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Nutritional Status of Children Aged 0 to 59 Months Suffering from Severe Acute Malnutrition (SAM) Hospitalized at the CRENI of Tillabéry.

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A B S T R A C T

Introduction: Malnutrition due to micronutrient deficiency, particularly among pregnant women, is of concern because it affects fetal and child health. in Niger, one in 23 women dies during pregnancy or childbirth (compared to 1 in 42 in Africa).

Objectives: This study aims to assess iron supplementation among pregnant women and methods for diagnosing anemia in the district health of KOLLO, based on a sample of 50 women between September and October 2023.

Materials and Methods: To conduct the study, we used various materials, including a scale to measure the weight of pregnant women and a measuring tape to measure their height. The main data collection tool was a survey form (questionnaire) intended for pregnant women.

The method employed was a cross-sectional descriptive study involving 50 pregnant women encountered during prenatal consultations at the KOLLO Health District between September 1st and October 30th, 2023. The data were analyzed using Epi-info version 3.3.2 software for data encoding, analysis, and processing, as well as Microsoft Office 2010 for writing the report.

Results: Regarding the profile of the surveyed women, the majority (60%) are under 25 years old, with ages ranging from 15 to 42 years. Their average weight is 78.5 kg, with a range from 42 to 115 kg, while their average height is 1.61 m, ranging from 1.38 to 1.84 m. 70% of the women are in their first to third pregnancies. During the survey, over half of the women (52%) were in their second trimester of pregnancy, while 42% had no formal education. Homemakers represent 70% of the surveyed women. Regarding diet during pregnancy, almost all women (90%) consumed iron-rich foods, but 62% of them consumed food stimulants. However, none of the women underwent hemoglobin examination. Regarding iron supplementation, all women were supplemented with one tablet per day, but only 28 reported adhering to the prescribed dosage. Additionally, hemoglobin examination was conducted on 31 parturients, and the most prescribed molecule was FétonTM/FefolMT at an average dose of 17 capsules per woman.

Conclusion: Recommendations arising from this study include the need to replenish pharmacies with iron supplements, to make hemoglobin testing freely accessible to all pregnant women, and to promote health education on pregnancy-appropriate nutrition.

Keywords: Anemia, Iron , Tillabéry

Introduction

Malnutrition among children aged 0 to 59 months is a significant public health issue. It results from acute or chronic deficits in calories, proteins, or micronutrients. It is also the outcome of a combination of structural and circumstantial factors that determine the availability, accessibility, and utilization of nutrients **(Manual, 1999)**. The nutritional status of children aged 0 to 59 months is one of the determinants of infant mortality and proper growth. Hunger and malnutrition are devastating factors, particularly for the poor and underprivileged. Regardless of the origin of malnutrition (insufficient harvests, economic or geographical inaccessibility, climate change, conflict, etc.), it weakens the immune system and leads to increased susceptibility to infections. Similarly, an infectious phenomenon induces profound metabolic changes and deterioration of nutritional status **(Chevalier, 2005; Jazetetal, 2012)**. Thus, it results from a complex association of interdependent factors generally related to consumption, access to food, health, sanitation, healthcare, social protection, and women's empowerment initiatives, which determine nutritional status **(UNICEF, 2013)**. In Niger, the nutritional situation of children is very worrying, with more than 12 out of 100 children suffering from acute malnutrition, and one in two children, or 50%, suffering from

chronic malnutrition. 40% of children have low weight **(WHO, 1999)**. In view of all the above, our objective is to study the nutritional status of children aged 0 to 59 months suffering from severe acute malnutrition hospitalized at the CRENI in Tillabéry.

Materials and Methods

To conduct our study effectively, we performed a comprehensive probabilistic sampling, investigating all mother-child pairs admitted to the Center for Intensive Nutritional Recovery and Education (CRENI) in Tillabéry, totaling 50 pairs. Inclusion criteria allowed for the inclusion of children aged 0 to 59 months accompanied by their mothers and hospitalized for severe acute malnutrition, while exclusion criteria applied to children whose mothers were not present at the hospital. Data were primarily collected through interviews with the mothers of the children involved, document analysis, and anthropometric measurements. The tools utilized included a structured interview guide, the child's health record, Mid-Upper Arm Circumference (MUAC) measurement, scales for weighing adults and babies, a stadiometer, and a measuring tape. The survey was conducted based on monthly hospital admissions, covering 34% of admissions during the study period. Data collected were recorded in Excel and analyzed using the Epi Info software.

