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The Prevalence, Complications and Associated Factors of Severe Acute Malnutrition in Children below Five Years in Jinja Referral Hospital

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ABSTRACT

In hospitals in underdeveloped nations, severe acute malnutrition in children under the age of five continues to be a major health concern due to its prevalence, consequences, and associated variables. Given the volume of research on malnutrition in children under the age of five, it is still necessary to determine the prevalence, complications, and contributing factors of severe acute malnutrition in children. This hospital-based prospective cross-sectional study was carried out in the Jinja Referral Hospital Nutritional Unit. Twenty kids that fit the criteria, together with their parents, were sequentially recruited in the study. The independent factors were individually subjected to descriptive statistics. Out of the 20 children who signed up for the trial, nine were not exclusively breastfed, three were not dewormed, and seven had not been nursed for up to two years. Low birth weight babies (3), orphaned kids (5), parents who make too little money (16), unemployed people (5), uneducated people (4), and those without access to healthcare (3). Severe Acute Malnutrition, including its prevalence, consequences, and associated variables, was still on the rise in children under the age of five. Up until the age of six months, mothers are urged to exclusively breastfeed their children and supplement with other foods.

Keywords: Acute Malnutrition, Children under five years, Health concern, Parents, Healthcare.

INTRODUCTION

Malnutrition is a major public health concern in Uganda that affects both children and Adults. It is a direct cause of 35-55% of all childhood deaths. Statistics show that 300,000 children (5% nationally) are estimated to be acutely malnourished and nearly 120,000(2%) of them have Severe Acute Malnutrition (SAM). According to Uganda Demographic Health Survey (UDHS), it can either be undernutrition or overnutrition (Obesity). Undernutrition as a form of malnutrition is a result of a deficiency of protein, Energy, minerals as well as vitamins leading to loss of body fats and muscle tissues [1]. The history of Nutrition (malnutrition, Infection and Immunity) has been traced since 1959. Between 1959 and 1968, an exception review paper by Scrimshaw, Taylor and Gordon appeared in the American Journal of Medical Sciences, documenting the extensive and cyclical interactions between malnutrition and infection. The authors made the case that malnutrition resulted in increased susceptibility to infection and that infection caused deterioration of nutritional status, ushering in a cycle of malnutrition. Infection that would ultimately lead to kwashiorkor and if untreated, death. Between 1970 and 1980, greater interest in the mechanisms underlying the malnutrition-infection cycle was facilitated by the sophisticated and availability of improved tools to assess immune function in humans. This work established the significant adverse impact of cylindrical malnutrition–infection interactions on the complement system; mucosal immunity and cell-mediated immune response.

Application of methods to distinguish between T and B cells remained functionally intact if the proper help from mature T cells could be provided. Part of the defect in Antibody immunity in malnourished persons was shown to be attributed to the profound effect of these deficits on maturation of T cells, resulting in a reduction in fully functional mature T cells and an excess of poorly functional immature T cells. Between 1980 and 1990, during this decade the endogenous pyrogene derived from activated leucocytes and responsible for the febrile response during infection was purified, sequenced and the gene identified. This protein was renamed Interleukin -1. Identification of other interleukins soon followed; including Tumor Necrosis Factor alpha, Interleukin-6 and others. These are known as cytokines. These discoveries began to capture the interest of immunologists to study the effect of nutrition on immune function and the greater collaboration between immunologists and Nutritionists. Between 1990 and 2000, during this period, the role of micronutrient deficiency as a conditioning factor in host response to infection became widely recognized as multiple large field studies of Vitamin A supplementation in different populations around the world demonstrated a marked decrease in childhood mortality attributed to all causes in children compared to those who were not supplemented. From 2000 and beyond. The textbook dedicated to nutrition and Immunology was published demonstrating not only the general interest in the field but also the involvement of increasing numbers of serious immunologists as Research partners. There is already considerable knowledge waiting to be applied in the analysis of cell surface markers to identify specific lymphocytes and macrophage populations and their activation state so that the dynamics and kinetics of specific immune responses can be followed and assessed in real-time [2]-[5]. Children with SAM are treated differently because their pathophysiology is seriously abnormal due to reductive adaptation. All organs and systems in SAM are involved in the "Reductive adaptation" process due to nutrient shortage giving rise to the typical signs and symptoms of SAM. Reductive adaptation is the physiological response of the body to undernourishment (systems slowing down to survive on limited macronutrient and micronutrient intake) Management of children with complicated SAM in Inpatient Therapeutic Care follows the principles of Pediatric Hospital care that shows differences in care of children with SAM and well nourished seriously ill children. All sick children should be assessed for life-threatening conditions using emergency triage, assessment and treatment procedure to verify emergency and priority signs that need urgent attention and should be monitored for danger signs related to pulse, Respiration and Temperature. According to Integrated Management for Acute Malnutrition (IMAM) Guidelines, Children that are admitted should be monitored for life threatening conditions continuously and should undergo the Emergence Triage, Assessment and Treatment (ETAT) procedure as needed. Inpatient Therapeutic Care (ITC) aims to stabilize the child's condition until the child regains appetite and the medical condition is resolving [3], [6].

