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# Nutritional Status and Quality of Food in Children Under Five Years of Age in Benin

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**Abstract:**

**Background** Malnutrition is a public health problem in developing countries. The aim of our work is to assess the nutritional status and dietary quality of children under 5 years of age.

**Objective** This study focused on children seen in the pediatric department of the Saint Martin de Papanè Hospital during the period from April 6 to July 6, 2021. It is a descriptive and analytical survey by questionnaire on 208 children aged 0 to 59 months.

**Results** The evaluation of the nutritional status of these children under 5 years of age is predominantly male (sex ratio 1.2) and the analysis of the answers to the questions asked of their respective mothers has made it possible to better appreciate the nutritional situation of the children in this study area and to identify the determinants associated with this malnutrition. The study revealed that 74.88% of children are stunted, 90.34% suffer from global acute malnutrition and 79.43% are underweight. Exclusive breastfeeding is very rare, with only 11% of children between the ages of 0 and 6 months receiving only breast milk. The evaluation of dietary diversity reveals that 76.92% of children have a low dietary diversity. In fact, 86% of the children surveyed receive an inadequate complementary diet based on cereals and 67.31% are subjected to the family dish that is poor in nutrients. 59% of the homes in which the children live are more than 5 km from the health centers, 56.73% of the children's mothers have no education and 25% have a low level of education.

**Conclusion** According to our results, poor weaning practices, diseases, sibling rank and low level of education of mothers are the associated determinants of malnutrition observed in the study population in this area of northeast Benin.

**Keys Words:** Food, Diet, Nutrition Malnutrtion, Benin

## Introduction

Malnutrition is a pathology

It is a systemic condition with multiple consequences and a wide range of etiologies. It concerns the insufficiency and inability to use nutrients to maintain health (WHO, 2001). It is also a pathological condition that combines both the deficiency of macroelements (energy nutrients, proteins) and trace elements, with increased susceptibility to infections (Scrimshaw N. S. et al, 2010). It is therefore the consequence of a diet insufficient in quality and quantity. It is a deficiency of protein and micronutrients (Grebmer V. K. et al, 2013). Malnutrition and calorie deficiency is one of the factors of children's diseases in the world (IIRPA, 2016). It is the result of inadequate nutrition due to inappropriate feeding practices and the prevalence of infectious and parasitic diseases that thrive in the conditions of poor environmental, individual and collective hygiene. Protein-energy malnutrition in children is a real public health problem. It refers to a set of disorders characterized above all by a stoppage or delay in growth (Osman A. et al, 1995). According to the 2016 World Nutrition Report, one in three people are affected by malnutrition in the world. The United Nations Children's Fund, the World Health Organization and the World Bank estimated in 2015 that about 159 million children under the age of five were affected by chronic malnutrition worldwide, or

23.8% (UNICEF, WHO, World Bank, 2015). West and Central Africa is the most affected by child malnutrition (with a rate of 35%). Likewise, the other Sahelian countries are no exception. Malnutrition in children under the age of five is a major public health problem because of its scale and severity throughout the world, particularly in developing countries. Approximately 815 million people are hungry worldwide (FAO, 2017). Malnutrition contributes largely to child mortality by weakening the child's immune functions (Chandra R. K. et al, 1991), decreasing its resistance to infectious diseases (Victoria C.G. et al, 1990). It occurs at the individual level, but its root and fundamental causes extend to the family and community level, national and international level (UNICEF, 2010). According to WHO, 155 million children under the age of five are stunted, while 41 million are overweight (UNICEF, WHO, 2017). In Africa, the prevalence of stunting is 40% and underweight is 25% (UNICEF, 2009). In West and Central Africa, about 40% of children under 5 are stunted, and 60% are anaemic (FAO, WHO, UNICEF, 2017).

In Benin, 37% of children aged 6-59 months are stunted, 12% of which are in severe form. The prevalences of underweight and wasting are 17.3% and 4.7% respectively (AGVSA, 2014).

Malnutrition results from both inadequate food intake and morbidity. Epidemiological studies have shown an association between the nutritional status of the mother and child during pregnancy and breastfeeding (Osman A. et al, 1995 and Alihonou E et al, 2000), particularly in the case of inadequate breastfeeding or abrupt weaning. Indeed, breastfeeding provides the child with many health and cognitive benefits, beneficial for both the child and the mother (Noirhomme-Renard F. et al, 2009). It is therefore important that the mother herself be healthy. One of the best indicators to assess the nutritional status of the child is growth (WHO, 1995). However, several other measurement tools have been developed. Among these are anthropometric indicators, a low level of which is associated with a risk of morbidity, diarrhea and mortality in children (Tonglet R. et al, 1999 and Isanaka S. et al, 2009). In children under 5 years of age, the most commonly used indicators are weight-for-age, height-for-age and weight-for-height.

The general objective of this study is to evaluate the nutritional status and the quality of the food of children under 5 years old received in consultation at the pediatric department of the Saint Martin de Papanè Hospital.

## Results

### General characteristics of the study population

### Distribution of children by sex

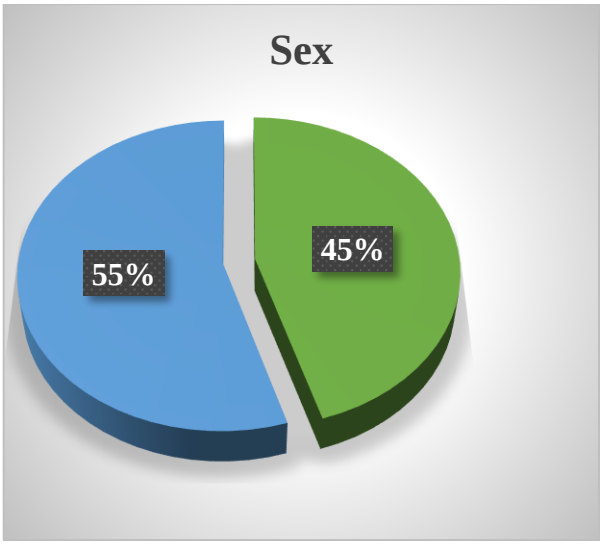
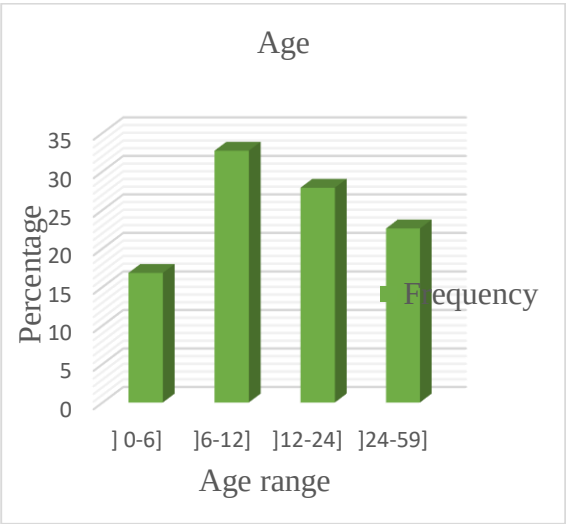



**Figure 3: Distribution of children by gender**

This figure shows that our population is made up of 55% of male children and 45% of female children.

### Distribution of children by age group




### Distribution of children by age group

The figure shows that our population is made up of 16.83% of children under 6 months of age, 32.69%, 27.88% and 22.60% of children between 6 and 12

months, 12 to 24 months and 24 to 59 months respectively.

**Distribution by level of education of mothers**

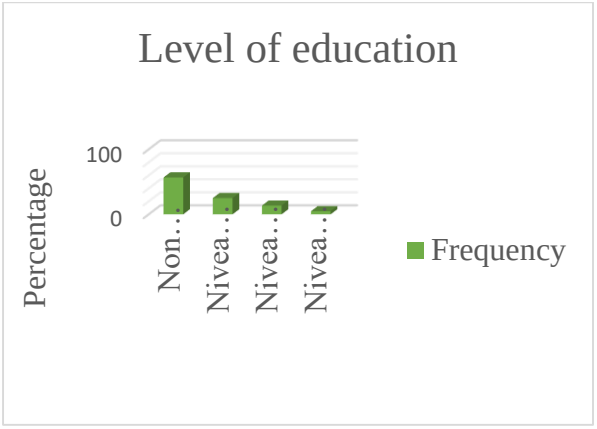
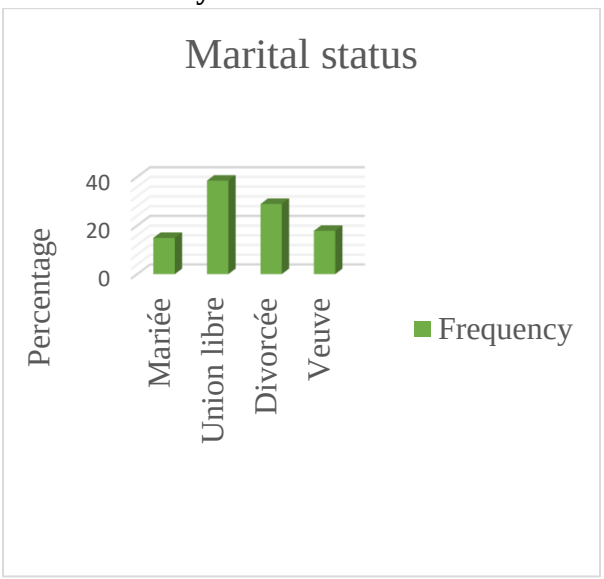



**Figure 5: Distribution of mothers by education level**

This figure shows that 56.73% of the children's mothers have no education, while 25%, 13.46% and 4.8% of the children's mothers have low, medium and high education respectively.

