

PREVALENCE OF MALNUTRITION AND ASSOCIATED FACTORS AMONG CHILDREN UNDER-FIVE YEARS IN JUBA CITY

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RESULTS

1. DISTRIBUTION OF SAMPLE SIZE

The data collection was divided among four health facilities of Al-Sabah Children’s Hospital, Nyakuron Primary Health Care Centre, Munuki Primary Health Care Centre and Kimu Primary Health Care Centre. Each health facility was equally apportioned twenty sample size.

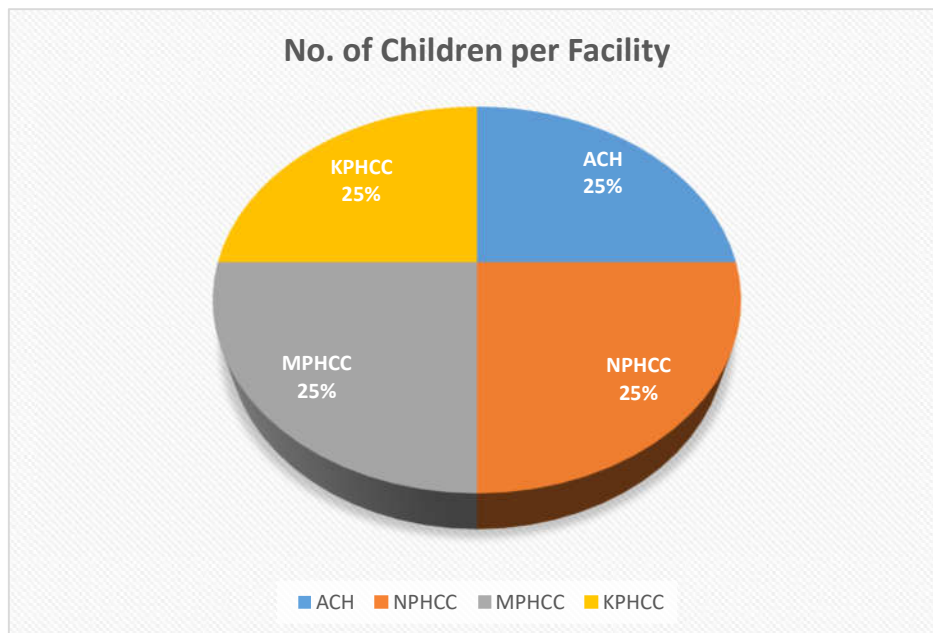


Figure 5: children’s distribution in health facilities

2. PREVALENCE OF MALNUTRITION

The number of children assessed was 80 with 33 for boys and 47 for girls in Juba City from four health facilities. Table 4 presents the nutrition status of children 6-59 months incorporated in the nutritional survey in Juba City. The prevalence ratio of malnutrition between Boys to Girl was 0:7. That is 33:47 for boys and girls respectively. 32.6% and 67.4% were boys and girls aged between 6-17 months respectively, which showed significant difference in their malnutrition prevalence which was very common among children less than 1.5 years. The overall prevalence of severe wasting based on oedema and by sex was 14.0 % and severe underweight based on oedema by sex was 19.0%. Prevalence of Marasmic-kwashiorkor was (6.3 %), Kwashiorkor 12.7 %, Marasmic 55.7 % and 25.3 % were not severely malnourished (SAM). This identifies that marasmus was the highest prevalence of malnutrition among CU5. Table 2 shows the prevalence of wasting (based on weight-for-height and/or edema) by sex of the children; (32) 40.1 % (84.7 - 99.5 95% C.I.) and (41) 51.9 % (77.0 - 95.3 95% C.I.)

for boys and girls respectively. Severe wasting (<-3 z-score) was 55.7% and Moderate wasting (>= -3 and <-2 z-score) 17.8%. The overall prevalence of malnutrition was 42% underweight, 37% wasting and 21% stunting.