Results

Table 1 presents the types of breastfeeding practices followed by the respondents in the current study. It is noted in this table that more than three-quarters (3/4) of the children of the surveyed mothers received exclusive breastfeeding before their first six months, followed by 14% of cases who underwent complementary breastfeeding and a significant rate of 6% of non-breastfed children. For the latter case (6%), the children never suckled breast milk due to trauma (mothers' deaths during childbirth, and in some cases, even in the presence of the mother, the child refuses to suckle, perhaps due to illness). **Table 2** shows that 70% of children suckle more than 8 times in 24 hours, while 30% of children do not reach the minimum recommended daily number of meals for the child in the UNICEF protocol. NB: here the number of meals = number of breastfeeding sessions for the child in 24 hours.

For weaning age , analysis of the data from this study revealed that, apart from those not weaned, representing 48% of the sample, children weaned at the normal age (19-24 months) represented a significant proportion (32%) in the sample. The age group of 25 months and above comes in second position with 14%, 4% for children included in the 12-18 months interval, 2% for those aged 5-12 months **(Table 3)**.

About weaning type, it is observed in **Table 4** that 84.61% of children in the sample of this study were abruptly weaned, while only 15.38% benefited from a gradual introduction of complementary food before the definitive cessation of breastfeeding.

The different causes of weaning among the children in the sample of this study are given in **Table 5**, which reveals that 42.30% of children reached their weaning ages. However, 38.46% of cases were weaned due to an ongoing pregnancy, where mothers misunderstood contraception practice, and 19.23% due to illness, which may be due to hygiene deficiency.

For clinical aspects of malnutrition, the detected signs during clinical examination are: Fever (78%), cough (68%), low weight (66%), diarrhea (54%), vomiting (42%), and pallor (16%) were the main reasons for consultation among our respondents **(Figure 1)**. Clinical Forms were Marasmus predominated with a rate of 60% compared to 26% for kwashiorkor and 14% for mixed form **(Figure 2)**.

Malaria, dehydration, pneumonia, infection, and anemia are the main complications related to malnutrition among our respondents, with rates of 98%, 95%, 16%, and 6%, respectively **(Figure 3)**. It emerges from the present study that over half of the children have a less altered general condition, 54% compared to 46% who are severely affected **(Figure 4)**.

Analysis of the study data indicates that 84% of children are up to date with their vaccination status, while 16% are not **(Table 6)**. At the end of this study, 13 out of 50, or 26% of the children monitored, were discharged from the CRENI with a moderate state, with a W/H ratio ⩾-2 **(Table 7)**.

Table 1: Representation of respondents according to type breastfeeding

Type of breastfeeding	Number	%
Exclusive breastfeeding	40	80
complementary breastfeeding	7	14
Non-breastfed	3	6
Total	**50**	**100**

Table 2: Representation of respondents according to number of feeding

Number of feedings	Number	%
6 to 8	15	30
≥ 8	35	70
Total	**50**	**100**

Table 3: Distribution of respondents according month of weaning breastfeeding

Months	Number	%
Not weaned	24	48
5-12	1	2
13-18	2	4
19-24	16	32
≥25	7	14
Total	**50**	**100**

Table 4: distribution of of respondents according to type of weaning from to breast feeding

Type of weaning from breastfeeding	Number	%
Gradual introduction of food	4	15
Brutal	22	85
Total	**26**	**100**

Table 5: Distribution of respondents according to ause of weaning from

Cause of weaning from breastfeeding	Number	%
Age of weaning	11	42
Disease	5	19
Pregnancy	10	39
Total	**50**	**100**

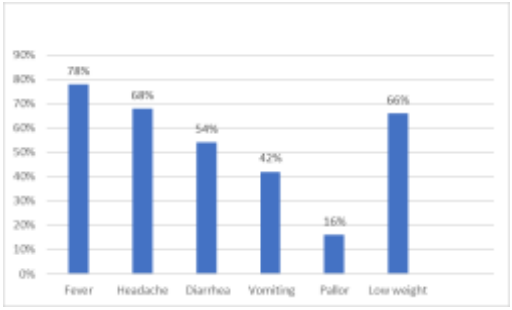

Figure 1: Distribution of respondents according to Reasons for consultation

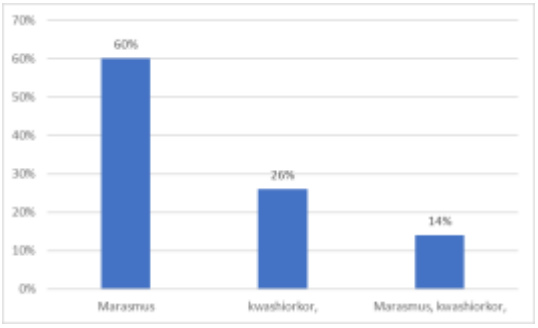

Figure 1: Distribution of children according to clinical forms diagnoses of severe acute malnutrition.