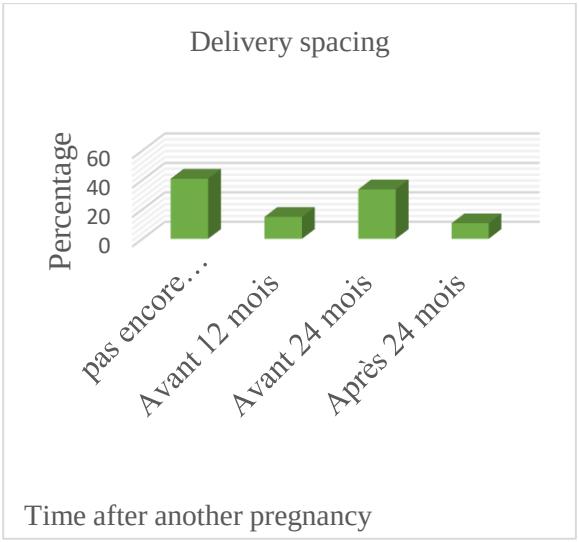
**Distribution by marital status of mothers**




**Distribution by marital status of mothers**

From this figure we can see that 14.90% of the children's mothers are married, 38.46% are in a common-law relationship, 28.85% have already been divorced and 17.79% are widowed.

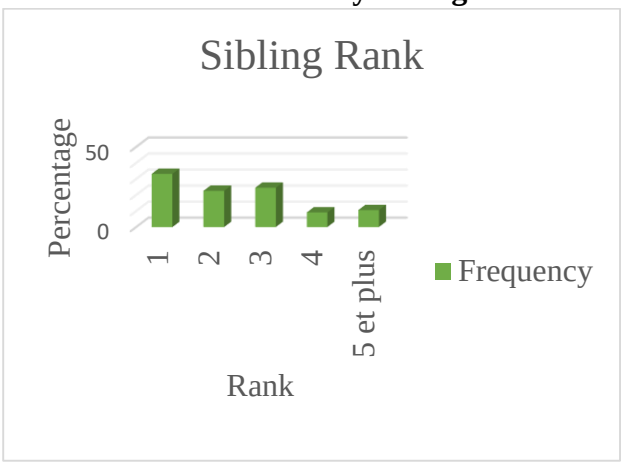
**Distribution by time after another pregnancy**




**Distribution by time after another pregnancy**

The figure shows that 40.86% of the children's mothers have not yet conceived, whereas 59.14% have conceived, including 14.90% before 12 months after delivery, 33.65% before 24 months and 10.54% after 24 months.

**Distribution of children by sibling rank**




**Distribution of children by sibling rank**

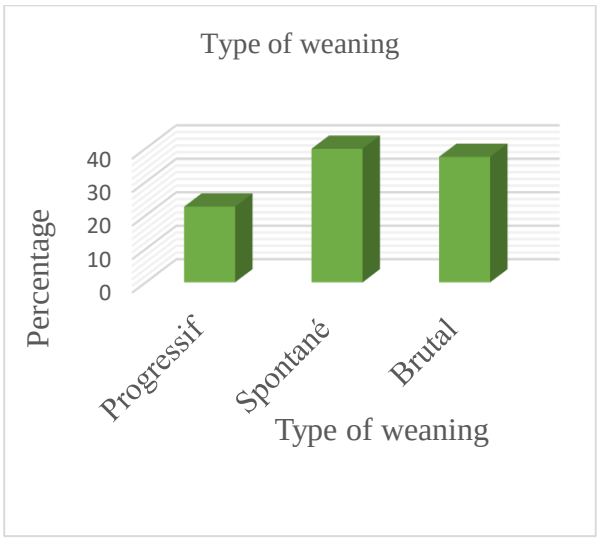
This figure shows that 33.17% of the children included in this study occupy the first rank in the siblings, 22.60% occupy the second rank, 24.52% occupy the third rank, 9.13% occupy the fourth rank and 10.58% occupy the fifth rank and above.

**Distribu by household type**

**Table II:** Distribution by household type

From this table, we can see that 26.74% of children come from monogamous households, compared with 73.26% from polygamous households.

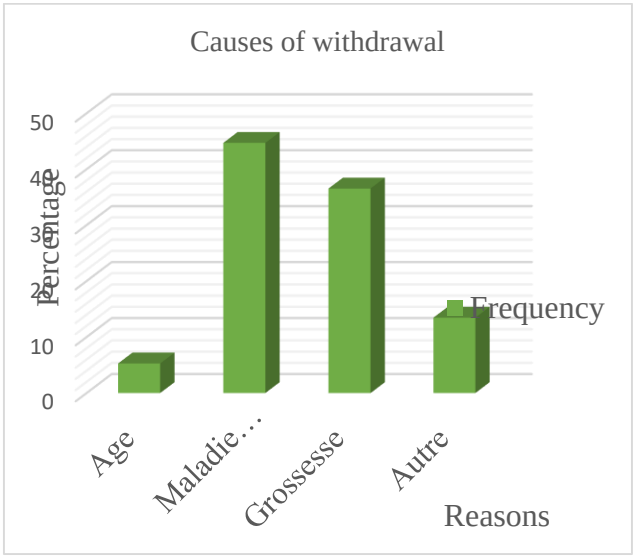
**Distribution by type of weaning**




**Distribution by type of weaning**

This figure shows that 22.60% of the children underwent normal weaning against 77.40% of abnormal weaning of which 39.90% were spontaneous and 37.5% were abrupt.

**Distribution by cause of withdrawal**




**Distribution by causes of withdrawal**

The figure shows that 5.29% of children reach the normal weaning age, 44.71% were weaned because of their mother's health, 36.54% because of a new pregnancy and 13.46% for no fundamental reason.

**Occupational distribution of the children's mothers**

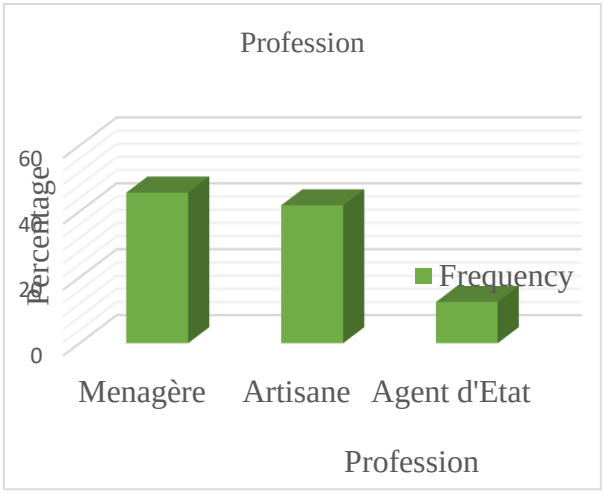
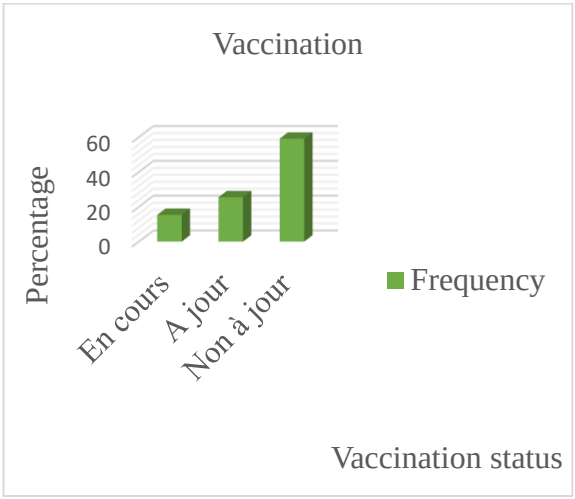



**Figure 11:** Occupational distribution of children's mothers

The figure shows that 45.67% of the children's mothers are housewives, 41.83% are craftswomen and 12.5% are government employees.

