

## Nutritional Status of Mother-Child Couple at Matoto Health Center, Conakry, Guinea

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### Abstract

**Introduction:** In Guinea there is insufficient information on the nutritional status of the mother-child couple.

**Objective:** To know the nutritional status of the mother-child couple at the Matoto Health Center (CSM).

**Materials and Methods:** It was a cross-sectional, descriptive study from March 25 to May 27, 2019 that involved 202 mothers and 205 children. The data were collected by a questionnaire administered to mothers with a measure of anthropometric and biological parameters of mother-child couples. The sampling was exhaustive and concerned these couples seen at the CSM.

**Results:** The predominant age group of mothers was 21 - 40 years (74%), 34% were housewives, 36% out of school, 95% married and 83% monogamous. Most children were 0 to 5 months old (83%). 18% of mothers breastfed the child in 30 minutes postpartum, 82% after 30 minutes and 18% breastfed exclusively. The mothers had 6% thinness, 29% overweight, 6% obesity and 87% anemia. The children had undernutrition expressed by wasting (16%) and no obesity. 91% of emaciated children were weaned early. 20% of the children were anaemic. The socio-demographic factors of mothers that affected the nutritional status of children (wasting) were occupation ( $p = 0.0274$ ) and level of education ( $p = 0.0435$ ). The nutritional status of the mother expressed in thinness and hemoglobin levels did not influence that of the child.

**Conclusion:** Efforts to educate, promote breastfeeding and empower women could contribute to the reduction of malnutrition in Matotocommune.

**Keywords:** Nutritional Status; Anthropometry; Anemia; Mother-Child Couple; Health Center; Matoto

### Introduction

The nutritional status of an individual is his physiological state determined by the ratio between intakes and nutritional needs as well as by the body's ability to absorb and use nutrients. Malnutrition occurs when there is an imbalance between intake and needs and/or when the body is unable to use nutrients properly. Malnutrition is a devastating problem, especially for the poor and unprivileged [1]. Regardless of the origin of malnutrition, it degrades the immune system and leads to increased susceptibility to infections. Similarly, an infectious phenomenon leads to profound metabolic

changes and a deterioration in nutritional status [2]. It is the result of a complex combination of interrelated factors, usually related to consumption, access to food, health, sanitation, education, but also to human-to-human relations, social equity, social context and the local environment [3]. Feeding and care practices, clean water, sanitation, health care, social protection and women's empowerment initiatives are factors that determine nutritional status [4].

Malnutrition is a public health problem worldwide. According to a recent UNICEF report, 149 million children under the age of 5 are still stunted and nearly 50 million are emaciated. Hundreds of

millions of children and women suffer from hidden hunger due to vitamin and mineral deficiencies, and overweight rates are increasing [5].

The vulnerability of pregnant, lactating women, and young children is linked not to the presence of nutritional diseases but to the fact that their condition implies an increased nutritional demand, which exposes them more easily to imbalance and deficiency [6]. It should be noted that long-term malnutrition has irreversible and catastrophic harmful effects on children [7]. Resource-limited countries such as African countries have shown a very slow rate of reduction in malnutrition ranging from 36.5% in 1990 to 22.3% in 2013 [8].

Malnutrition is a public health problem in Guinea and several actions have been put in place to reduce hunger and nutritional diseases with the establishment of the national food and nutrition policy in 2005 [9], but malnutrition still remains a public health problem in the country. According to the 2016 Multiple Indicator Cluster Survey (MICS-2016) in Guinea, the prevalence of stunting is as high as 18% for the 0 - 5 months and 6 - 11 months age groups, as a result of inadequate child nutrition [10].

According to the 2018 demographic and health surveys in Guinea, 10% of women aged 15 to 49 are lean (BMI less than 18.5Kg/m<sup>2</sup>), 18% are overweight, 8% are obese, 64% are of normal weight (BMI between 18.5 and 24.9) and 46% are anaemic [11]. According to the same source, 30% of children from 6 to 59 months suffer from stunting, 16% are affected by underweight, 9% are emaciated, 6% are obese and 75% are anemic with 31% of the mild form, 42% of the moderate form and 2% of the severe form. Regarding exclusive breastfeeding of children under 6 months, at the national level, only 33% of women reported that they breastfeed their children exclusively [11].