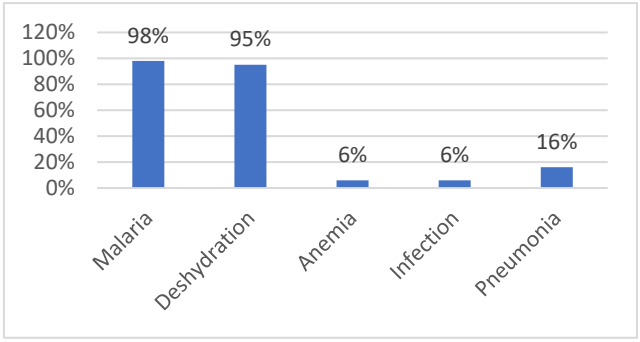

Figure 1: Distribution of children according to clinical forms associated

Table 6: Distribution of children according to physical state

Physical state	Number	%
Slightly altered	23	42
Altered	27	19
Total	**50**	**100**

Table 7: Distribution of children according to height weight ratio at discharge

Height weight ratio	Number	%
< -2zcore	37	74
≥ -2zcore	13	26
Total	**50**	**100**

Discussion

The minimum age of the surveyed women was 15 years, and the maximum was 42 years. Notably, 60% of the surveyed women were under 25 years old, which is higher than findings reported by **Dogoni (2014)** in Bamako, who had 43.70% of participants aged 14 to 24 years. The weight of the surveyed women ranged from 42 to 115 kg, with an average of 78.5 kg. Similarly, the height varied between 1.38 and 1.84 m, with an average of 1.61 m. These

results align with those reported by **Safae (2009)** in Morocco, who found weight variations from 48 to 90 kg and height variations from 1.46 to 1.77 m, with an average of 1.61 m.

Seventy percent (70%) of the surveyed women were in their first to third pregnancies, consistent with findings by **Dogoni (2014)**, who reported a total of 62.2% in the same gestational range. It was noted that anemia is five times more common after the fifth pregnancy, emphasizing the role of closely spaced pregnancies in maternal iron deficiency. More than half (52%) of the surveyed women were in their second trimester of pregnancy, consistent with findings by **Safae (2009)**, who observed delayed initiation of prenatal care among adolescents. Forty-two percent (42%) of the surveyed women had no formal education, contrasting with findings by **Sendwe (2012)**, who reported only 4.9% of pregnant women with no education. Homemakers represented the majority (70%) of the pregnant women, differing from **Dogoni's (2014)** findings, which showed 99% homemakers. The vast majority (94%) of the surveyed women were married, consistent with **Dogoni's (2014)** findings of 93.20% married women. Sixty-four percent (64%) of pregnant women began prenatal consultations during the second trimester, lower than **Sendwe's (2012)** finding of 85.3% starting consultations during this period. Iron-rich food consumption was nearly universal among the surveyed pregnant women. However, 62% reported consuming dietary stimulants, consistent with findings by **Lioret (1997).** The most common reasons for consultation were fatigue and headaches, representing 30% of cases. Pale skin, dizziness, fatigue, and headaches accounted for 20% of cases, although **Dogoni (2014)** noted low sensitivity of conjunctival pallor as an indicator of anemia. All surveyed pregnant women received iron supplementation, aligning with recommendations from UNICEF (1994). However, adherence to prescribed dosages was only 28%. Some authors argue against systematic iron supplementation during pregnancy unless specific risk factors are present, advocating for a balanced diet rich in iron-absorption-promoting factors to maintain satisfactory iron reserves **(Beau-frère et al., 1995; Lioret, 1997)**.

Six percent (6%) of surveyed women received their first tetanus vaccination, despite **WHO's (2019)** recommendation of five properly spaced doses for lifelong protection if vaccination begins in adolescence or adulthood.

Conclusion:

The literature on anemia in pregnant African women is extensive, with varied methodological approaches. This study conducted a descriptive cross-sectional observation in the KOLLO's health center, sampling 50 pregnant women attending antenatal consultations from September 1st to October 30th, 2023. The overarching objective was to enhance maternal and neonatal health, with specific aims including assessing iron supplementation coverage, describing diagnostic methods for anemia, and identifying prescribed molecules and doses. Data collection employed interviews based on a pre-established questionnaire, utilizing materials such as pens and duplicate paper. Analysis was conducted using Epi-info version 3.3.2 and Microsoft Office Word 2013. Findings revealed zero iron supplementation coverage, although 33 pregnant women received prescriptions, with 28 adhering to recommended dosages. Hemoglobin examination was the sole diagnostic method for anemia, conducted in 31 parturient. The most prescribed molecule was FétonTM/FefolMT, with an average dosage of 17 capsules per woman. In conclusion, adherence to iron supplementation recommendations during pregnancy was lacking, and pregnant women bore the financial burden of prescribed molecules.

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