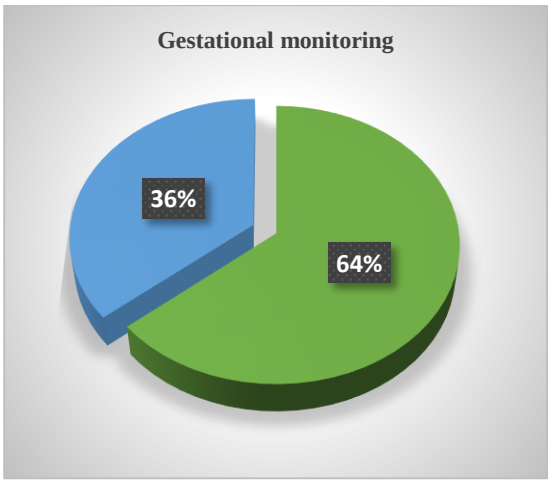
**Distribution according to vaccination status**




**Distribution by vaccination status**

This figure shows us that 59.14% of the children have an abnormal vaccination status against 40.86% with a normal vaccination status of which 15.38% are in progress.

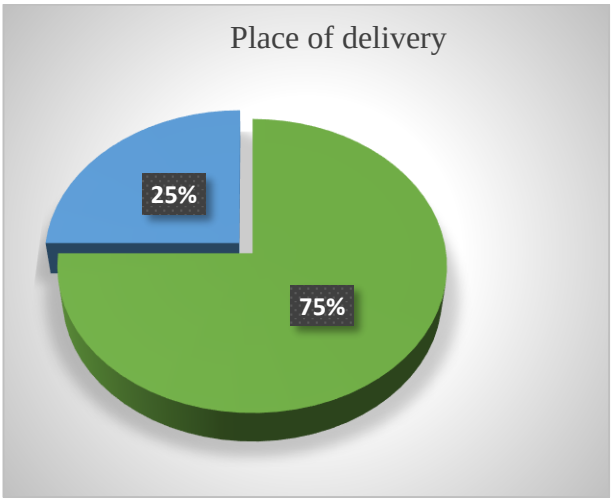
**Distribution by follow-up during pregnancy**




Distribution by follow-up during pregnancy

The figure shows that 64% of the mothers were monitored during the pregnancy of the children consulted and 36% did not keep their appointments during the prenatal visit.

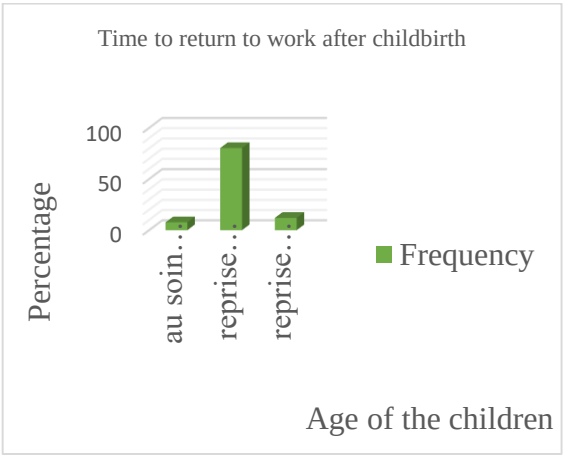
**Distribution by place of delivery**




Distribution by Place of Delivery

This figure shows that 75% of children are born in hospital and 25% at home.

**Distribution according to the time of return to work after childbirth**

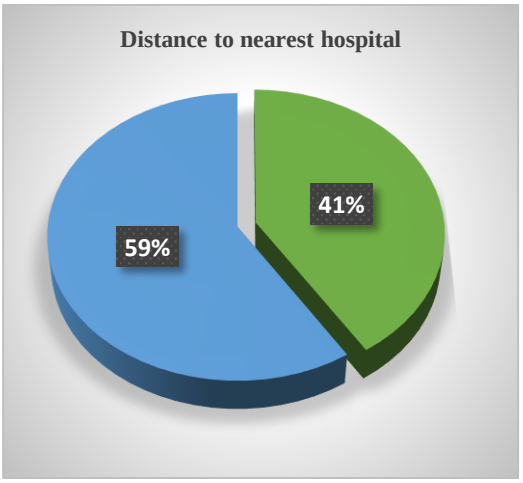



Distribution according to time of return to activity after childbirth

This figure shows that 7.69% of the children's mothers are still caring for their children, compared to 80.29% who resumed their activity less than 6 months after giving birth and 12.02% after 6 months.

**Distribution by hospital closest to the parents**

| Diet | Workforce | Frequency in % (%) |
|---|---|---|
| Monogame | 56 | 26,74 |
| Polygamist | 152 | 73,26 |
| Total | 208 | 100 |



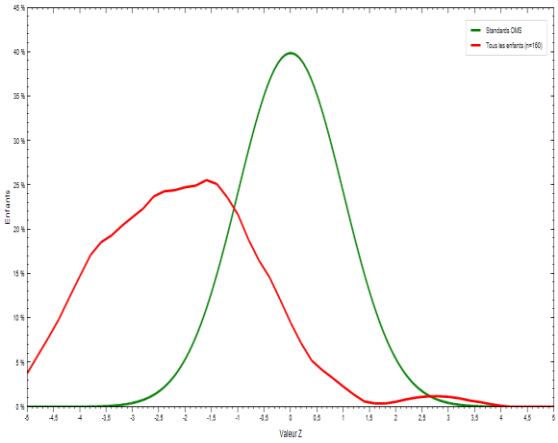
**Distribution by hospital closest to parents**

The figure shows that 41% of the children have parents who are close (less than 5 km) to a health centre and 59% are more than 5 km away.

**Nutritional status of children**

**Weight-for-height (W/H) distribution**

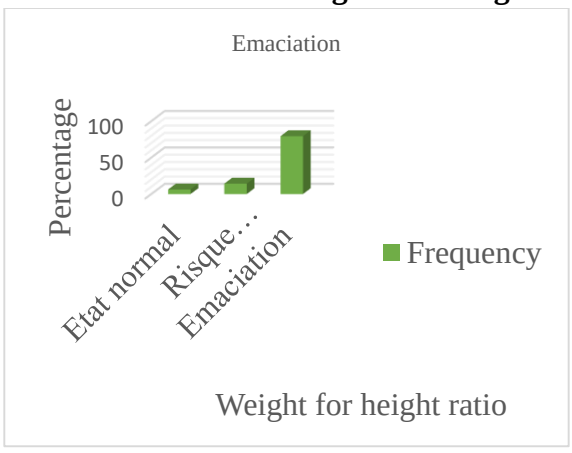
- **Weight-for-height trend line**



Weight-for-height trend line

We note that the curve of the children in the sample (red curve) is shifted to the left with respect to the curve of the reference population (green curve). It intersects the reference curve at a point with coordinates (-1ET; 20%), so the whole population is emaciated.

- **Percentage of wasting**

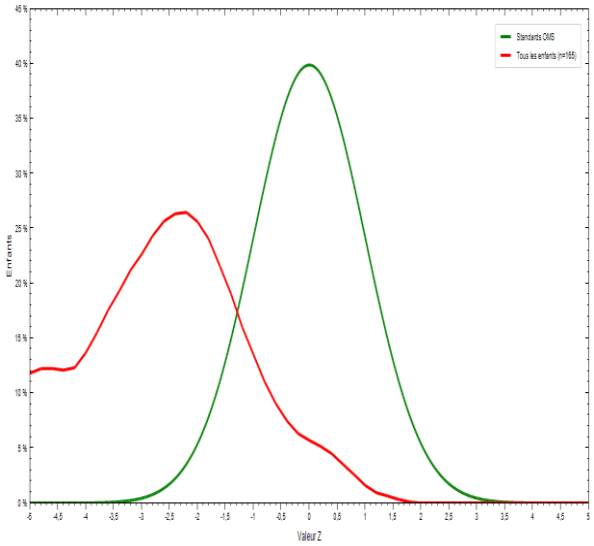



Weight-for-height distribution

According to this figure, 6.29% of children have a normal nutritional status, while 14.29% are at risk of wasting and 79.43% suffer from it.