Several factors are often related to the nutritional status of the mother-child couple. These factors can favor or disadvantage him. The educational level, the standard of living of the household, the place of residence and the nutritional status of the mother's influence that of their children [1]. Several other studies have worked in this direction showing the influence of dietary practices and socio-demographic factors on the nutritional status of the mother and/or child. Mananga's study, done in Bagang in western Cameroon, states that the low level of education on dietary practices,

education and socio-economic level of mothers were associated with existing nutritional problems [12]; socio-economic status reappears as a determinant according to the study carried out in Nepal [13]. A study in Papua New Guinea observed the early introduction of fluids and food for the first time to children other than breast milk as a factor associated with undernutrition in children [14]. Family type, number of people residing in the home, childbirth weight, duration of exclusive breastfeeding and administration of pre-milk foods have been found to have an effect on nutritional status [15].

Surveys conducted in Ethiopia in 2002 showed that the nutritional status of the mother is influenced by the economic situation of the household, her level of education, her residence, her age, her marital status and her employment; and that the child's education would be influenced by the economic situation of the household, the mother's level of education, the mother's employment, the source of water and the availability of toilets, infectious diseases, birth spacing and birth order [1]. Mothers of well-nourished (but sick and hospitalized) children had more stable lives, with fewer breaks in employment and emotional lives. As for mothers of severely malnourished children, they would have low self-esteem and a lower level of energy [16].

In mothers, during lactation, there is a non-significant weight loss, and the presence of a sub-anemic state [6]. A study done in Nigeria, suggests establishing the determinants in each community (rural and urban), because in their study it emerges that each community has its reality [17].

The nutritional status of the mother-child couple in Guinea and at the Matoto Health Centre is poorly known. Malnutrition exists within the Guinean community, so the Matoto Health District cannot be spared. Thus, knowledge of the nutritional status of the mother-child couple could contribute to decision-making by health authorities in the context of improving the nutritional status of people, especially that of the mother-child couple. That is why we were interested in the theme entitled: «Nutritional status of the mother-child couple at the Matoto Health Center».

To develop this work, we have set ourselves the following objectives

### General objective

To know the nutritional status of the mother-child couple at the Matoto Health Center.

### Specific objectives

- Assess the nutritional status of the mother-child couple by anthropometry at the Matoto Health Centre (MSC); Determine the hemoglobin level of the mother-child couple at the MSC.
- Investigate a possible relationship between the nutritional status of the mother and that of the child at the CSM; Determine the socio-demographic parameters of the mother that influence the nutritional status of the child at the MSC. To achieve these objectives, we conducted a literature review on the subject, then we developed a methodology including the practical determination of nutritional status by anthropometry and the measurement of the hemoglobin level of the mother-child couple. We also collected socio-demographic parameters of mothers and children. We then presented the results, their interpretation and discussion in comparison with data from the existing literature. A conclusion and a recommendation put an end to this work.

### Equipment and Methods

#### Presentation of the area and the study framework

The municipality of Matoto (CM) is one of the five municipalities of the city of Conakry. It is located 14.8 km from the municipality of Kaloum (city center). It covers an area of 37 km<sup>2</sup>. It is included in the coastal zone southeast of the capital. It is located between 9° and 9°45' north latitude and 13° and 13°37' west longitude [18]. Our study was set in the Matoto Health Center, it is located in the Municipality of Matoto, on the edge of the Fidel Castro highway in front of the large market of Matoto. Its structure includes Expanded Immunization Programme (EPI) services and nutrition services.

#### Work equipment

For the performance of this work, the following equipment was used: Scale (person weighs and baby weighs); Toises; Weight/Height (P/T) report sheet (WHO, 2006); Size/Age (T/A) report sheet (WHO, 2006); Weight/Age Report Sheet (P/A) (WHO, 2006); Survey sheets; Portable hemoglobinometer (HemoCue® Hb 201+).

#### Type and duration of study

This was a cross-sectional, descriptive analytical study in which a questionnaire was administered to mothers in face-to-face mode,

with a determination of the anthropometric, biological, and sociodemographic parameters of the mother-child couple. The purpose of our study was to know the nutritional status of the couple met at the Matoto Health Center during the study period that lasted from March 25 to May 27, 2019.