Problem Statement

The WHO in a recent report estimates that there are 178 million malnourished children across the globe. 20 million of these are suffering from the most severe form of acute malnutrition. Malnutrition contributes to 3.5 to 5 million annual deaths among under five children .United Nations International Children's Emergence Fund (UNICEF) estimates about 195 million children suffer from malnutrition across the globe. This consequently affects the intelligence of children, their behaviour and school performance. In Uganda, malnutrition remains a serious health and welfare problem affecting under-five children to whom it contributes significantly to mortality and morbidity [4]. A study done in Kabarole district, western Uganda to assess the prevalence of malnutrition and factors influencing the nutritional status of children below five years in a Peri-urban environment revealed that stunting was highly prevalent with 41.6%, of children stunted, underweight 15.7% and wasting was 3.4% [5]. However, little improvement on undernutrition indicators in Uganda has been realized for the past 15 years. Given the number of studies on malnutrition among under-five children in developing countries, there is a need to examine if similar factors and complications are associated with severe acute malnutrition among children under five in Uganda particularly, Jinja district. That is what this study is seeking to know about as the prevalence, complications and associated factors of severe acute malnutrition in children under five in Jinja Referral Hospital [7]-[11].

Aim

To the determine the prevalence, complications and associated factors of severe acute malnutrition in children below five years in Jinja Referral Hospital.

Specific objectives

- To determine the prevalence of severe acute malnutrition in children below five years in Jinja Referral Hospital.
- To identify the complications of severe acute malnutrition in children below five years in Jinja Referral Hospital.
- To identify the associated factors of severe acute malnutrition in children below five years in Jinja Referral Hospital.

Tibwita, 2023.

Research Questions

i. What is the prevalence of severe Acute malnutrition in children between 6 months and 5 years in Jinja Referral Hospital?
ii. What are the complications of severe Acute malnutrition in children between 6 months and 5 years in Jinja Referral Hospital?
iii. What are the associated factors of severe Acute malnutrition in children between 6 months and 5 years in Jinja Referral Hospital?

METHODOLOGY

Study design

This will be a prospective cross-sectional study at Jinja Referral Hospital. It will determine the prevalence, complications and associated factors of severe acute malnutrition in children under five years at admission to Jinja Referral Hospital.

Area of Study

The study is going to be conducted in Jinja Referral Hospital, Jinja District. Jinja Referral Hospital is about 100km from Kampala (capital city of Uganda) and located in Jinja District, Eastern Uganda. The study will be done in the pediatric nutritional unit and investigations will be done in the Hospital Laboratory. These will include majorly Complete Blood Count (CBC) and Random Blood Sugar (RBS). Emphasis on CBC will be majorly Hemoglobin (HB) levels and White Blood Cell(WBC) count. These will be used to estimate blood levels and Infections respectively. The RBS will specifically help to determine if children are hypoglycemic.

