veg	12	17.14%	0	0.00%	0	0.00%	2	15.38%	1	6.67%	1.424	0.840
	Nonveg	58	82.86%	1	100.00%	1	100.00%	11	84.62%	14	93.33%		
Unintentional weight loss	Yes	6	8.57%	0	0.00%	0	0.00%	3	23.08%	3	20.00%	3.472	0.482
	No	64	91.43%	1	100.00%	1	100.00%	10	76.92%	12	80.00%		
Poor weight gain	Yes	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	-	-
	No	70	100.00%	1	100.00%	1	100.00%	13	100.00%	15	100.00%		
Symptoms	Diarrhoea	7	10.00%	0	0.00%	0	0.00%	2	15.38%	3	20.00%	1.588	0.811
	Not liking hosp. food	7	10.00%	0	0.00%	1	100.00%	3	23.08%	6	40.00%	13.482	0.009
	Anorexia	17	24.29%	0	0.00%	0	0.00%	5	38.46%	8	53.33%	6.278	0.179
	Vomiting	2	2.86%	0	0.00%	0	0.00%	1	7.69%	2	13.33%	3.173	0.529
	Constipation	1	1.43%	0	0.00%	0	0.00%	2	15.38%	0	0.00%	7.972	0.093
	Nausea	4	5.71%	0	0.00%	0	0.00%	5	38.46%	1	6.67%	13.537	0.009
	NBM	0	0.00%	0	0.00%	0	0.00%	1	7.69%	1	6.67%	5.285	0.259
	IV fluid	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
Diagnosis of complications													
Screening 1	No complications	60	85.71%	1	100.00%	1	100.00%	1	7.69%	2	13.33%	52.529	<0.001
	Possible	10	14.29%	0	0.00%	0	0.00%	10	76.92%	11	73.33%		
	Definite	0	0.00%	0	0.00%	0	0.00%	2	15.38%	2	13.33%		
Screening 2	No complications	60	85.71%	1	100.00%	1	100.00%	1	7.69%	2	13.33%	50.822	<0.001
	Possible	6	8.57%	0	0.00%	0	0.00%	7	53.85%	7	46.67%		
	Definite	4	5.71%	0	0.00%	0	0.00%	5	38.46%	6	40.00%		

		Normal No.	%	Obese No.	%	Severely Stunted No.	%	Severely underweight No.	%	Stunted No.	%	Chi-square test χ^2	P
Child's nutritional intake-													
Screening 1	No Change	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	6.67%	54.409	<0.001
	Recently Deceased	10	14.29%	0	0.00%	0	0.00%	12	92.31%	12	80.00%		
	No Nutritional intake	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
Screening 2	No Change	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	6.67%	50.647	<0.001
	Recently Deceased	10	14.29%	0	0.00%	0	0.00%	12	92.31%	13	86.67%		
	No Nutritional intake	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
IAP growth chart													
Screening 1	<1 Centile space	8	11.43%	0	0.00%	0	0.00%	0	0.00%	1	6.67%	74.491	<0.001
	>2 Centile space	1	1.43%	0	0.00%	0	0.00%	1	7.69%	1	6.67%		
	>3 Centile space	1	1.43%	0	0.00%	0	0.00%	11	84.62%	11	73.33%		
Screening 2	<1 Centile space	8	11.43%	0	0.00%	0	0.00%	0	0.00%	1	6.67%	74.491	<0.001
	>2 Centile space	1	1.43%	0	0.00%	0	0.00%	1	7.69%	1	6.67%		
	>3 Centile space	1	1.43%	0	0.00%	0	0.00%	11	84.62%	11	73.33%		
Risk of malnutrition													
Screening 1	Low risk (0-1)	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	50.647	<0.001
	Medium risk (2-3)	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
	High risk (>4)	10	14.29%	0	0.00%	0	0.00%	12	92.31%	13	86.67%		
Screening 2	Low risk (0-1)	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	50.647	<0.001
	Medium risk (2-3)	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
	High risk (>4)	10	14.29%	0	0.00%	0	0.00%	12	92.31%	13	86.67%		
Diet Specifications													
	Full diet	59	84.29%	1	100.00%	1	100.00%	12	92.31%	13	86.67%	0.932	0.920
	Full diet +Breastfeeding	11	15.71%	0	0.00%	0	0.00%	1	7.69%	2	13.33%		

No. Number; χ^2 Chi-square test

Table 3.20 provides a comprehensive overview of factors influencing the nutritional status of 100 children at the time of discharge from a pediatric ward. Among the discharged children, 52.86% were severely stunted, underscoring the prevalence of growth issues in this population. Age distribution showed 47.14% were between 1 to 6 years old, while 65.71% were male and 34.29% were female, indicating a male predominance among these cases. Hospital stay duration varied, with 62.86% of children staying for 5 to 7 days, suggesting differing treatment needs and recovery rates. Food preferences leaned heavily towards non-vegetarian options (82.86%), and unintentional weight loss was noted in 46.07% of cases, highlighting ongoing health challenges post-discharge. Symptoms such as anorexia (24.29%) and diarrhea (10.00%) persisted despite treatment, indicating continued health monitoring needs. In terms of complications, 85.71% of children had no complications based on both screening assessments, implying successful management during hospitalization. However, nutritional intake assessment showed that only 64.29% received a full diet, with 15.71% being breastfed, suggesting room for improvement in dietary management strategies post-discharge. The IAP growth chart assessment revealed that 92.31% of children were below the 3rd centile space, indicating persistent growth concerns requiring ongoing nutritional support and monitoring.

4. CONCLUSIONS

In conclusion, the impact of hospitalization on the nutritional well-being of pediatric patients is of significant concern. By thoroughly assessing patients upon admission and discharge, and analyzing various factors including demographics, dietary habits, and physical measurements, we gained a detailed understanding of the nutritional challenges faced by these children.

The predominance of male patients and the prevalence of non-vegetarian diets suggest potential influences on nutritional outcomes. While most children entered the hospital with normal weight, there were significant variations in height and weight, highlighting the diversity within the patient. The presence of common symptoms such as diarrhea, anorexia, and vomiting underscores the difficulties in maintaining proper nutrition during hospital stays. Nutritional Screening identified risk factors in a considerable number of children, emphasizing the need for early intervention to prevent malnutrition. The correlation observed between hospital stay duration and nutritional risk underscores the importance of tailored nutritional support, especially for patients with longer stays. Despite improvements in linear growth, some children experienced weight loss during hospitalization.

5. ACKNOWLEDGEMENT

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