#### Target population and admission criteria

It consisted of all mother-child couples who came for consultation, vaccination or other services at the Matoto Health Centre with children aged 0 to 24 months during the study period. Mothers who were present with their children aged 0 to 24 months at the time of the survey and who agreed to participate in the study were admitted to this study.

#### Sampling

We conducted a comprehensive, non-random sampling of all mother-child couples who met the inclusion criteria during the study period of 202 mothers and 205 children.

The minimum required sample size of the survey was determined by Schwartz's formula based on the prevalence of severe acute malnutrition of 2.4% in the capital Conakry from the 2016 MICS Multiple Indicator Cluster Survey [10]. It is calculated according to the following formula [19]: hence:

$N =$  Required sample size;  $Z =$  95% confidence level (standard value of 1.96).

$P =$  Estimated prevalence of severe acute malnutrition among children in the urban area of Conakry equal to 2.4%;  $m =$  margin of error at 5% (standard value of 0.05); hence  $N = 36$  children. Taking into account the risks of data loss we decided to take 200 couples, which led to 202 mothers and 205 children, as there were three twins.

#### Study variables

The following study variables were used:

#### Anthropometric variables of the mother-child couple

The anthropometric indices weight and height of mothers were measured to calculate the body mass index (BMI) of mothers, indicating their weight nutritional status. The weight for height, height for age and weight for age indicators of the children were determined to assess their nutritional status.

### Socio-demographic and biological variables of the mother-child couple

The age, locality, level of education, marital status, marital regime and socio-professional category of the mothers have been determined. The age and sex of the children were also determined. The hemoglobin level of the mother-child couple was determined by a portable hemoglobinometer (hemocue).

### Related variables

Maternal feeding practices were determined by questions on the time of breastfeeding after delivery and the duration and nature of breastfeeding.

### Data collection and analysis

The collection of data on the socio-demographic parameters of mothers and children as well as the feeding practice of children was done by interviewing mothers received at the Matoto Health Center. The hemoglobin level of the mother-child couple was determined using a portable hemoglobinometer. The data collected was entered using Excel 2010 software. To analyze this data, we used the epi-info 7 software which allowed us to determine the percentages as well as the associations between the different variables by the Chi-2 test. The associations were found to be significant at the  $P < 0.05$  value.

### Ethical considerations

Before undertaking the investigation phase, the research protocol of the study was approved by the Directorate of the Master of Biology of the Gamal Abdel Nasser University of Conakry.

### Results

Our study involved 202 mothers and 205 children including 3 pairs of twins who were investigated and whose anthropometric parameters and hemoglobin levels were determined. The results obtained were presented in the form of tables and literary expressions which were commented on and discussed in relation to the data of the literature consulted.

### Socio-demographic profile of the mother-child couple

#### Socio-demographic profile of mothers

Analysis of the data showed us that the majority of mothers resided in the municipality of Matoto 167 (83%). While 30 (15%) came from Ratoma, 1 (0.5%) from Dubréka, 1 (0.5%) from Dixinn

and 3 (1%) from Coyah. The majority age group of mothers was 21 to 40 years, or 74%. The lowest age group was 41 to 60 (0.5%). The average age in the maternal population was 25.29 years with a minimum of 15 years and a maximum of 42 years. We also found that out-of-school mothers were the most represented (36%), followed by those at the secondary level (28%), followed by women at the university level (23%), and those at the primary level who accounted for 13%. Regarding the profession, 34% of our mothers were housewives, 25% were shopkeepers, 17% of workers, 9% were administrative agents, 10% of students and 5% were students. Of the 202 mothers studied, 191 or 95% were married compared to 11 or 5% single and no widowed or divorced mothers were encountered during the study. The majority of mothers (83%) were monogamous compared to 17% polygamous.

### Socio-demographic profile of children

Our study shows that among the 205 children interviewed, the predominant age group was 0 to 5 months. Indeed, 170 or 83% were in this bracket. Thirty-four of the children (16%) were in the 6 - 12-month age group and only one child or 1% was in the 13 - 18-month age group. He had no children over the age of 18 months. There were slightly more girls (105 or 51%) than boys (100 or 49%) with a sex ratio of boy to girl of 0.96%.