**Weight-for-age (W/A) distribution**

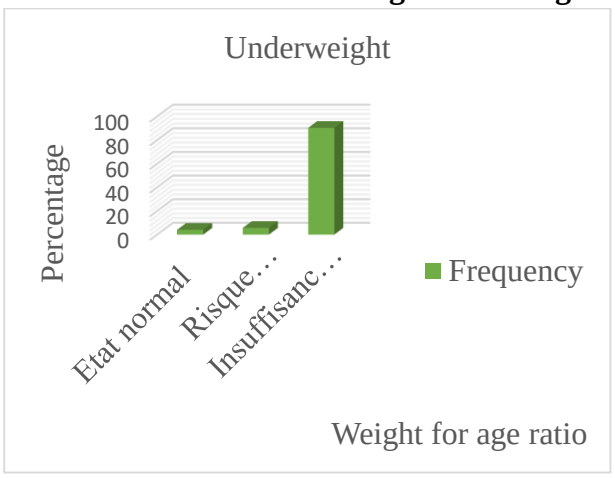
- **Weight-for-age trend line**



Weight-for-age trend line

We note that the curve for the children in the sample (red curve) is shifted to the left with respect to the curve for the reference population (green curve). It intersects the reference curve at a point with coordinates (-1.5ET; 15%), so the whole population is underweight.

- **Percentage underweight**

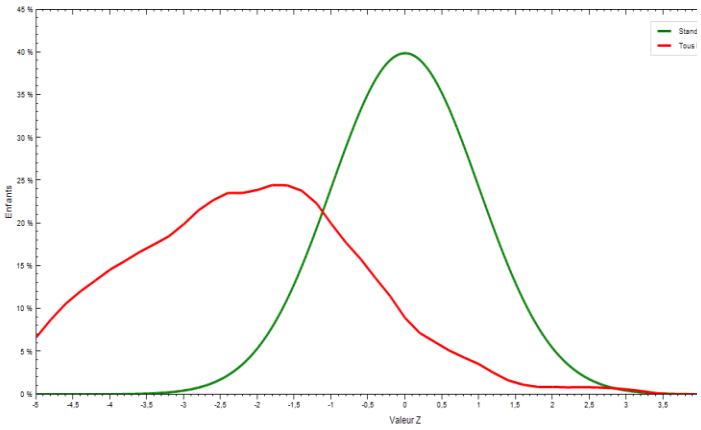



Weight-for-age distribution

This figure shows that 3.98% of children have a normal nutritional status, but 5.68% are at risk of wasting and 90.34% suffer from it.

**Distribution by height-for-age ratio (H/A)**

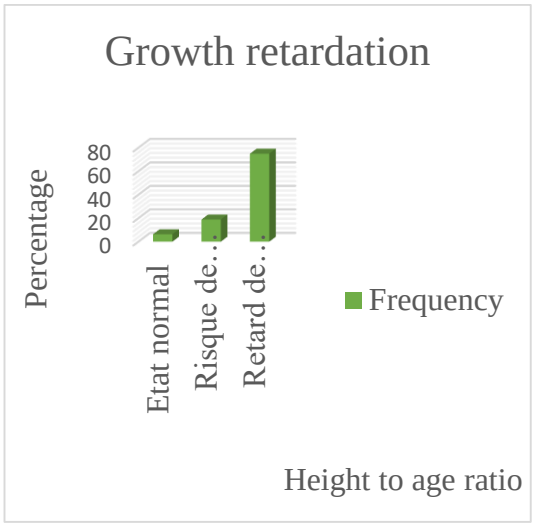
- **Size-for-age trend line**



Height-for-age trend line

We note that the curve of the children in the sample (red curve) is shifted to the left with respect to the curve of the reference population (green curve). It intersects the reference curve at a point with coordinates (-1ET; 20%), so the whole population is likely to suffer from stunting.

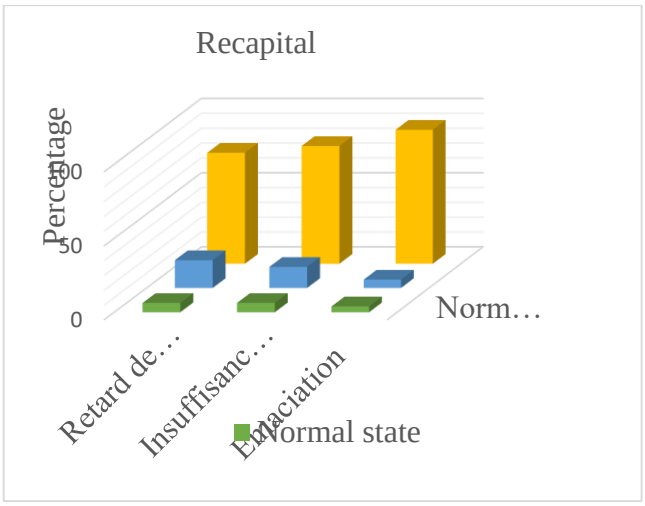
- **Percentage of stunting**




**Distribution by height-for-age ratio**

The figure shows that 6.28% of children have a normal nutritional status, but 18.84% are at risk of stunting and 74.88% are stunted.

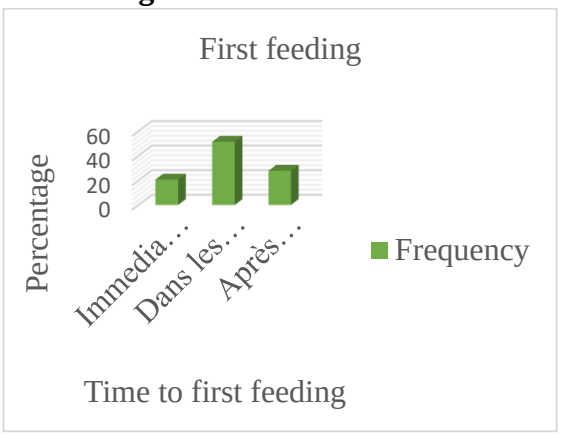
**Summary of nutritional status**




**Summary of nutritional status**

From this figure, we can see that 74.88% of children suffer from stunted growth, 79.43% are underweight and 90.34% are wasted.

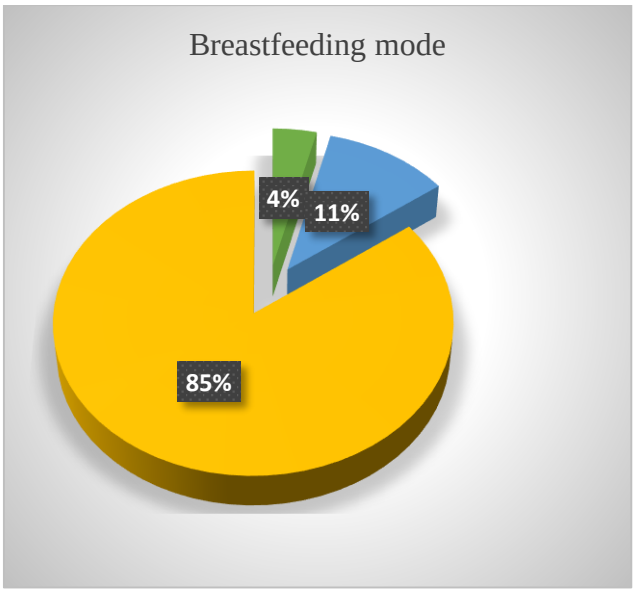
**Distribution according to the time elapsed before the first feeding**




Distribution by time to first feeding

This figure shows that 20.67% of the children were able to suckle immediately, 51.44% the same day and 27.88% after 24 hours.

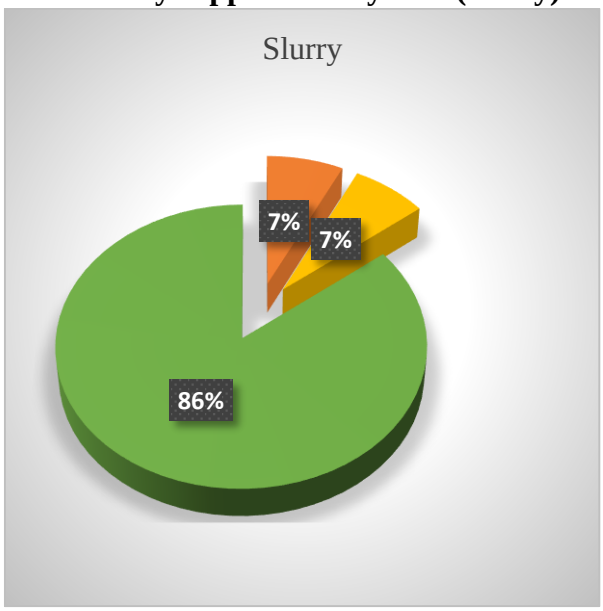
**Distribution by breastfeeding mode**




**Distribution by breastfeeding mode**

This figure shows that 85% of children are subject to mixed breastfeeding against 15% subject to exclusive breastfeeding, 4% of whom are still being breastfed

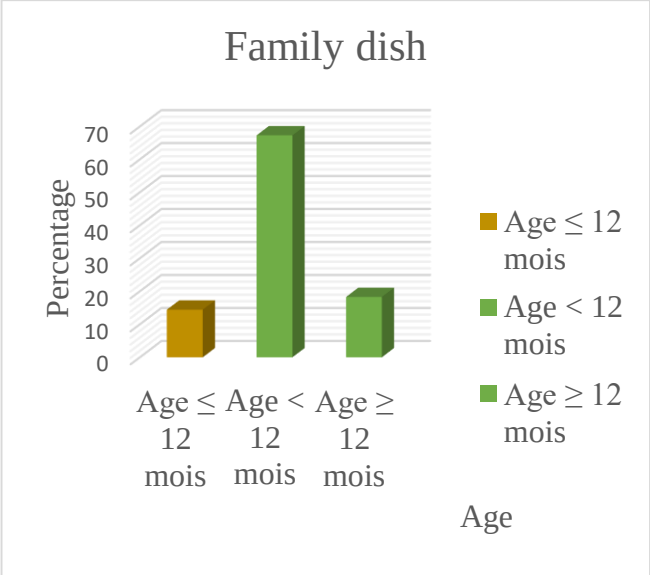
**Distribution by supplementary feed (slurry)**




Distribution by supplementary feed

This figure shows that 7% of children are not yet on porridge, 7% are on enriched flour porridge against 86% on non-enriched flour porridge.

