

# Risk Factors for the Onset of Acute Malnutrition in Children Aged 6-59 Months at the Ureni of the CSREF in Commune V in the District of Bamako

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## Abstract

**Introduction:** Malnutrition is a major public health problem in several countries around the world. The aim of this study was to determine the impact of risk factors for the occurrence of types of malnutrition in children aged 6 to 59 months at the URENI of the CSREF in Commune V. **Method and Materials:** Sampling was exhaustive; the sample size was 73 children. **Results:** The female sex was the most represented (55%), the most represented age group was 12 to 24 months (49.31%) and the majority of the children were not vaccinated. The mothers ranged in age from 20 to 34 years (64.38%), and were mostly uneducated, housewives (89.04%) and multiparous (64.4%). The most common form of SAM was marasmus (72.60%) and malaria was the most common pathology associated with severe acute malnutrition (54.8%). Risk factors for malnutrition included poverty (38%), food insecurity (20.5%), disease (13.7%) and poor diet (13.7%). A statistically significant link was found between the risk factors and the type of severe acute malnutrition. **Conclusion:** SAM is common in the Commune V CSREF, and the risk factors for its occurrence remain dominated by poverty.

**Keywords:** Risk factor, Malnutrition, CSREF Commune V.

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## INTRODUCTION

Malnutrition is a major public health problem in several countries around the world and is a priority in the Sustainable Development Goals (SDG2). Malnutrition is both a medical and a social disorder, often rooted in poverty, and defined by the WHO as a pathological state resulting from the relative or absolute deficiency or excess of one or more essential nutrients, whether manifested clinically or detected only by biochemical, anthropometric or physiological analyses [1]. Malnutrition encompasses three groups of conditions, namely under nutrition, micronutrient malnutrition and over nutrition. It is estimated that by 2022, 149 million children under the age of 5 worldwide will be stunted (too small for their age), 45 million will be wasted (too thin for their height), and 37 million will be overweight or obese [2]. Since 2012, Mali has been experiencing a political and military crisis, which has worsened the

nutritional situation, as shown by the results of previous studies carried out at national level. In 2018, the EDSM-VI reported a national prevalence of 13% of global acute malnutrition (GAM) and 9% of severe acute malnutrition (SAM). According to the results of the same survey, chronic malnutrition remains a cause for concern, with a national prevalence of 27% and underweight of 19% [3]. Malnutrition contributes to an increase in the morbidity of certain diseases such as diarrhoea, respiratory infections, perinatal diseases, measles, malaria and many others. The aim of the study was to determine the relationship between the risk factors associated with malnutrition and the frequency of forms of severe acute malnutrition in children aged between 6 and 59 months at the URENI of the CSREF in Commune V.

## MATERIAL AND METHOD

This was a prospective descriptive cross-sectional study conducted from 1 November to 20

December 2022. We adopted a non-probability sampling method with an exhaustive technique. The size of the study was all malnourished children aged 6 to 59 months (MAM and MAS) admitted to the paediatric URENI during the study period. Our study population consisted of all malnourished children admitted to the paediatric URENI in Commune V. Target population: Children aged 6-59 months admitted to the URENI unit of the CSREF in Commune V. Inclusion criteria: all children aged 6-59 months admitted to the URENI for malnutrition whose mothers agreed to hospitalisation and interview after informed consent were included in the study. Non-inclusion criteria: children aged 6-59 months admitted to URENI for malnutrition whose mothers did not agree to the interview and/or hospitalisation. The data were entered and analysed using SPSS 20 software, and the text was processed using Word software. In terms

of ethics and deontology, a request for authorisation to collect data was sent to the head doctor of the CSREF in Commune V. Anonymity and confidentiality were guaranteed throughout the survey period. A request for authorisation was sent to local officials before the survey began, and verbal informed consent was requested from respondents. Respondents were free to withdraw their consent at any time during the survey, and no compensation was paid to respondents.

## RESULTS

### 1- Socio-demographic characteristics

The majority of cases were female (55%). The most common age group was 12 to 24 months, accounting for half the cases (49.31%) (Figure 1).