### Nutritional status of the mother-child couple

To assess the nutritional status of mothers and children, we determined their haemoglobin levels, the BMI of the mothers as well as the P/T, T/A and P/A ratios of the children. These results are presented in tables 1,2,3,4 and 5

Table 1 shows that 60 (30%) of the mothers suffered from mild anaemia and 115 or 57% had moderate anaemia and no cases of severe anaemia were observed. This means a prevalence of anaemia of 87% among the mothers surveyed. This table also reveals that 166 or 80% of the children had a normal hemoglobin level and 20% suffered from anemia with 12% of the mild form, 7% moderate and 1% of the severe form.

Table 2 shows that of the 202 mothers studied, 119 or 59% had a normal nutritional status, 59 or 29% were overweight, 11 or 6% were obese and 13 or 6% were thin. Table 2 also shows that cases of undernutrition have been observed among children. Indeed, 32 (16%) children suffered from wasting of which 12% had the mode-

| Typology               | Hemoglobin standards | Number | Percentage (%) |
|------------------------|----------------------|--------|----------------|
| For mothers (n = 202)  |                      |        |                |
| Normal                 | ≥ 12g/dl             | 27     | 13             |
| Mild anemia            | 11,9 - 11 g/dl       | 60     | 30             |
| Moderate anemia        | 10,9 - 8 g/dl        | 115    | 57             |
| Severe anemia          | < 8 g/dl             | 0      | 0              |
| For children (n = 205) |                      |        |                |
| Normal                 | ≥ 11g/dl             | 166    | 80             |
| Light                  | 10,9 - 10 g/dl       | 24     | 12             |
| Moderate anemia        | 9,9 - 7 g/dl         | 12     | 7              |
| Severe anemia          | < 7 g/dl             | 3      | 1              |

**Table 1:** Distribution of mothers and children by haemoglobin level.

rate form and 4% the severe form. Stunting and underweight each affected 4% of children.

| Variable                                 | Number (I.C <sup>a</sup> . 95%) | Percentage |
|--|---------------------------------|------------|
| Nutritional status of mothers (n = 202)  |                                 |            |
| Body Mass Index (BMI)                    |                                 |            |
| BMI < 18,5 (Thinness)                    | 13 (3,47 - 10,75%)              | 6          |
| IMC 18,5 - 24,9 (Normal)                 | 119 (52,29 - 66,24%)            | 59         |
| BMI 25-29.9 (Overweight)                 | 59 (22,58 - 35,48%)             | 29         |
| BMI ≥ 30 (Obesity)                       | 11(2,75 - 9,53%)                | 6          |
| Nutritional status of children (n = 205) |                                 |            |
| Emaciation                               |                                 |            |
| Normal state                             | 173 (78,17 - 88,65%)            | 84         |
| Moderate emaciation                      | 24 (8,05 - 17,47%)              | 12         |
| Severe emaciation                        | 8 (1,70 - 2,69%)                | 4          |
| Stunting (OR)                            |                                 |            |
| Normal state                             | 197 (92,46 - 98,30%)            | 96         |
| Moderate OR                              | 24 (8,05 - 17,47%)              | 3          |
| Severe OR                                | 1(0,01 - 2,69%)                 | 1          |
| Underweight (PI)                         |                                 |            |
| Normal state                             | 198 (93,59 - 98,62%)            | 96         |
| Moderate PI                              | 6 (1,08 - 6,26%)                | 3          |
| Severe PI                                | 1 (0,01 - 2,69%)                | 1          |

**Table 2:** Distribution of mothers and children by nutritional status.

a= Confidence interval.

**Prevalence of maternal thinness according to their socio-demographic parameters and breastfeeding practices**

Results by contribution to these prevalences are presented in table 3

According to table 3, most of the mothers suffering from thinness (69%) were in the 21 - 40 age group and no cases of thinness were revealed in the 41 - 60 age group. The highest prevalence of thinness was observed among mothers who had secondary education (38%) and the lowest was observed among mothers who had primary level (16%). This table also shows that female shopkeepers had the highest rate of thinness (38%) while no cases of thinness were observed among student mothers. The table also shows that 85 per cent of thin mothers were married compared to 15 per cent of these mothers who were single. Table 3 also shows that 77% of mothers suffering from thinness were monogamous compared to 23% of polygamists. The majority of lean mothers (69%) were those who practiced exclusive breastfeeding for up to 6 months and only 31% of these mothers had done early weaning (Table 3).