**Distribution by supplementary food (family dish)**




**Distribution by supplementary food (family dish)**

From this figure, it appears that 14.42% of some children aged ≤ 12 months are not yet subjected to the family dish while 67.31% of those aged less than 12 months and 18.27% aged more than 12 months are subjected.

**Distribution according to the product taken before the first feeding**

**Table III:** Distribution according to the product (water or herbal tea or serum) taken before the first feeding

| Before the first feeding | Workforce | Frequency in % (%) |
|---|---|---|
| Having drunk before | 117 | 56,25 |
| Not having drunk before | 91 | 43,75 |
| Total | 208 | 100 |

The table shows that 56.25% of the children drank (water, herbal tea or serum) before the first feeding, as against 43.75% who took nothing.

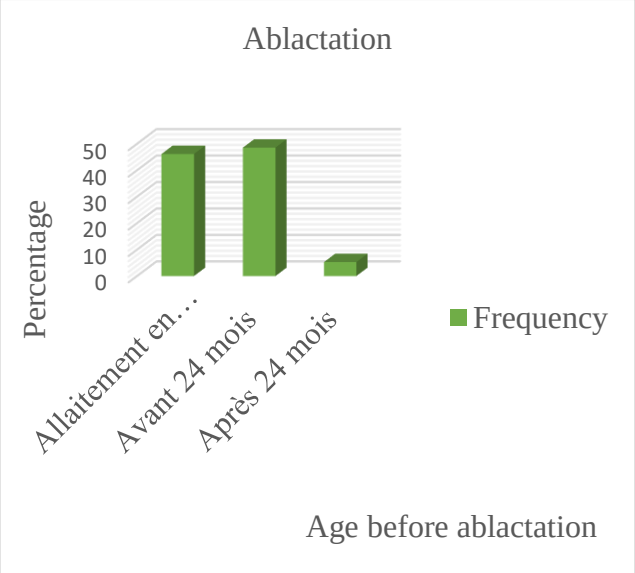
**Breakdown by source of water consumed**

**Table IV:** Distribution by source of water consumed

| Water | Workforce | Frequency in % (%) |
|---|---|---|
| Drinking | 33 | 15,87 |
| Non-drinkable | 175 | 84,13 |
| Total | 208 | 100 |

This table shows that 15.87% of children consume drinking water, while 84.13% consume non-drinking water (well water, rain water, marsh water and even sometimes pump water contaminated by the method or container used to collect it)

**Distribution by age of ablactation**




**Distribution by age of ablactation**

This figure shows that 46.15% of children continue to be breastfed, compared with 53.85% who have been weaned, of whom 48.56% are under 24 months of age and 5.29% are over 24 months of age.

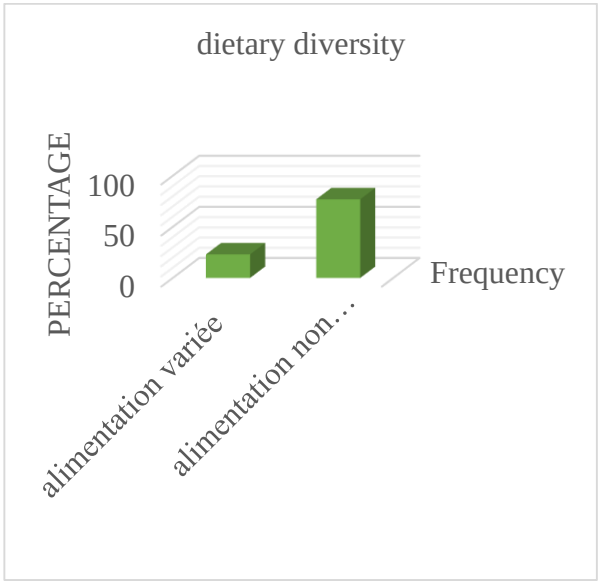
**Breakdown by nutritional advice received by the children's mothers**

**Table V:** Distribution by nutritional advice received by children's mothers

| Nutritional advice | Workforce | Frequency in % (%) |
|---|---|---|
| Received | 63 | 30,29 |
| Not received | 145 | 69,71 |
| Total | 208 | 100 |

The table shows that 30.29% of the children's mothers received nutritional advice during the pre- and post-natal visits, as against 69.71% who did not.

**Distribution by food diversity**

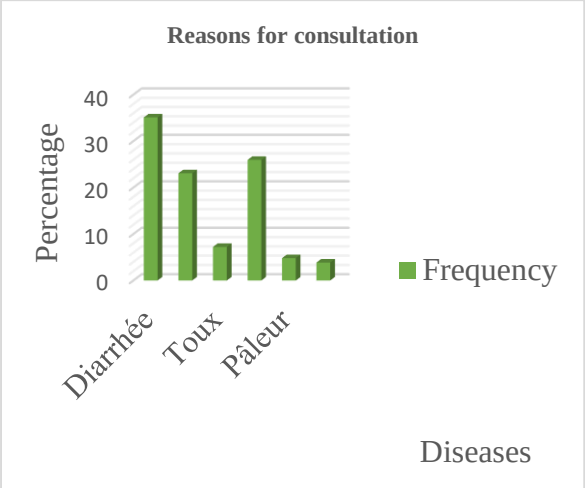



**Distribution by dietary diversity**

From this figure, 23.08% of mothers varied their child's diet compared to 76.92% who fed their child with only one type of food.

**Health status**

**Distribution of cases according to reasons for consultation**




**Distribution of reasons for visits**

This figure shows that 35.10% of the children were consulted because of diarrhea, 23.08% because of heat, 7.21% because of cough, 25.96% because of vomiting, 4.81% because of paleness and 3.85% because of low weight.

**Distribution according to the presence of bilateral oedema**

**Table VI:** Distribution according to the presence of bilateral oedema

| Bilateral edema | Workforce | Frequency in % (%) |
|---|---|---|
| Present | 43 | 20,67 |
| Absent | 165 | 79,33 |
| Total | 208 | 100 |

This table shows that 20.67% of children have bilateral oedema compared to 79.33% without oedema.

**Distribution by Acute Respiratory Infections (ARI)**

**Table VII:** Distribution by Acute Respiratory Infections (ARI)

| IRA | Workforce | Frequency in % (%) |
|---|---|---|
| Infected | 196 | 94,23 |
| Not infected | 12 | 5,77 |
| Total | 208 | 100 |

This table shows that 94.23% of children suffer from acute respiratory infection against 5.77% healthy.

**Malnutrition and associated factors**

**Percentage of malnourished**

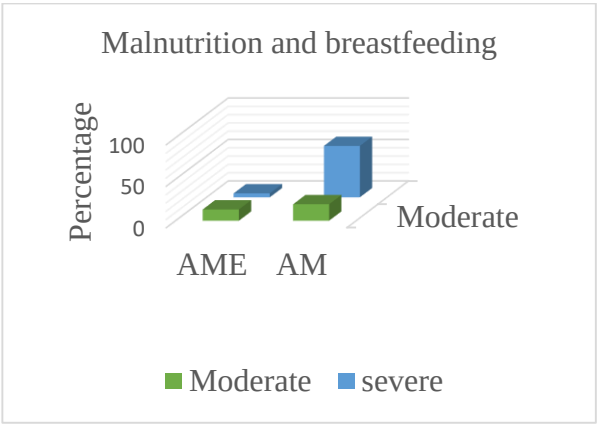
The nutritional status of each child is checked during the consultation, so we have in the following table presents the different types of nutritional status encountered.