Table 4: Distribution of age and sex of sample

AGE (mo)	Boys		Girls		Total		Ratio
	no.	%	no.	%	no.	%	Boy: Girl
6-17	15	18.7	31	38.75	46	57.5	0.5
18-29	8	10	9	11.25	17	21.3	0.9
30-41	7	8.7	6	8	13	16.3	1.2
42-53	2	2.5	0	0.0	2	2.5	
54-59	1	1.1	1	1	2	2.5	1.0
Total	33	41	47	59	80	100.0	0.7

Table 5: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex

	All n = 79	Boys n = 33	Girls n = 46
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(73) 92.4 % (84.4 - 96.5 95% C.I.)	(32) 40.1 % (84.7 - 99.5 95% C.I.)	(41) 51.9 % (77.0 - 95.3 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(14) 17.7 % (10.9 - 27.6 95% C.I.)	(3) 9.1 % (3.1 - 23.6 95% C.I.)	(11) 23.9 % (13.9 - 37.9 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(59) 74.7 % (64.1 - 83.0 95% C.I.)	(29) 36.7 % (72.7 - 95.2 95% C.I.)	(30) 38 % (50.8 - 77.3 95% C.I.)

The prevalence of oedema is 14.0

Table 6: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (>= -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	46	29	36.7	12	15.2	4	5	1	1.3
18-29	16	10	12.7	1	1.3	1	1.3	4	5
30-41	13	4	5	1	1.3	0	0.0	8	10.1
42-53	2	0	0.0	0	0.0	1	1.3	1	1.3
54-59	2	1	1.3	0	0.0	0	0.0	1	1.3
Total	79	44	55.7	14	17.8	6	7.6	15	14.0

Table 7: Distribution of acute malnutrition and oedema based on weight-for-height z-scores

	<-3 z-score	>=3 z-score
Oedema present	Marasmic kwashiorkor No. 5 (6.3 %)	Kwashiorkor No. 10 (12.7 %)
Oedema absent	Marasmic No. 44 (55.7%)	Not severely malnourished No. 20 (25.3 %)

Table 8: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex

	All n = 80	Boys n = 33	Girls n = 47
Prevalence of global malnutrition (< 125 mm and/or oedema)	(80) 100.0 % (95.4 - 100.0 95% C.I.)	(33) 41 % (89.6 - 100.0 95% C.I.)	(47) 59 % (92.4 - 100.0 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(0) 0.0 % (0.0 - 4.6 95% C.I.)	(0) 0.0 % (0.0 - 10.4 95% C.I.)	(0) 0.0 % (0.0 - 7.6 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(80) 100.0 % (95.4 - 100.0 95% C.I.)	(33) 41 % (89.6 - 100.0 95% C.I.)	(47) 59 % (92.4 - 100.0 95% C.I.)

Table 9: Prevalence of acute malnutrition by age, based on MUAC cut offs and/or oedema

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (>= 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	46	46	57.5	0	0.0	0	0.0	1	1.3
18-29	17	17	21.2	0	0.0	0	0.0	4	5
30-41	13	8	10	0	0.0	0	0.0	8	10
42-53	2	2	2.5	0	0.0	0	0.0	1	1.3
54-59	2	2	2.5	0	0.0	0	0.0	1	1.3
Total	80	75	93.8	0	0.0	0	0.0	15	14

Table 10: Prevalence of underweight based on weight-for-age z-scores by sex

	All n = 65	Boys n = 24	Girls n = 41
Prevalence of underweight (<-2 z-score)	(55) 84.6 % (73.9 - 91.4 95% C.I.)	(20) 30.8 % (64.1 - 93.3 95% C.I.)	(35) 53.8 % (71.6 - 93.1 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(20) 30.8 % (20.9 - 42.8 95% C.I.)	(5) 7.7 % (9.2 - 40.5 95% C.I.)	(15) 23.1 % (23.6 - 51.9 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(35) 53.8 % (41.9 - 65.4 95% C.I.)	(15) 23 % (42.7 - 78.8 95% C.I.)	(20) 30.8 % (34.3 - 63.5 95% C.I.)

Table 10 defines Prevalence of underweight by sex was (<-2 z-score) (20) 30.8 % (64.1 - 93.3 95% C.I.); (35) 53.8 % (71.6 - 93.1 95% C.I.) for boys and girls respectively. Severe underweight was (15) 23 % (42.7 - 78.8 95% C.I.) boys and (20) 30.8 % (34.3 - 63.5 95% C.I.)