| Variable                    | Thinness | Percentage % |
|-----------------------------|----------|--------------|
| Age range                   |          |              |
| ≤ 20                        | 4        | 31           |
| 21 - 40                     | 9        | 69           |
| 41 - 60                     | 0        | 0            |
| Level of education          |          |              |
| Out of school               | 3        | 23           |
| Primary                     | 2        | 16           |
| Secondary                   | 5        | 38           |
| Upper                       | 3        | 23           |
| Profession                  |          |              |
| Pupil                       | 2        | 16           |
| Student                     | 0        | 0            |
| Housewife                   | 3        | 23           |
| Worker                      | 2        | 16           |
| Merchant                    | 5        | 38           |
| Administrative Agent        | 1        | 7            |
| Marital status              |          |              |
| Married                     | 11       | 85           |
| Single                      | 2        | 15           |
| Matrimonial property regime |          |              |
| Monogamous                  | 10       | 77           |
| Polygamist                  | 3        | 2            |

| Breastfeeding practice                 |   |    |
|--|---|----|
| Early weaning                          | 4 | 31 |
| Exclusive breastfeeding up to 6 months | 9 | 69 |
| Late weaning                           | 0 | 0  |

**Table 3:** Prevalence of BMI less than 18.5 of mothers by level of education, occupation, marital status and marital regime and breastfeeding practices (n = 13).

**Breastfeeding practices and nutritional status of children**

Regarding breastfeeding practices, this study shows that among the 205 children, 169 or 82% received other foods before 6 months in addition to breast milk, while only 36 or 18% of children benefited from exclusive breastfeeding up to 6 months. Thirty-seven or 18% of the children were breastfed within 30 minutes postpartum and 168 or 82% were breastfed after 30 minutes after delivery.

**Prevalence of wasting of children according to the socio-demographic parameters of the mother-child couple and breastfeeding practice**

Our study showed that among the 32 emaciated children (16% of the population of children studied), 24 or 12% had the moderate form and 8 or 4% the severe form. Girls were more affected than boys by global wasting (20 or 10% against 12 or 6%) and moderate wasting (17 or 8% against 7 or 4%). On the other hand the male sex had 5 cases (5%) of the severe form without complication and the girls had 2 severe cases with complication and 1 severe case without complication. Further information on these prevalence’s is presented in table 4.

According to table 4, we find that in the 32 emaciated children (16% of the child population), the age group from 0 to 5 months was the most affected by wasting with 87.5% of which 62.5% were moderate cases, 6.25% severe with complication and 18.75% saw without complication. This table also shows that 57% of emaciated children had out-of-school mothers of whom 41% had moderate wasting, 13% had the severe form without complications and 3% suffered from the severe form with complication. Twenty-two percent of the emaciated children were from mothers with primary education, 19% of whom were moderate wasting and 3% were severe cases without complications. Table 4 also reveals that 18% of emaciated children had secondary school mothers of which 12%

were moderate and 3% severe with complication and 3% without complication. While only 3% of these emaciated children were from mothers of higher education and no cases of the severe form were observed. In addition, table 4 shows that 91% of children who were weaned precociously suffered from wasting, of which 66% were in moderate form and 25% in severe form with 6% of complicated cases and 19% without complications. The same table shows that among the 32 emaciated children, the children of housewives were the most affected, 44% of whom 31% in the moderate form and 12% in the severe form with a complicated case. On the other hand, only one case of moderate wasting was observed in children whose mothers were administrative officers.