**Table VIII:** Distribution by nutritional status

| Nutritional status | Workforce | Frequency in % (%) |
|---|---|---|
| Normal | 82 | 39,42 |
| Moderate malnutrition | 58 | 27,88 |
| Severe malnutrition | 68 | 32,70 |
| Total | 208 | 100 |

The table shows that 39.42% of children have a good nutritional status, but 60.58% (i.e. 126 children) are malnourished, of whom 27.88% are moderate and 32.70% severe.

**Malnutrition and breastfeeding mode**

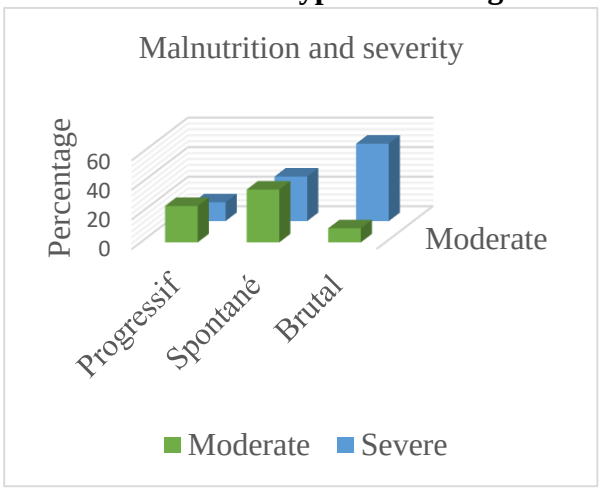



**Malnutrition and breastfeeding patterns**

This figure shows that 13.49% of the children benefiting from the AME suffer from moderate malnutrition and 4.76% of these children suffer from severe malnutrition, whereas 19.84% of the children who did not benefit from the AME suffer from

moderate malnutrition and 61.90% from severe malnutrition.

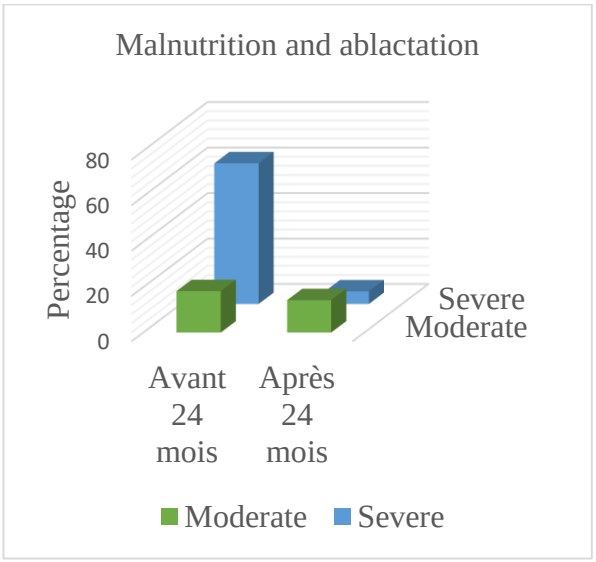
### 3.5.3- Malnutrition and type of weaning




**Malnutrition and type of weaning**

The figure shows that 24.60% of children who have been gradually weaned suffer from moderate malnutrition and 12.70% of these children suffer from severe malnutrition. On the other hand, 35.71% of spontaneously weaned children suffer from moderate malnutrition and 30.16% from severe malnutrition. Furthermore, 9.52% of children who were weaned suddenly suffer from moderate malnutrition and 52.38% from severe malnutrition.

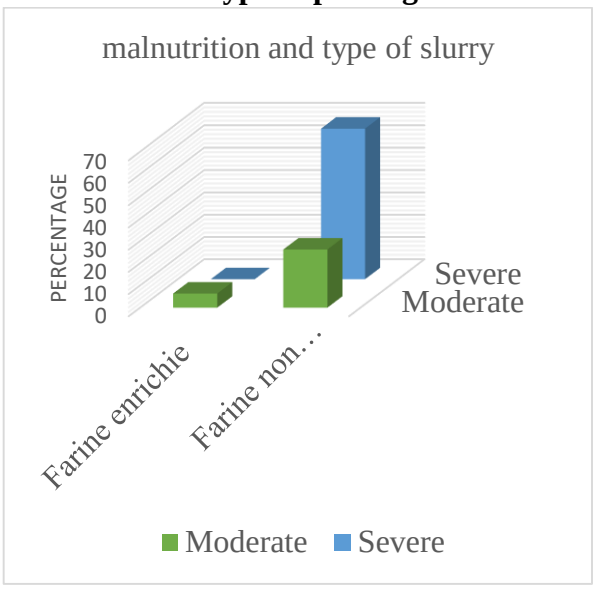
**Malnutrition and age of ablactation**




**Malnutrition and age at ablactation**

From this figure, 18.25% of children ablated before the age of 24 months suffer from moderate malnutrition and 61.90% of these children suffer from severe malnutrition against 14.29% and 5.56% of children ablated after the age of 24 months suffer from moderate and severe malnutrition respectively.

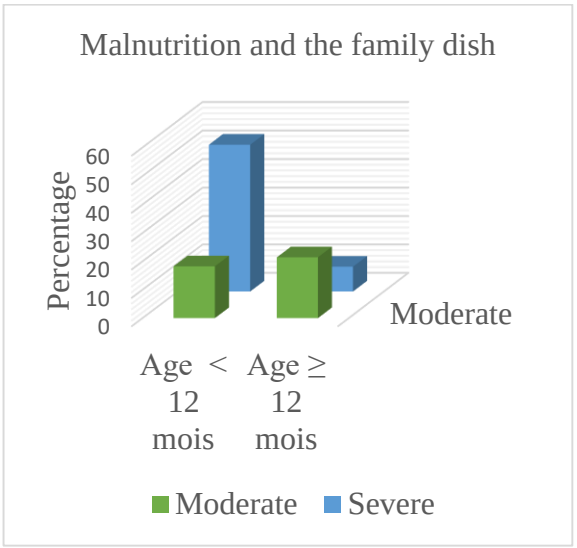
**Malnutrition and type of porridge**




**Malnutrition and type of porridge**

The figure shows that 6.35% of children fed with enriched flour-based porridge suffer from moderate malnutrition, while 26.19% of those fed with non-enriched flour-based porridge suffer from moderate malnutrition and 67.46% of these children suffer from severe malnutrition.

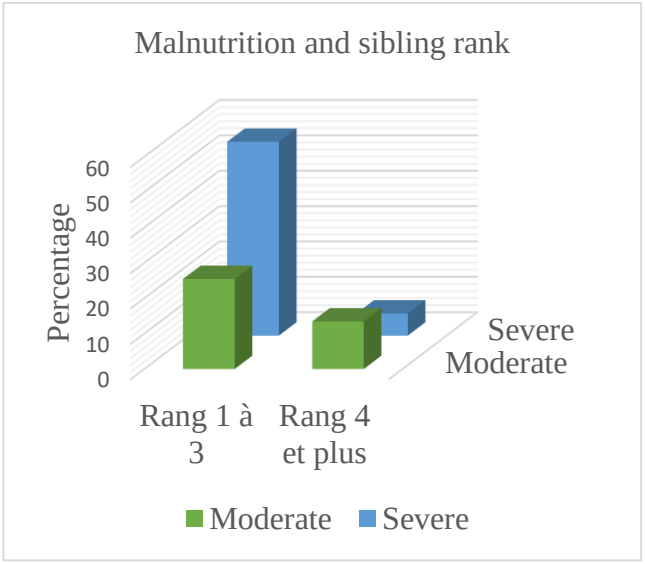
**Malnutrition and age of submission to the family dish**




**Malnutrition and age of submission to the family meal**

This figure shows that 18.23% of children under 12 months of age on the family dish suffer from moderate malnutrition and 51.59% of these children suffer from moderate malnutrition. On the other hand, 21.43% of children over 12 months of age suffer from moderate malnutrition and 8.73% suffer from severe malnutrition.

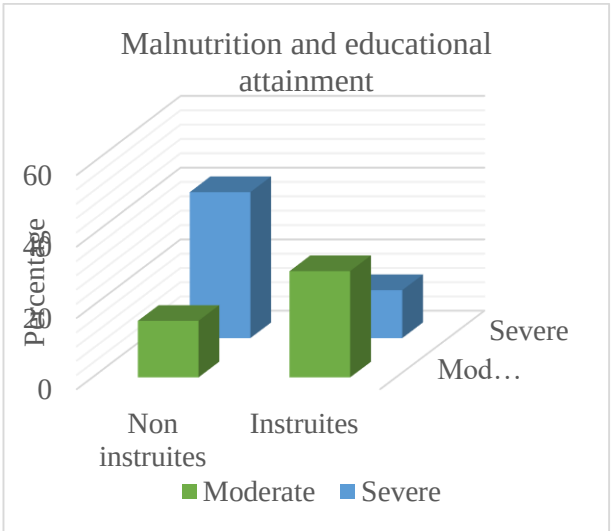
**Malnutrition and sibling rank**




**Malnutrition and sibling rank**

The figure shows that 25.48% of children in ranks 1 to 3 suffer from moderate malnutrition and 54.81% of these children suffer from severe malnutrition, while 13.46% of children in ranks 4 and above suffer from moderate malnutrition and 6.25% of children in the same ranks suffer from severe malnutrition.