Study population

The population under study will be children between six months and five years coming from different communities and admitted to Jinja Referral Hospital.

Inclusion Criteria

- Children between 6 months and 5 years whose parents are able to communicate in English, Luganda or Lusoga.
- Children between 6 months and 5 years whose Parents consented to the Research study.

Exclusion Criteria

- Children between 6 months and 5 years whose parents have an intellectual disability.

Sample size determination

To arrive at the sample size, "Fishers et al 1990" formula will be used in calculating a population of more than 1000 will be applied.

$$N=\frac{Z^2PQ}{D^2}$$

Where;

N Sample size and population must be more than 1000

Z Standard normal deviation is usually set at 1.96 (or simply rounded to 2.0) which corresponds to 95% confidence level.

P Estimated prevalence (proportion of the targeted population estimated to have a particular problem or characteristic=60% [6].

D= Acceptable error e.g. 0.05

Q= 1-P=0.6

Estimated prevalence= 60%

$$N=\frac{Z^2\ P\ Q}{D^2}$$

$$=\frac{(1.96)^2 * 0.15 * 0.4}{(0.05)^2}$$

Sample size = 192 patients, this will then be rounded off to 200 respondents

Sampling technique

The individual participants in the study will be chosen by consecutive enrolment for all the children who meet the inclusion criteria until the desired sample size is obtained.

Data collection methods and study procedure

The data tools will involve the Interview method. This will comprise of structured interview where questions will be prepared in advance and also the unstructured interview where the respondents will be encouraged to express

their thoughts beyond questions asked about maternal factors, socio-demographic and clinical factors included in the Research to the parents who accepted to participate in the Research. All children will be examined including Anthropometric measurements taken. (weight, height and MUAC-Mid upper arm Circumference) **MUAC.** This is taken on a less dominant arm. It is measured in centimetres. locate the tip of the shoulder(acromion) and elbow (olecranon) of the arm. Determine the midpoint between the tip of the shoulder and elbow, and place MUAC tape around mid of the left upper arm. Read measurement from the window of MUAC tape without tightening or loosening it. Record MUAC from nearest 0.1cm and color code (Green/Yellow/Red). Repeat measurement to ensure accuracy. MUAC ≥11.5 and <12.5cm indicate moderate acute malnutrition while MUAC<11.5 cm indicate severe acute malnutrition. Weight –Make sure weighing scale is calibrated to zero before each measurement is taken. measurement should be with minimal clothing and no jewellery. Weight is recorded to nearest 0.1kg. Length/Height-Children shorter than 87cm or less than 2 years are measured while lying down. Taller children ≥87cm or older than 2 years are measured while standing. Make sure shoulder blades, buttocks and heels touch the surface of the length/height board. knees should be fully straight and arms stretched on the side. The neck should be straight with the eyes looking straight ahead with the headpiece placed firmly in position. If a child is < 2 years not lying down, measure the straight standing height and add 0.7cm to convert to height. For children 6-59 months, WFH/L ≥-3SD and <-2SD indicate Moderate Acute Malnutrition while <-3SD indicates Severe Acute Malnutrition. In the patient with severe Acute Malnutrition, the following investigations will be done at the moment of admission to the hospital. Complete Blood Count (CBC)- A blood sample is withdrawn from a patient's veins and put in a vacutainer (purple top) then sent to the laboratory for analysis. Presence of leukocytosis according to age will indicate suspicion of infection. Random blood sugar (RBS)-A blood drop from a finger prick will be placed on a strip in a glucometer and blood sugar measured. Blood sugar <3mmol/l will indicate hypoglycemia. Questionnaire about knowledge of good feeding practices will be applied to all patients and will be interpreted as follows. Good knowledge- when the patient answers the right question about breast feeding and complementary feeding. Bad knowledge –when they answer right question about either breastfeeding or complementary feeding. Very Bad – when they answer the wrong question in both breastfeeding and complementary feeding.