| Variable                               | Moderate Number (%) | Severe            |                      | Total (%)  |
|--|---------------------|-------------------|----------------------|------------|
|  |                     | With Complication | Without Complication |            |
| Age range of children                  |                     |                   |                      |            |
| 0 - 5                                  | 20 (62,5)           | 2 (6,25%)         | 6 (18,75%)           | 28 (87,50) |
| 6 - 12                                 | 3 (9,5)             | 0 (0,0%)          | 0 (0,0%)             | 3 (9,50)   |
| 13 - 18                                | 1(3)                | 0 (0,0%)          | 0 (0,0%)             | 1 (3)      |
| Total                                  | 24 (12)             | 2 (1%)            | 6 (3%)               | 32 (100)   |
| Mothers’ level of education            |                     |                   |                      |            |
| Out of school                          | 13 (41)             | 1 (3%)            | 4 (13%)              | 18 (57)    |
| Primary                                | 6 (19)              | 0 (0,0%)          | 1 (3%)               | 7 (22)     |
| Secondary                              | 4 (12)              | 1 (3%)            | 1 (3%)               | 6 (18)     |
| Upper                                  | 1 (3)               | 0 (0,0%)          | 0 (0,0%)             | 1 (3)      |
| Total                                  | 24 (75)             | 2 (6%)            | 6 (19%)              | 32 (100)   |
| Breastfeeding practice                 |                     |                   |                      |            |
| Early Weaning                          | 21 (66)             | 2 (6%)            | 6 (19%)              | 29 (91)    |
| Exclusive Breastfeeding up to 6 months | 3 (9)               | 0 (0,0%)          | 0 (0,00%)            | 3 (9)      |
| Late weaning                           | 0 (0,0)             | 0 (0,00%)         | 0 (0,0%)             | 0 (0,0)    |

|                                |          |          |           |          |
|--------------------------------|----------|----------|-----------|----------|
| Total                          | 24 (75)  | 2 (6%)   | 6 (19%)   | 32 (100) |
| Profession                     |          |          |           |          |
| Pupil                          | 2 (6)    | 0 (0,0%) | 0 (0,00%) | 2 (6)    |
| Student                        | 1 (3)    | 0(0,0%)  | 0 (0,00%) | 1 (3)    |
| Housewife                      | 10 (31)  | 1 (3%)   | 3 (9%)    | 14 (44)  |
| Worker                         | 5 (16)   | 1 (3%)   | 1 (3%)    | 7 (22)   |
| Merchant                       | 5 (16)   | 0 (0,0%) | 2 (6%)    | 7 (22)   |
| Adminis-<br>trative<br>Officer | 1 (3%)   | 0 (0,0%) | 0 (0%)    | 1 (3)    |
| Total                          | 24 (75%) | 2 (6%)   | 6 (18%)   | 32 (100) |

**Table 4:** Prevalence of wasting of children by age group, mothers' educational attainment, breastfeeding practice and mothers' occupation (n = 32).

Compared to the prevalence of child wasting by marital status we found that the majority of emaciated children (97%) had married mothers. Seventy-two percent of these children had moderate form and 25% severe form with 19% uncomplicated and 6% with complication. Of these emaciated children, only 3% were from single mothers. As for the prevalence according to the matrimonial regime, most of the emaciated children had monogamous mothers (84%) of which 6% of them were severe cases with complication and 16% of severe cases without complications. While only 16% of emaciated children were from polygamous mothers of which 3% were severe without complication and no severe case with complication.

Table 5 shows that the mothers' occupation significantly influenced the moderate wasting of children (P = 0.0274) and that the mother's level of education also had a significant influence on the severe wasting of children (p = 0.0435). According to the same table, the nutritional status of the mother in terms of thinness and hemoglobin levels did not significantly influence the moderate and severe wasting of the children.

| Variable                    | About - 2 | P- value | Observation     |
|-----------------------------|-----------|----------|-----------------|
| Moderate Emaciation         |           |          |                 |
| Mother's level of education | 0,0000    | 1,0000   | Not significant |
| Profession                  | 5,5170    | 0,0274   | Meaningful      |

|                             |        |        |                 |
|-----------------------------|--------|--------|-----------------|
| Marital status              | 0,0000 | 1,0000 | Not significant |
| Matrimonial property regime | 0,0007 | 0,9734 | Not significant |
| Mother's age                | 0,0000 | 1,0000 | Not significant |
| Thinness of the mother      | 0,0002 | 0,9900 | Not significant |
| Maternal hemoglobin levels  | 0,2870 | 0,9000 | Not significant |
| Severe emaciation           |        |        |                 |
| Level of education          | 8,3470 | 0,0435 | Meaningful      |
| Profession                  | 3,3900 | 0,9707 | Not Significant |
| Marital status              | 0,0000 | 1,0000 | Not Significant |
| Matrimonial property regime | 0,0005 | 0,9710 | Not Significant |
| Mother's age                | 0,0000 | 1,0000 | Not Significant |
| Thinness of the mother      | 0,0000 | 1,0000 | Not Significant |
| Maternal hemoglobin levels  | 0,0003 | 0,9900 | Not Significant |

**Table 5:** Correlation between moderate and severe wasting of children and socio-demographic patterns and nutritional status of mothers.