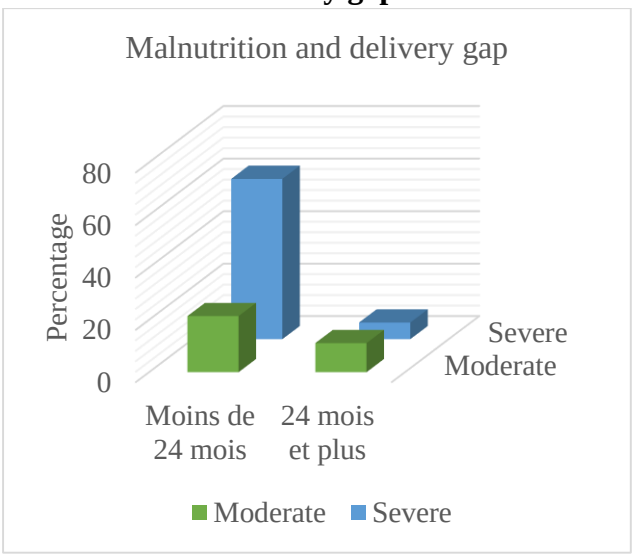
**Malnutrition and the level of education of mothers**




**Malnutrition and level of education of mothers**

The figure shows that 15.86 per cent of children with illiterate mothers suffer from moderate malnutrition and 40.86 per cent of children in this group suffer from severe malnutrition. On the other hand, 29.81% of children with educated mothers suffer from moderate malnutrition and 13.46% of children in this group suffer from severe malnutrition.

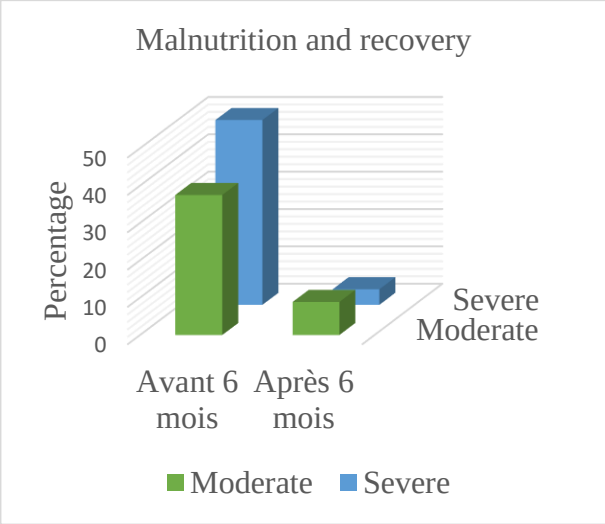
**Malnutrition and delivery gap**




**Malnutrition and delivery gap**

This figure shows that 21.43% of children with mothers observing less than 24 months before a new pregnancy suffer from moderate malnutrition and 61.11% of children in this same group suffer from severe malnutrition. On the other hand, 11.11% of children with mothers who were 24 months or more pregnant suffered from moderate malnutrition and 6.35% of these children suffered from severe malnutrition.

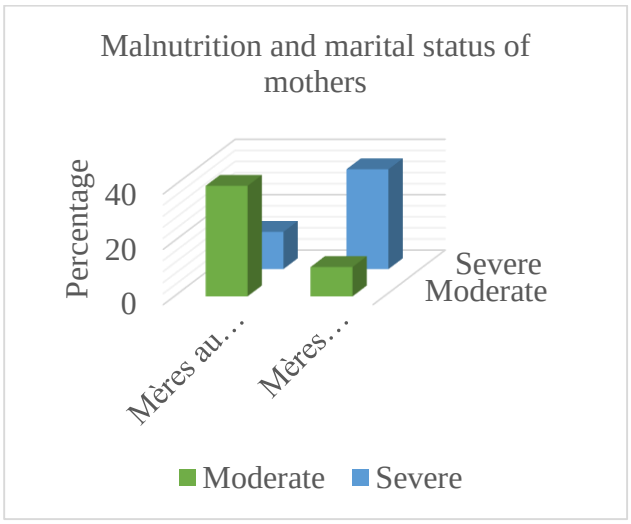
**Malnutrition and recovery time**




**Malnutrition and recovery time**

The figure shows that 37.5% of children with mothers who started working less than six months after delivery suffer from moderate malnutrition and 49.48% of these children suffer from severe malnutrition, while 8.85% of children with mothers who started working more than six months after delivery suffer from moderate malnutrition and 4.17% of children in the same group suffer from severe malnutrition.

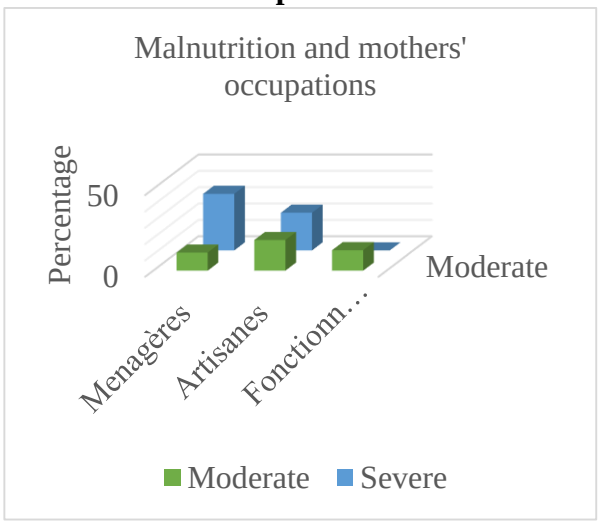
**Malnutrition and marital status of mothers**




**Malnutrition and marital status of mothers**

The figure shows that 39.90 per cent of children with stay-at-home mothers (married or common-law) suffer from moderate malnutrition and 13.46 per cent of children in this group suffer from severe malnutrition. Furthermore, 10.58% of children with single mothers (divorced or widowed) suffer from moderate malnutrition and 36.06% of these children suffer from severe malnutrition.

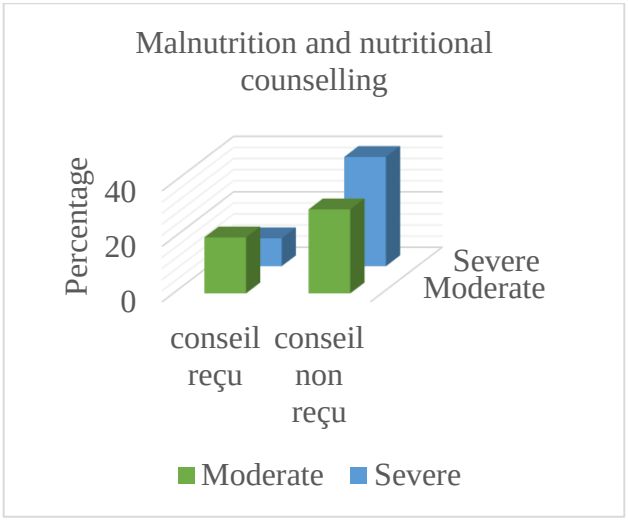
**Malnutrition and occupation of mothers**




**Malnutrition and occupation of mothers**

From this figure we can see that 11.06% of children with housewives suffer from moderate malnutrition and 3461% of children in this group suffer from severe malnutrition. On the other hand, 18.75% of the children of craftswomen suffer from moderate malnutrition and 23.08% of these children suffer from severe malnutrition. On the other hand, 12.5% of children with intellectual mothers suffer from moderate malnutrition.

**Malnutrition and nutritional advice**

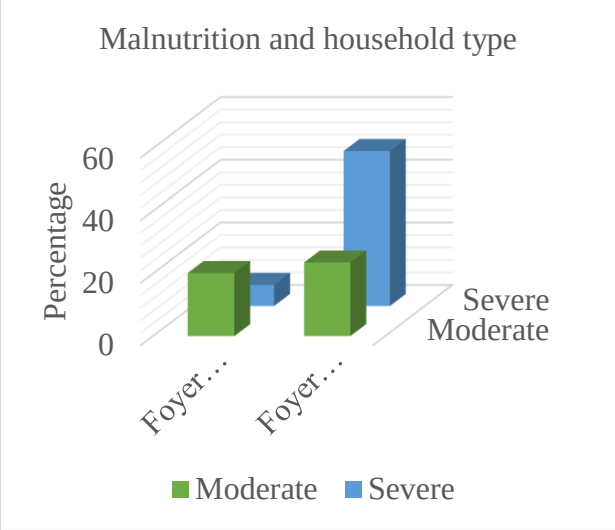



**Malnutrition and nutritional counselling**

From this figure it appears that 20.19% of children with mothers who have received nutritional counselling suffer from moderate malnutrition and

10.10% of children in the same group suffer from severe malnutrition while 30.29% of children with mothers who have not received nutritional counselling suffer from moderate malnutrition and 39.42% of these children suffer from severe malnutrition.