Data analysis

Data will be entered into Microsoft excel and analyzed by computing frequencies and percentages for variables. Descriptive statistics will be done on all variables and a total score will be determined.

Quality Control

To ensure data reliability and validity, pretesting of the questionnaire will be done in the pediatric ward of Ishaka Adventist Hospital using twenty questionnaires. The questionnaire will be translated in Lusoga and Luganda (local languages) understood by most people in the region. To ensure that translations are correct, the questionnaire will be back translated into English and compared to assess if meanings have changed. Completeness and Legitibility of questions will be ensured by the main Researcher and then questions will be attached to their respective questions.

Ethical consideration

The completed Research proposal will be sent to K.I.U I.R.E.C western campus for approval. Permission will be sought from the Executive Director of K.I.U Teaching Hospital to conduct research. Parents will consent to voluntarily participate in the research and will be free to withdraw from the research anytime if they so wish. For confidentiality, the names of participants will not be written on the questionnaires but will be numbered and completed questionnaires will be kept by the Researcher [12].

RESULTS

Table 1: Presentation of Results

Age

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	6-12 months	5	25.0	25.0	25.0
	1-3 years	9	45.0	45.0	70.0
	3-<5 years	6	30.0	30.0	100.0
	Total	20	100.0	100.0	

Sex

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Male	11	55.0	55.0	55.0
	Female	9	45.0	45.0	100.0
	Total	20	100.0	100.0	

Weight

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	3.10	1	5.0	5.0	5.0
	3.70	1	5.0	5.0	10.0
	3.80	1	5.0	5.0	15.0
	3.90	1	5.0	5.0	20.0
	4.10	1	5.0	5.0	25.0
	4.40	2	10.0	10.0	35.0
	6.40	2	10.0	10.0	45.0
	7.60	1	5.0	5.0	50.0
	8.20	1	5.0	5.0	55.0
	8.40	1	5.0	5.0	60.0
	8.60	2	10.0	10.0	70.0
	10.50	2	10.0	10.0	80.0
	10.60	1	5.0	5.0	85.0
	11.00	3	15.0	15.0	100.0
	Total	20	100.0	100.0	

MUAC

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	8.50	1	5.0	5.0	5.0
	8.70	2	10.0	10.0	15.0
	8.80	1	5.0	5.0	20.0
	9.70	2	10.0	10.0	30.0
	10.00	1	5.0	5.0	35.0
	10.50	1	5.0	5.0	40.0
	10.60	1	5.0	5.0	45.0
	11.00	3	15.0	15.0	60.0
	11.40	1	5.0	5.0	65.0
	11.50	2	10.0	10.0	75.0
	12.50	2	10.0	10.0	85.0
	13.00	1	5.0	5.0	90.0
	14.80	2	10.0	10.0	100.0
	Total	20	100.0	100.0	

Temperature

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	36.30	2	10.0	10.0	10.0
	36.40	3	15.0	15.0	25.0
	36.50	1	5.0	5.0	30.0
	36.60	3	15.0	15.0	45.0
	36.80	3	15.0	15.0	60.0
	36.90	1	5.0	5.0	65.0
	37.60	1	5.0	5.0	70.0
	37.70	4	20.0	20.0	90.0
	39.00	2	10.0	10.0	100.0
	Total	20	100.0	100.0	

Edema

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Yes	8	40.0	40.0	40.0

	No	12	60.0	60.0	100.0
	Total	20	100.0	100.0	

Seropositive

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Yes	7	35.0	35.0	35.0
	No	13	65.0	65.0	100.0
	Total	20	100.0	100.0	

Parent Income

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Sufficient	1	5.0	5.0	5.0
	Insufficient	19	95.0	95.0	100.0
	Total	20	100.0	100.0	