Table 11: Prevalence of underweight by age, based on weight-for-age z-scores

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (>= -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	45	24	36.9	13	30	8	12.3	1	1.3
18-29	13	7	10.8	4	6	2	3	4	5
30-41	5	3	4.6	2	3	0	0.0	8	10
42-53	1	0	0.0	1	1.5	0	0.0	1	1.3
54-59	1	1	1.5	0	0.0	0	0.0	1	1.3
Total	65	35	53.8	20	30.8	10	12.6	15	19.0

Table 12: Prevalence of stunting based on height-for-age z-scores and by sex

	All n = 78	Boys n = 32	Girls n = 46
Prevalence of stunting (<-2 z-score)	(36) 46.2 % (35.5 - 57.1 95% C.I.)	(16) 20.5 % (33.6 - 66.4 95% C.I.)	(20) 25.6 % (30.2 - 57.8 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(20) 25.6 % (17.3 - 36.3 95% C.I.)	(6) 7.7 % (8.9 - 35.3 95% C.I.)	(14) 18 % (19.1 - 44.8 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(16) 20.5 % (13.0 - 30.8 95% C.I.)	(10) 12.8 % (18.0 - 48.6 95% C.I.)	(6) 7.7 % (6.1 - 25.7 95% C.I.)

Table 13: Prevalence of stunting by age based on height-for-age z-scores

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (>= -2 z score)	
		No.	%	No.	%	No.	%
6-17	45	5	11.1	14	31.1	26	57.8
18-29	16	4	25.0	2	12.5	10	62.5
30-41	13	4	30.8	4	30.8	5	38.5
42-53	2	2	100.0	0	0.0	0	0.0
54-59	2	1	50.0	0	0.0	1	50.0
Total	78	16	20.5	20	25.6	42	53.8

Table 14: Mean z-scores, Design Effects and excluded subjects

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	64	-3.44±1.26	1.00	16	0
Weight-for-Age	65	-3.21±1.22	1.00	15	0
Height-for-Age	78	-1.65±2.02	1.00	2	0

* contains for WHZ and WAZ the children with edema.

1. ASSOCIATED FACTORS OF MALNUTRITION IN JUBA CITY.

1. Socio-economic and demographic variables; marital status, education, occupation

Table 15: Demographic variables

Marital status			Education of Head			Occupation		
	No.	%		No.	%		No.	%
Married	76	95	None	24	30	Unemployed	35	44
Single	3	3.8	Primary	28	35	Employed	28	35
Divorced	0	0	Secondary	23	29	Casual	13	16
Separated	1	1.2	University	5	6	Self-employed	4	5
Total	80	100	Total	80	100	Total	80	100

A total of eighty children aged 6–59 months were included, which makes the response rate 100%. The large proportions, 76(95 %) of the children’s mothers were married, 3(3.75%) were single and 1.25% were widowed. The prevalence of malnutrition was very common among children of the married mothers as revealed by the prevalence of global acute malnutrition (<-2 z-score and/or oedema=) 92.4 %(84.4 - 96.5 95% C.I.). Information collected on the head of the family’s educational status indicated very low level of the children’s parent’s (30%) illiterate, 35% primary leavers, 29% secondary dropouts and 6% in universities. According to the results, there was a significant association between acute malnutrition among U5 children and education level, marital status and the occupation as shown in table 12 above. The main sources of House Hold food security were Homegrown (agriculture) for 61% and bought (commercial) for 60%. There was a slight difference between children of employed parents 28(35%) and unemployed 35(44%).

2. Child characteristics; Age, Sex, and morbidity status fever, malaria, diarrhea and Acute Respiratory Infection

As shown in table 4. Of the total 80 surveyed children, 46(58%), were found in the age group of 6–17 months 15(18.7%) were boys, 31(38.75%) were girls. In age group 18–29 months 8(10%), 9(11.25%) were boys and girls respectively. Age group 30–41 months and 42–53 months, 7(8.7%), 6(8%) and 2(2.5%), 0(0%) were boys and girls in that order. 54–59 months 1(1%), 1(1%) were male and female children respectively. Children aged from 54 months up to 59 months had the least prevalence of malnutrition. This was followed by children aged between 42 months and 53 months were also having less prevalence of malnutrition. This results from table 1, show significant decrease in prevalence of malnutrition as children increase in their ages. In their early months, girl children had higher prevalence of malnutrition than their counterpart. Prevalence of baby boys’ malnutrition was significantly higher than girls’ at the ages between 42–43 months where baby girls had zero percent of malnutrition. Among children covered in the survey, 41% were males and 59% were females.