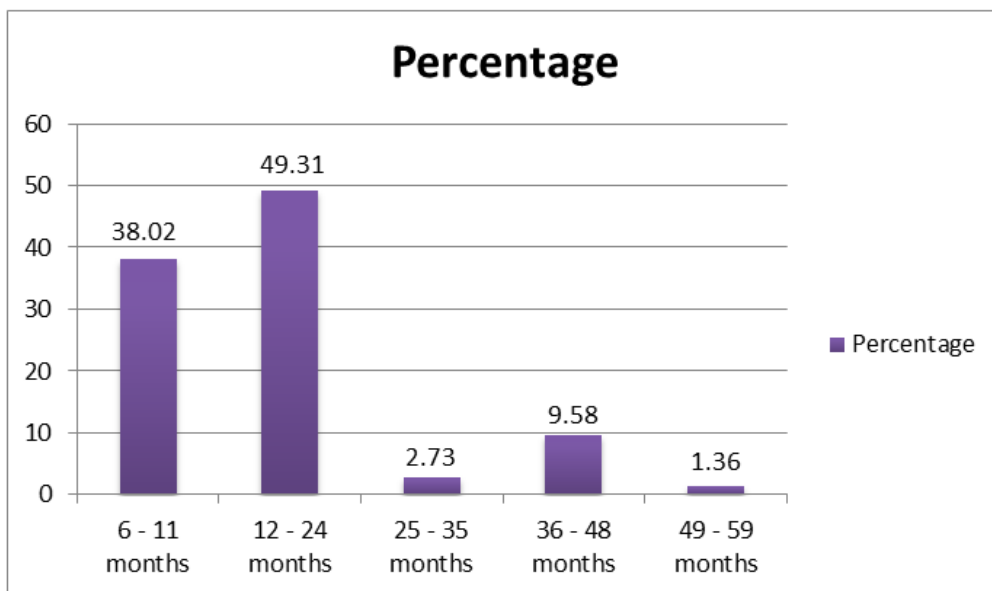


Figure 1

The age group of mothers most represented was 20 to 34 years, i.e. 64.38%. Half of the children (50.7%) had not been vaccinated; most of the mothers (95.8%) were married, 86.3% were not in education, 89.04% were

housewives and 64.4% were multiparous. 75.34% of the fathers were monogamous, 83.6% were not in education and 71.23% were manual workers.

Table I: Breakdown of socio-demographic characteristics

Variables	Frequency	Percentage
Age of mothers under 20	19	26.02%
20 to 34 years old	47	64.38%
> 34 years	7	9.58%
<b>Children's vaccinations up to date</b>		
Yes	36	49.3%
No	37	50.7%
<b>Mothers' marital status</b>		
Single	3	4.1 %
Married	70	95.8%
<b>Mothers' level of education</b>		
Educated	10	13.7%
No education	63	86.3%

Variables	Frequency	Percentage
<b>Mother's occupation</b>		
Housewives	65	89.04%
Other professions	8	10.95%
<b>Parity</b>		
Primiparous	26	35.6%
Multiparous	47	64.4%

## 2. Mode of Feeding

Exclusive breastfeeding was the most commonly used feeding method (65%), with complementary foods introduced in 41.1% of children

aged 0-6 months. Weaning was carried out before 24 months of age in 71.23% of cases, and gradually in 67.1%.

**Table II: Breakdown of the child's diet**

Variables	Frequency	Percentage
<b>Power supply mode</b>		
Exclusive	48	65.8
Artificial	19	26.0
Mixed	6	8.2
<b>Diversification age</b>		
0 to 6 months	30	41
7 to 11 months	22	30
12 months and over	21	29
<b>Weaning children</b>		
Before 24 months	52	71.23
After 24 months	21	28.76
<b>Type of weaning</b>		
Sudden	12	16.4
Late	1	1.4
Spontaneous	11	15.1
Progressive	49	67.1

## 3. Risk Factors

The most common form of SAM was marasmus (72.60%). The most common pathology associated with

severe acute malnutrition was malaria (54.8%). Among the risk factors, poverty was the most common (38%).

**Table III: Risk factors associated with severe acute malnutrition in children aged 6 to 59 months**

Risk factors	Frequency	Percentage
Diseases	10	13.7
Conflicts	5	6.8
Food insecurity	15	20.5
Poverty	28	38.4
Accessibility to health facilities	5	6.8
Poor nutrition	10	13.7
<b>Total</b>	<b>73</b>	<b>100.0</b>

The results of the statistical tests showed that there was a statistically significant relationship between the types of SAM and the associated pathologies (P value less than 0.05, Pearson Chi-square 62.569a, ddl =10).

There was also a statistically significant link between types of malnutrition and risk factors. (Pearson Chi-square 95.232a ddl 10 p: 0.000).

**Table IV: Statistical link between risk factors and forms of SAM**

Risk factors	Type of SAM			
	Marasmus	Kwashiorkor	Mixed	Total
Diseases	Effectif	10	0	0
	%	100,0%	0,0%	0,0%
Conflicts	Effectif	5	0	0
	%	100,0%	0,0%	0,0%

Risk factors	Type of SAM			
	Marasmus	Kwashiorkor	Mixed	Total
Food insecurity	Effectif	15	0	0
	%	100,0%	0,0%	0,0%
Poverty	Effectif	23	5	0
	%	82,1%	17,9%	0,0%
Accessibility to health facilities	Effectif	0	4	1
	%	0,0%	80,0%	20,0%
Poor nutrition	Effectif	0	0	10
	%	0,0%	0,0%	100,0%
<b>Total</b>	<b>Effectif</b>	<b>53</b>	<b>9</b>	<b>11</b>
	<b>%</b>	<b>72,6%</b>	<b>12,3%</b>	<b>15,1%</b>

Pearson chi-square 95.232a ddl: 10 p: 0.000.