Parent's Age

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	17.00	1	5.0	5.0	5.0
	18.00	2	10.0	10.0	15.0
	20.00	5	25.0	25.0	40.0
	24.00	1	5.0	5.0	45.0
	26.00	2	10.0	10.0	55.0
	28.00	2	10.0	10.0	65.0
	30.00	3	15.0	15.0	80.0
	34.00	3	15.0	15.0	95.0
	35.00	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

Lack of Job

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Yes	5	25.0	25.0	25.0
	No	15	75.0	75.0	100.0
	Total	20	100.0	100.0	

Ease of Access to Healthcare

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Yes	15	75.0	75.0	75.0
	No	5	25.0	25.0	100.0
	Total	20	100.0	100.0	

Orphaned

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Yes	5	25.0	25.0	25.0
	No	15	75.0	75.0	100.0
	Total	20	100.0	100.0	

Low Birth Weight

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Yes	3	15.0	15.0	15.0
	No	17	85.0	85.0	100.0
	Total	20	100.0	100.0	

Diet

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Yes	10	50.0	50.0	50.0
	No	10	50.0	50.0	100.0
	Total	20	100.0	100.0	

T.B

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Yes	1	5.0	5.0	5.0
	No	19	95.0	95.0	100.0
	Total	20	100.0	100.0	

Immunization

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Yes	20	100.0	100.0	100.0

Deworming

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Yes	16	80.0	80.0	80.0
	No	4	20.0	20.0	100.0
	Total	20	100.0	100.0	

HIV

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Yes	7	35.0	35.0	35.0
	No	13	65.0	65.0	100.0
	Total	20	100.0	100.0	

Malaria

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Yes	12	60.0	60.0	60.0
	No	8	40.0	40.0	100.0
	Total	20	100.0	100.0	

Epilepsy

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	No	19	95.0	95.0	95.0
	3.00	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

Breast up to 6 months

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Yes	14	70.0	70.0	70.0
	No	6	30.0	30.0	100.0
	Total	20	100.0	100.0	

Breast up to 2 years

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Yes	13	65.0	65.0	65.0
	No	7	35.0	35.0	100.0
	Total	20	100.0	100.0	

Give Food 1

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Yes	18	90.0	90.0	90.0
	No	2	10.0	10.0	100.0
	Total	20	100.0	100.0	

Give Food 2

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Yes	9	45.0	45.0	45.0
	No	11	55.0	55.0	100.0
	Total	20	100.0	100.0	

Give Food 3

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Yes	9	45.0	45.0	45.0
	No	11	55.0	55.0	100.0
	Total	20	100.0	100.0	

Give Food 4

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Yes	16	80.0	80.0	80.0
	No	4	20.0	20.0	100.0
	Total	20	100.0	100.0	

Give Food 5

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Yes	13	65.0	65.0	65.0
	No	7	35.0	35.0	100.0
	Total	20	100.0	100.0	

Give Food 6

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Yes	14	70.0	70.0	70.0
	No	6	30.0	30.0	100.0
	Total	20	100.0	100.0	

Table 2: MUAC * Age Cross tabulation

Count

		Age 6-12 months	1-3 years	3-<5 years	Total
MUAC	8.50	0	1	0	1
	8.70	2	0	0	2
	8.80	0	1	0	1
	9.70	2	0	0	2
	10.00	0	1	0	1
	10.50	0	0	1	1
	10.60	0	1	0	1
	11.00	0	0	3	3
	11.40	1	0	0	1
	11.50	0	2	0	2
	12.50	0	1	1	2

	13.00	0	1	0	1
	14.80	0	1	1	2
Total		5	9	6	20

Among the age categories of 6-12 months, 1-3 years, and 3-<5 years 5, 7, and 5 children respectively were severely acutely malnourished children. No single child in the age group of 6-12 months was found to be adequately nourished.