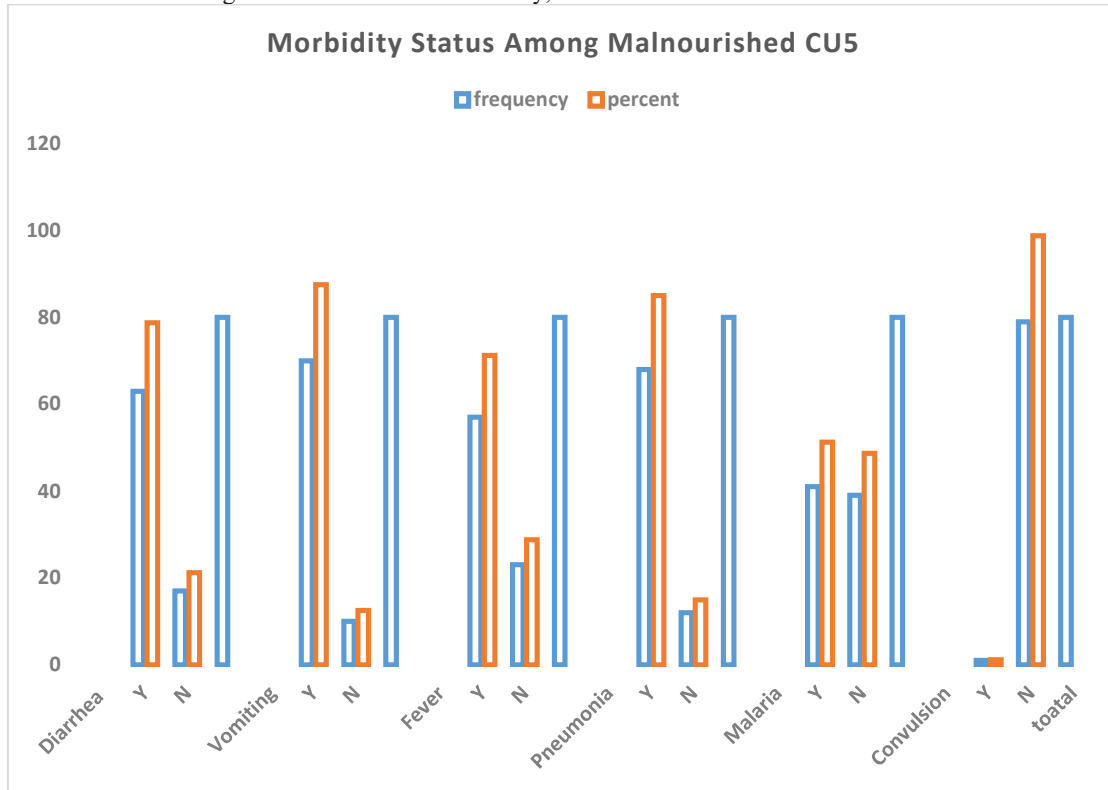


Figure 6; children characteristics

Figure 6 explains characteristics of the associated factors with prevalence of malnutrition among CU5 in Juba city. The result revealed that sex of the child significantly affected the likelihood of malnutrition indicators. Female children were 7 times more malnourished than male children. Diarrhea and vomiting prevalence were 78.5% and 87.5% within the surveyed children which indicated them as the risk factors to malnutrition. Fever (71%) was a factor associated with malnutrition as 29% of the assessed children with malnutrition had not fever. This indicated that, underlying causes of fever were also responsible for existence of malnutrition among CU5. Among 80 children who were surveyed, 68(85%) had coughing for the last seven days. 87% of those children with malnutrition previously reported with vomiting in association with malnutrition. Only 13% did not present with vomiting among the malnourished children under 5 years. This possibly defined pneumonia as the associated factor to malnutrition among CU5.