Disease, conflict, food insecurity and poverty all contribute to the risk of stagnation, while accessibility to healthcare and poverty all contribute to the risk of Kwashiorkor. Poor nutrition exposes children to the risk of mixed malnutrition.

## COMMENTS

### 1. Socio-demographic characteristics

In our study, 55% of the patients were female. This result is higher than that of COULIBALY [4], who obtained 21% in his thesis on the risk factors of malnutrition in children aged 6 to 59 months hospitalised in the paediatrics department of CHU Gabriel Toure. The study by Is AND ABRAHAM [5], on the determining factors of acute malnutrition in children aged 6-59 months in the health district of Ménaka found that the most common age of mothers was 20 to 34 years, i.e. 70%. The number of siblings was less than three, i.e. 55.9%, and the majority of children had not been vaccinated, i.e. 50.7%. The mothers of the children were mostly married (88%), 89% had not attended school, and the majority were housewives (93.7%); these results corroborate those of our study. With regard to the children's dietary situation, supplementary foods were introduced to the children from 0 to 6 months (41.1%). This could be explained by the fact that many mothers give their children food other than breast milk after birth. The type of breastfeeding was exclusive (65%), the majority of children were weaned before the age of 24 months (71.23%) and the type of weaning was gradual (67.1%).

### Frequency of severe acute malnutrition

Marasmus was the most common type of SAM (72.60%). In our study, the percentage of marasmus was 72.6%, Kwashiorkor 12.3% and the mixed form 15.1%. Compared with data from the EDSVI-Mali from 2001 to 2018, the prevalence of stunting and underweight has decreased overall, from 42% to 27% for stunting and from 29% to 19% for underweight. On the other hand, the prevalence of wasting varies irregularly: from 12% in 2001, it rose to 15% in 2006, then fell to 9% in 2018. On the other hand, the prevalence of overweight has not varied over this period [3]. The work of Diall *et al.*, [6] shows that 21.3% of malnourished children were

emaciated, with 93.9% in a severe form (marasmus 75.8%, kwashiorkor 16.1% and mixed form 2%), while the study by Yattara [7] shows that malnourished children suffered more from marasmus than other forms of malnutrition (81.49%), a result lower than that of our study.

### Diseases associated with malnutrition in children aged 6 to 59 months

Malaria was the condition most frequently associated with severe acute malnutrition (54.8%). This could be explained by the fact that Mali is a country where malaria is highly endemic. This study reveals a relationship between the types of SAM and the pathologies associated with severe acute malnutrition, with a Chi-square test of 0.000, which is statistically significant. According to COULIBALY [4], malnutrition was associated with gastroenteritis in 31.6% of cases. Musimwa *et al.*, [8] found that the clinical picture of malnourished children was dominated by cough and/or pneumonia in 42.50%, gastroenteritis in 38.55%, dermatoses in 22.91% of cases, fever in 22.35%, oedema in 19.0%, pallor in 8.38%, and hepatomegaly in 1.68% and splenomegaly in 2.89%, the least frequently observed signs. In the 2018 study by Diall *et al.*, [6], the most common associated pathologies were dehydration (25%), anaemia (19%), pneumonia (18%) and malaria (17%).

### Risk factors for malnutrition and frequency of cases of severe acute malnutrition

Our study showed that there is a link between the risk factors and the frequency of cases of malnutrition, which is confirmed by Pearson's chi-squared statistical test (P: 0.000), while the associated pathologies have a statistically significant link with the frequency of cases of severe acute malnutrition (P: 0.000). Disease, conflict, food insecurity and poverty expose people to the risk of malnutrition, while access to healthcare and poverty expose people to the risk of Kwashiorkor. Poor nutrition exposes children to the risk of mixed malnutrition. A study conducted in Burkina Faso showed that multivariate analysis with an age  $\geq$  12 months increased the risk of acute malnutrition (adjusted odds ratio (aOR): 2.3; 95% confidence interval: 1.1-4.7),

while knowledge of exclusive breastfeeding reduced the risk of acute malnutrition (aOR: 0.4; 95% CI 0.2-0.9) [9]. in addition, an age  $\geq$ 12 months (aOR: 0.08, CI95%: 0.03-0.22), female gender (aOR: 0.31, CI95%: 0.12-0.77) and the absence of dietary restrictions (aOR: 0.13, CI95%: 0.05-0.3) reduced the risk of infants being chronically malnourished.

## CONCLUSION

At the end of this study, we note that malnutrition remains a real public health problem in the world, particularly in Africa and Mali, among children aged 0-59 months. Its impact on the survival, growth and development of the child, due to its multidimensional causes, obliges us to take effective preventive measures and appropriate management.

This study enabled us to determine the anthropometric characteristics of severely acutely malnourished children, the frequency of forms of severe acute malnutrition, and to identify the risk factors and pathologies associated with malnutrition in children aged 6 to 59 months.

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