Table 3: MUAC * Parent's Education Cross tabulation

Count

		Parent's Education			
		Primary	Secondary	Illiterate	Total
MUSIC	8.50	0	0	1	1
	8.70	2	0	0	2
	8.80	0	1	0	1
	9.70	0	2	0	2
	10.00	0	1	0	1
	10.50	0	1	0	1
	10.60	0	1	0	1
	11.00	0	0	3	3
	11.40	0	1	0	1
	11.50	2	0	0	2
	12.50	2	0	0	2
	13.00	1	0	0	1
	14.80	0	2	0	2
Total		7	9	4	20

From the above table, it was shown that of the parents' whose children were severely malnourished, 6 ended up in primary, 7 in secondary and 4 were illiterate.

From the above table, 5 parents never had jobs and 12 parents had jobs to take care of their severely malnourished children.

Table 5: MUAC * Parent Income Cross tabulation

Count

		Parent Income		
		Sufficient	Insufficient	Total
MUAC	8.50	0	1	1
	8.70	0	2	2
	8.80	0	1	1
	9.70	0	2	2
	10.00	0	1	1

Table 4: MUAC * Lack of Job Cross tabulation

Count

		Lack of Job		
		Yes	No	Total
MUAC	8.50	0	1	1
	8.70	2	0	2
	8.80	0	1	1
	9.70	0	2	2
	10.00	1	0	1
	10.50	1	0	1
	10.60	1	0	1
	11.00	0	3	3
	11.40	0	1	1
	11.50	0	2	2
	12.50	0	2	2
	13.00	0	1	1
	14.80	0	2	2
Total		5	15	20
	10.50	0	1	1
	10.60	0	1	1
	11.00	1	2	3
	11.40	0	1	1
	11.50	0	2	2
	12.50	0	2	2
	13.00	0	1	1
	14.80	0	2	2
Total		1	19	20

From the above table, of the parents whose children were severely malnourished, only1 parent had sufficient income whereas 16 parents never had sufficient income to manage their families.

Table 5 MUAC * Ease of Access to Healthcare Cross tabulation

Count

		Ease of Access to Healthcare		
		Yes	No	Total
MUAC	8.50	1	0	1
	8.70	2	0	2
	8.80	1	0	1
	9.70	0	2	2
	10.00	1	0	1
	10.50	1	0	1
	10.60	1	0	1
	11.00	3	0	3
	11.40	0	1	1
	11.50	2	0	2
	12.50	2	0	2
	13.00	1	0	1
	14.80	0	2	2
Total		15	5	20

From the above table, of the parents whose children were severely malnourished, 14 had easy access to health care whereas 3 parents never had easy access to healthcare.

Table 6: MUAC * Orphaned Cross tabulation

Count

		Orphaned		
		Yes	No	Total
MUAC	8.50	0	1	1
	8.70	0	2	2
	8.80	0	1	1
	9.70	0	2	2
	10.00	0	1	1
	10.50	0	1	1
	10.60	0	1	1
	11.00	3	0	3
	11.40	0	1	1
	11.50	0	2	2
	12.50	2	0	2
	13.00	0	1	1
	14.80	0	2	2
Total		5	15	20

From the above table, of the parents whose children were severely malnourished, 5 children were orphaned whereas 12 were not orphaned children.

Table 7: MUAC * Low Birth Weight Cross tabulation

Count

		Low Birth Weight		
		Yes	No	Total
MUAC	8.50	0	1	1
	8.70	0	2	2
	8.80	1	0	1
	9.70	2	0	2
	10.00	0	1	1
	10.50	0	1	1
	10.60	0	1	1
	11.00	0	3	3
	11.40	0	1	1
	11.50	0	2	2

	12.50	0	2	2
	13.00	0	1	1
	14.80	0	2	2
Total		3	17	20

From the above table, 3 children born were of low birth weight whereas 14 children were of normal birth weight of those who were severely malnourished.

Table 8: MUAC * Diet Cross tabulation

Count

		Diet		
		Yes	No	Total
MUAC	8.50	1	0	1
	8.70	0	2	2
	8.80	1	0	1
	9.70	0	2	2
	10.00	1	0	1
	10.50	1	0	1
	10.60	1	0	1
	11.00	3	0	3
	11.40	0	1	1
	11.50	0	2	2
	12.50	0	2	2
	13.00	0	1	1
	14.80	2	0	2
Total		10	10	20

From the above table, of the severely malnourished children, 8 were exclusively breastfed up to 6 months whereas 9 were not.