3. Child caring practices; health care seeking, weaning and immunization

The immunization coverage among surveyed children was fully 99%. During the assessment, 79 children were found vaccinated against their six-killer diseases of CU5. However, malnutrition regardless of this wide immunization coverage was still highly available. This shows that, being immunized against diseases doesn’t guarantee protection from being malnourished. However, children who were infected with, pneumonia and malaria and did not get immediate treatment had high prevalence of malnutrition as shown in figure 2 above.

Figure 3 below, shows children’s percentages between those immunized and not immunized. 100% of malnourished children were immunized as indicated by the percentage.

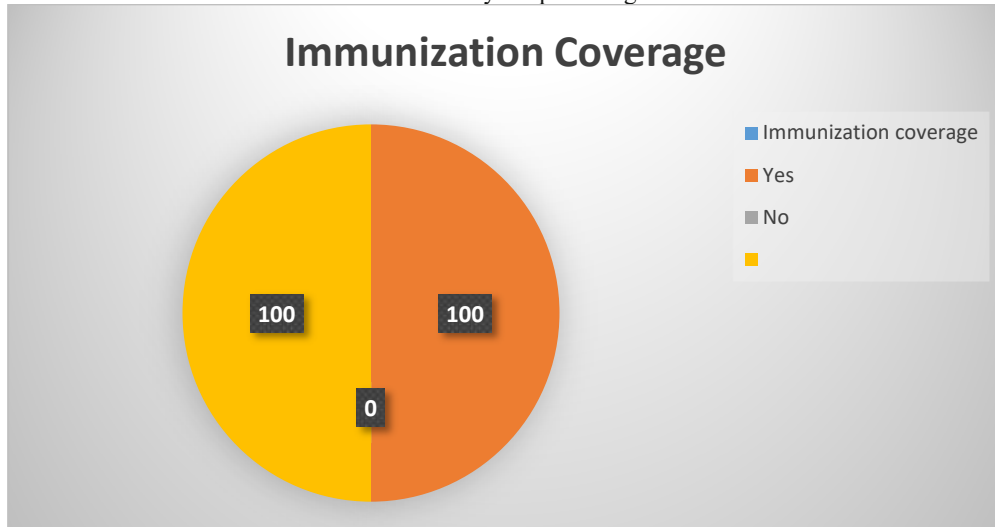


Figure 7; health care practices

Of all children surveyed 39(48.8%) were weaned exactly at 6 months. 33(41%) were weaned less than 6 months, and 8(10%) were weaned more than 6months. Malnutrition prevalence was higher in children introduced supplementary foods

4. Environmental Health factors such as housing condition

HOUSING FACTORS

Most children who were assessed during this study lived in grass thatched houses 93.75% and 3.75% in plastic-sheet roofed houses and 2.5% in iron-sheet roofed ones. This reveals inability to afford basic human needs therefore defining poverty level within the community of the assessment high.

Table 16: Socioeconomic Status.

			Marital Status	Frequency	Percent
House Roofing			Single	3	3.75
Grass thatched	75	93.75	Married	76	95
Plastic Sheet	3	3.75	Widowed	1	1.25
Iron-sheet	2	2.5	Divorced	0	
Total	80	100	Total	80	100
Floor Types			Educational Level		
Earth	80	100	None	24	30
Tiles	0		Primary	28	35
Total	80	100	Secondary	23	
Cooking Source of Fuel			University	5	6.25
Firewood	73	91.25	Total	80	100
Paraffin	0		Employment		
charcoal	7	8.75	Employed	28	35
Total	80	100	Unemployed	35	43.75
			Casual	13	16.25
Source of Food					
Home grown	39	48.75	Self-employed	4	5
Bought	38	47.5	Total	80	100
Donated	3	3.75	Weaning Time		
Total	80	100	6Ms	39	49
			<6ms	8	10
			>6Ms	33	41
			Total	80	100

Table 15 exhibits majority of children’s parents (91%) used firewood as the source of fuel for cooking. The remaining nine percent used charcoal in their houses. This information correlates to cheaper price of firewood than charcoal. This indicates poverty level among families of the malnourished children under five. Their main sources of food were homegrown 48.8%, bought 47.5% and donated 3.7%. The prevalence of malnutrition was seen frequently in children who were introduced to supplementary feedings at age of 6 months 39(49%) and more than 6 months with 33(41%).