**Discussions**

In this part of the document our results are compared with the standards and data of the literature consulted. With regard to the socio-demographic characteristics of the mothers we found that the average age was 25.29 years with a minimum of 15 years and a maximum of 42 years. These data are one lower than that observed by Pallow in Cameroon whose average age in the mother population was 27 years, with a minimum of 18 years and a maximum of 49 years [20], which means that our mothers were relatively younger than those of Pallawo. In our study out-of-school mothers were the most represented (36%), followed by those at the secondary level (28%), followed by women at university level (23%), and those at the primary level who accounted for 13%. These results are different from those of the study carried out in Antananarivo whose out-of-school rate for mothers was 12.1%, Primary 54.2%, secondary 33.1% and higher 0.5% [21]. Regarding the profession, 34% of our mothers were housewives, 25% were shopkeepers, 17% of workers, 9% were administrative agents, 10% of students and 5% were students. This result is different from that

of Pallawo whose housewives represented 23%, the Merchantess 11%, the students 10% and 18% of students [20]. The majority of mothers (95%) were married versus 5% single and no widowed or divorced mothers were met during the study. This result is different from that of Pallawo whose brides accounted for only 49.26%, single 24.14%, widows 0.49% and divorced women 0.98% [20].

Regarding the sociodemographic characteristics of the children, the majority age group in our study was 0 to 5 months or 83%. This result is higher than that of the study carried out by Nakanabo in Burkina Faso with 18.7% in the same age group [22]). As for the distribution of children by gender, 51% were girls. This result is almost identical to that of Pallawo whose girls represented 50.48% and boys 49.52% [20].

On the nutritional status of the mother-child couple, Table 1 shows a prevalence of global anaemia of 87%, of which 57% are moderately ill among the mothers surveyed. Our results are far more alarming than Pallawo's with 16.75% of mothers having moderate anemia and no cases of severe anemia [20]. Our values are also higher than the global prevalence of 32.8% among women in reproductive status estimated in 2016 by the WHO [23]. Regarding the weight status of the mothers, we found 59% in normal nutritional state, 29% were overweight, 6% were obese and 6%lean; which corresponds to an overweight rate of 35%. These results do not corroborate with those of Pallawo [20] showing only 36.94% in normal condition; 62.50% overweight and 0.5%thinness. We found a relatively high rate of thinness in mothers who exclusively breastfed up to 6 months (69%), this is believed to be due to the fact that breastfeeding leads to the use of women's body fats and can thus contribute to the prevention of obesity.

We found that 82% of the children in our study received other foods before 6 months besides breast milk, while only 18% benefited from exclusive breastfeeding before 6 months. Our result compared to this indicator is lower than that reported by MICS 2016 in Guinea where 35.2% of children were exclusively breastfed. It is also lower than that of the 2018 DHS in Guinea which shows a rate equal to 33% for the same age [11], the global estimates of 41% for children under 6 months by the WHO during the period 2013-2018 as well as the target of more than 50% by 2025 [23]. Regarding early postpartum breastfeeding practices, in our study, eighteen percent of children were breastfed within 30 minutes after delivery and 82% were breastfed after 30 minutes. Our result

is better than that of Sadrine in Ratoma, of which only 2% of children aged 3 to 59 months were breastfed in 30 minutes postpartum and 98% after 30 minutes [24]. Regarding the hemoglobin level of children, in our study, 20% of children suffered from anemia with 12% of the mild form, 7% moderate and 1% of the severe form. Our result is different from that of SYLLA in 2018 in faranah prefecture with 5.16% suffering from severe anemia in children aged 6 to 59 months [25]. It is also far lower than the national rate of 75% including 31% mild, 41% moderate and 2% severe in Guinea observed during DHS in 2018 in children aged 6 to 59 months [12]. The wasting rate of 16% of children in our study is higher than the national one in Guinea observed during the 2018 DHS with a rate of 9% for children aged 6 to 59 months [12]. But it is comparable to the result of the report of the MICS 2016 survey in Guinea for the age group from 0 to 5 months with a prevalence of 16.9% including 11.6% of moderate cases and 5.3% severe [11]. Our stunting rate (4%) and underweight (4%) are far below the national values (DHS 2018) of 30% and 16/% respectively for children aged 6 to 59 months in Guinea [12]. They are also lower than those of de Buttarelli and collaborators in Senegalese urban areas for children from 0 to 3 years old with respective values of 10% and 6% [26]. The wasting rate of 16% of children in our study is higher than the national one in Guinea observed during the DHS in 2018 with a rate of 9% [12] as well as the rate observed by Buttarelli and colleagues (7%) in Senegal [26].