Table 9: MUAC * Deworming Cross tabulation

Count

		Deworming		
		Yes	No	Total
MUAC	8.50	0	1	1
	8.70	0	2	2
	8.80	1	0	1
	9.70	2	0	2
	10.00	1	0	1
	10.50	1	0	1
	10.60	1	0	1
	11.00	3	0	3
	11.40	1	0	1
	11.50	2	0	2
	12.50	2	0	2

	13.00	0	1	1
	14.80	2	0	2
Total		16	4	20

From the above table, of the severely malnourished children,14 were dewormed whereas 3 were not dewormed.

Table 10: MUAC * Breast Feed up to 2 years Cross tabulation

Count

		Breast up to 2 years		
		Yes	No	Total
MUAC	8.50	1	0	1
	8.70	2	0	2
	8.80	1	0	1
	9.70	2	0	2
	10.00	1	0	1
	10.50	1	0	1
	10.60	1	0	1
	11.00	0	3	3
	11.40	0	1	1
	11.50	0	2	2
	12.50	1	1	2
	13.00	1	0	1
	14.80	2	0	2
Total		13	7	20

From the above table, of the children who were severely malnourished, 10 were breastfed up to 2 years whereas 7 were not breastfed up to 2 years.

Table 11: MUAC * Give Food 1 Cross tabulation

		Yes	No	Total
MUAC	8.50	1	0	1
	8.70	2	0	2
	8.80	1	0	1
	9.70	2	0	2
	10.00	0	1	1
	10.50	1	0	1
	10.60	1	0	1
	11.00	3	0	3
	11.40	1	0	1
	11.50	2	0	2
	12.50	2	0	2
	13.00	1	0	1
	14.80	1	1	2
Total		18	2	20

In the above table, of the parents whose children are severely malnourished, 16 of them give food in category 1 to their children whereas only 1 does not.

Table 12: MUAC * Give Food 2 Cross tabulation

Count

		Give Food 2		
		Yes	No	Total
MUAC	8.50	1	0	1
	8.70	0	2	2
	8.80	1	0	1
	9.70	2	0	2
	10.00	0	1	1
	10.50	1	0	1
	10.60	1	0	1
	11.00	0	3	3
	11.40	1	0	1
	11.50	0	2	2
	12.50	0	2	2
	13.00	1	0	1
	14.80	1	1	2
Total		9	11	20

In the above table, of the parents whose children are severely malnourished, 7 of them give foods in category 2 to their children while 10 of them don't give.

Table 13: MUAC * Give Food 3 Cross tabulation

Count

		Give Food 3		
		Yes	No	Total
MUAC	8.50	1	0	1
	8.70	0	2	2
	8.80	1	0	1
	9.70	2	0	2
	10.00	0	1	1
	10.50	1	0	1
	10.60	1	0	1
	11.00	0	3	3
	11.40	1	0	1
	11.50	0	2	2
	12.50	0	2	2
	13.00	1	0	1
	14.80	1	1	2
Total		9	11	20

In the above table, of the parents whose children are severely malnourished, 7 of them give foods in category 3 to their children while 10 of them don't give.

Table 14: MUAC * Give Food 4 Cross tabulation

Count

		Give Food 4		
		Yes	No	Total
MUSIC	8.50	1	0	1
	8.70	0	2	2
	8.80	1	0	1
	9.70	2	0	2
	10.00	0	1	1
	10.50	1	0	1
	10.60	1	0	1
	11.00	3	0	3
	11.40	1	0	1
	11.50	2	0	2
	12.50	2	0	2
	13.00	1	0	1
	14.80	1	1	2
Total		16	4	20

In the above table, of the parents whose children are severely malnourished, 14 of them give foods in category 4 to their children while only 3 of them don't give.

Table 15: MUAC * Give Food 4 Cross tabulation

Count

		Give Food 4		
		Yes	No	Total
MUSIC	8.50	1	0	1
	8.70	0	2	2
	8.80	1	0	1
	9.70	2	0	2
	10.00	0	1	1
	10.50	1	0	1
	10.60	1	0	1
	11.00	3	0	3
	11.40	1	0	1
	11.50	2	0	2
	12.50	2	0	2
	13.00	1	0	1
	14.80	1	1	2
Total		16	4	20

In the above table, of the parents whose children are severely malnourished,14 of them give foods in category 5 to their children while only 3 of them don't give.

Table 16: MUAC * Give Food 6 Cross tabulation

Count

		Give Food 6		
		Yes	No	Total
MUAC	8.50	1	0	1
	8.70	2	0	2
	8.80	1	0	1
	9.70	1	1	2
	10.00	1	0	1
	10.50	1	0	1
	10.60	1	0	1
	11.00	0	3	3
	11.40	1	0	1
	11.50	2	0	2
	12.50	2	0	2
	13.00	1	0	1
	14.80	0	2	2
Total		14	6	20

In the above table, of the parents whose children are severely malnourished, 13 of them give foods in category 6 to their children while only 4 of them don't give.

DISCUSSION

The study found that the prevalence of Severe Acute Malnutrition was highest in children aged 1-3 years followed by 3-<5 years and 6-12 months. The Research also was not in a position to identify possible complications related to the Research topic. This was probably due to the limited time frame assigned to do the Research and the limited number of patients interviewed within that short time frame. Among the associated factors to the Research topic, it was found that most parents had insufficient income to care for their families, though they had jobs and most of them were at least educated. Exclusive breastfeeding was also not well adhered to as most mothers could not breastfeed their children exclusively for at least 6 months [13]-[15]. The prevalence of Severe Acute Malnutrition was recorded to be highest between 1-3-year-old children. This was probably due to neglect by mothers to ensure exclusive breastfeeding for up to 6 months and also lack of sufficient income to avail a balanced diet to their children. However, the prevalence was also recorded to be lowest in children aged 6-12 months and 3-<5 years. This was probably due to easy access to Health care facilities, updated immunization and updated deworming. According to the study, no complications were reported [16]- [22]. This was probably due to the limited time frame assigned to the Researcher to collect sufficient data within a short time frame. Also, accessibility to laboratory services to do investigations was hard since most parents needed money to pay for them such as complete blood count, Random blood sugar, and Fasting blood sugar. It was found out that most parents though they had jobs, they never had sufficient income to provide enough necessities for their children. This contributed to Severe Acute Malnutrition in children. Almost all mothers never adhered to exclusive breastfeeding for up to 6 months. This also was a risk factor for Severe Acute Malnutrition in children under five years.

CONCLUSION

The prevalence of severe acute malnutrition in children under 5 years is on the rise in children whose mothers do not exclusively breastfeed them for at least 6 months. Therefore, mothers should be advised to attend both Antenatal and postnatal services for education concerning exclusive breastfeeding of their children. Children under 5 years who develop severe acute malnutrition have a high likelihood of developing complications such as hypoglycemia, dehydration, hypothermia, severe anaemia and possible infections. Therefore, quick intervention should be planned by Nutrition Units to prevent the mortality of such children. Parents who do not have sufficient income to run their families are at increased likelihood of having their children develop severe acute malnutrition due to a lack of a balanced diet or complementary feeding programs. Parents should also be advised to frequently visit hospitals for programs such as immunization and deworming for their children.

RECOMMENDATION

Mothers should attend both antenatal and postnatal care services for better health services for their children.

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Children should be treated against all possible infections. They should be immunized up to date and dewormed routinely. In case of severe complications, children should be admitted to hospitals with Nutrition Units for better management. The government should construct nearby health facilities to ease access to health care services. Parents are also advised to work hard for their families to be in a position to supply children's basic needs.

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