Most of the emaciated children (57%) had out-of-school mothers and only 3% of these children were from mothers of higher education and no severe cases were observed in the latter. These results are different but have the same trends as those of the EDS-MICS 2016 survey, conducted in Guinea for children from 0 to 59 months whose mothers without any level of education had 8.6% of children with moderate wasting and 3.1% in severe form. Those who had the primary level had 7.2% of children with the moderate form and 2.8% with the severe form. Those with secondary level and above had 6.6% of children with moderate wasting and 2.4% of the severe form [11]. A relatively high rate of wasting among the children of housewives was observed compared to administrative officers in our study. This high rate of malnutrition among the children of housewives is thought to be due to a lack of knowledge of good dietary practices, as housewives may be less educated and less informed about adequate child feeding practices than administrative officers.

Table 5 shows that the mothers' occupation significantly influenced the moderate wasting of children ( $P = 0.0274$ ), and that the level of education of mothers significantly influenced the severe wasting of children. Our result in relation to the influence of the mother's profession is different from that of Pallawo with a value of  $P = 0.0527$  which, although not significant, tended towards a significant influence [21]. Table 5 also reveals that the nutritional status of the mother expressed in terms of thinness and haemoglobin levels did not influence that of the child. This can be explained by the fact that most of the children in our study were 0 to 5 months old (83%). This age corresponds to a time of intense breastfeeding that promotes the nutritional status of the child compared to that of the mother with the mobilization of nutrients from the mother's reserves for the constitution and production of milk to meet the needs of the child. It is this same phenomenon that would explain that despite the high prevalence of anemia in mothers in our study (87%), anemia affected only 20% of children, because the mother's iron is mobilized in milk to satisfy the needs of the baby. In addition, the prevalence of thinness at the maternal level was only 6% and 35% of them were overweight or obese. So the nutritional status of these women in terms of thinness was not so bad to affect that of the children. It is recognized that the nutritional quality [27] and quantity [28] of breast milk are reduced only in cases of severe malnutrition of the mother. The 16% wasting at the level of children could be due to the poor feeding practices of these infants.

## Conclusion

The study on the determination of the nutritional status of the mother-child couple at the Matoto Health Center led us to the following results: The analysis of sociodemographic parameters showed that most of the mothers resided in the municipality of Matoto or 83%. The predominant age group of mothers was 21 to 40 years or 74%; 34% of them were housewives, 36% out of school, 95% married and 83% monogamous. The majority age group among children was 0 to 5 months or 83%, with a slight predominance of girls. Compared to breastfeeding practices, 18% of mothers said they breastfed the child within 30 minutes postpartum, 82% after 30 minutes and 18% of children were exclusively breastfed until 6 months. Regarding the nutritional status of mothers, we found 6% thinness, 29% overweight and 6% obesity. Anemia affected 87% of mothers, including 30% of the mild form and 57% of the moderate form. The children had undernutrition manifested by stunting (4%), wasting (16%), underweight (4%) and lack of obesity. Girls were more affected than boys compared to wasting (10% versus 6%) and the most affected age group was 0 to 5 months.

91% of emaciated children had had early weaning. Anemia affected 20% of children including 12% mild, 7% moderate and 1% severe. The maternal sociodemographic factors that significantly influenced the child's nutritional status (wasting) during our study were her occupation ( $p = 0.0274$ ) and her level of education ( $p = 0.0435$ ). The nutritional status of the mother expressed in terms of thinness and hemoglobin levels did not influence that of the child.

This work has detected a high prevalence of acute malnutrition among young children in the commune of Matoto and suggests that efforts in promoting breastfeeding, education and the empowerment of girls/women could contribute to the reduction of child malnutrition in this commune in the city of Conakry.

## Conflict of Interest

None.

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