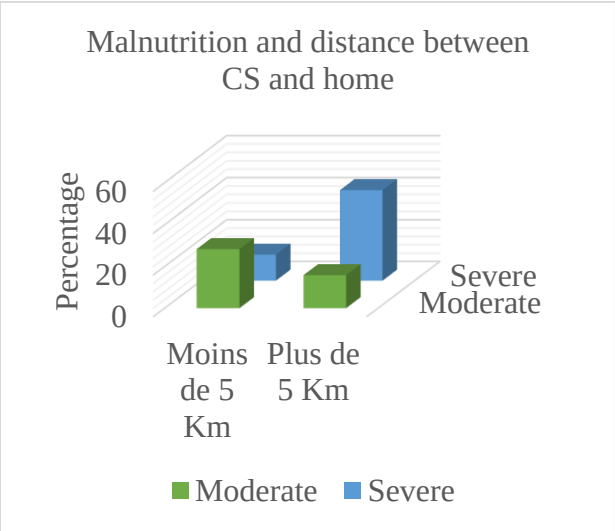
**Malnutrition and marital status of households**




**Malnutrition and marital status of households**

This figure shows that 20.19% of children from the monogamous household suffer from moderate malnutrition and 6.73% of these children suffer from severe malnutrition. On the other hand, 23.56% of children from the polygamous household suffer from moderate malnutrition and 49.52% of children from the same group suffer from severe malnutrition.

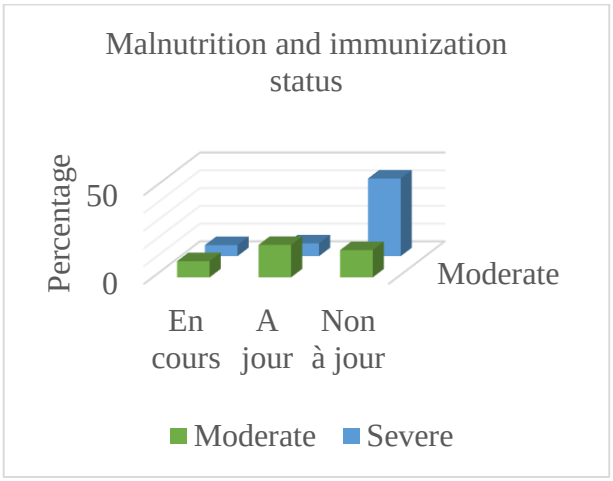
**Malnutrition and distance between the CS and the home of the malnourished**




**Malnutrition and lack of health centers**

This figure shows that 28.36% of children living less than 5 km from a health center suffer from moderate malnutrition and 12.5% of these children suffer from severe malnutrition, compared with 15.86% and 43.27% of children living more than 5 km from a health center who suffer from moderate and severe malnutrition respectively.

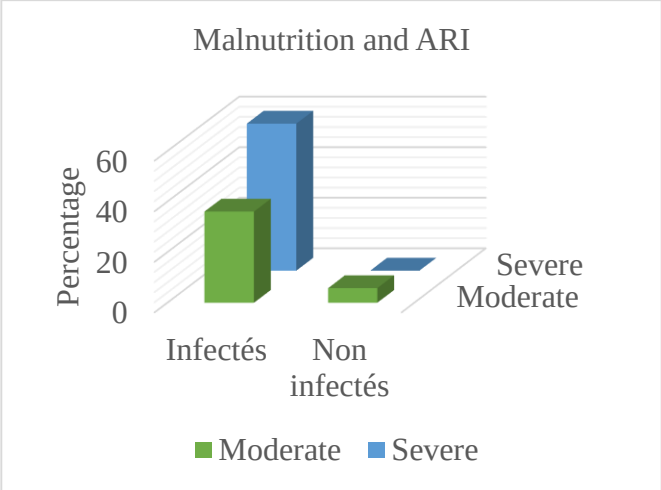
**Malnutrition and immunization status of children**




**Malnutrition and immunization status of children**

From this figure we can see that 9.13% of children with a good current vaccination status suffer from moderate malnutrition and 6.25% of children in this same group suffer from severe malnutrition. On the other hand, 18.27% of children with an up-to-date vaccination status suffer from moderate malnutrition and 7.21% of these children suffer from severe malnutrition. In addition, 15.38% of children whose immunization status is not up to date suffer from moderate malnutrition and 43.75% of children in this group suffer from severe malnutrition.

**Malnutrition and Acute Respiratory Infection**




**Malnutrition and Acute Respiratory Infection**

The figure shows that 36.06% of children infected with ARI suffer from moderate malnutrition and 58.17% of these children suffer from severe malnutrition. On the other hand, 5.77% of the non-infected children suffer from moderate malnutrition.

**Discussion**

**General characteristics of the study population**

**Sex: In the** course of our study, we counted 94 girls, i.e.
45% and 114 boys, i.e. 55%, with a sex ratio of 1.2 in favour of boys. This male predominance could be due, to the fact that boys are the most brought to consultation. This result is contrary to what was reported by Yessoufou G.A. et al (2014) from the Pendjari plain in northwestern Benin who found a sex ratio of 1.1 in favour of girls.

**Age:** The age group of 06-24 months represented the highest rate of children consulted, i.e. 60.58%. This result could be explained by the fragility of this age group to infections on the one hand and especially to weaning on the other hand. This finding was reported by Yessoufou G.A. et al (2014) who found 63% for the same age group. Kessi E. K. et al (1994) in Togo found a high frequency of 78.6% in children aged 02-30 months.

**Educational level of mothers**

Our results show that 25% of the children's mothers have a low level of education, 13.46% have a medium level of education, 4.81% have a high level of education and 56.73% have no education. The rate of the educational level of the mothers is low on the other hand that of the illiterates is very high compared to the national statistics which found a rate of low educational level of 34.5%, the medium educational level is 28.4%, the high level is 2.9% and 34.3% uneducated Doubogan C. A. et al (2016). These results explain the attachment of this region to tradition.

**Nutritional status of the study population**

This study revealed that 79.43% of the children were wasted, 74.88% were stunted and 90.34% were underweight. With regard to stunting and wasting, these results are higher than those reported by Yessoufou G.A. et al (2014) from the Pendjari plain in northwest Benin in their study done on the prevalence of acute malnutrition in children under five years (i.e. 63% and 34% respectively). On the other hand, the prevalence of underweight obtained is higher than that of Yessoufou G.A. et al (2014) who find 86%. Similarly the prevalences of the different nutritional states obtained are higher than those obtained in the department of Ouémé by the Global Analysis of Vulnerability and Food Security (AGVSA, 2014) which are respectively 6.1%; 29.5% and 15.7%. These prevalences are also higher than those presented at the level of the Atacora department in 2008 which were 40% for stunting; 7.8% for wasting and 17% for underweight (WFP/ UNICEF/ INSAE, 2008). This suggests that the situation at the departmental level does not reflect the situation in the commune of Tchaourou and that it is important to assess the specific situation in each locality in order to adequately adapt subsequent interventions. This difference could be explained by the socio-economic level of the populations in each study and the strategies for combating malnutrition in each department.

Comparison of the P/A, T/A and P/T curves with the respective reference curves shows that these curves have been shifted to the left in relation to the reference curves. This expresses an insufficient nutritional status compared to that of the reference population and therefore a situation of undernourishment. This analysis shows that the study population is confronted with only one type of malnutrition (undernutrition).

**Factors involved in the nutritional status of children**

**Breastfeeding and weaning**

Our results indicate that 27.88% of mothers who do not breastfeed on the first day are late in putting their babies to the breast. However, it is during the first twenty-four hours after birth that the child benefits from colostrum. Moreover, if the newborn is not breastfed within twenty-four hours, it receives, instead of breast milk, various liquids which risk putting it in contact with pathogenic agents. This situation is more pronounced in rural areas, where 56 per cent of children received various liquids that were preserved and sometimes prepared under poor hygienic conditions during the first 24 hours. This, together with the source of water chosen by the mothers (84% of the mothers chose a source of water that was not drinkable or was made non-drinkable by the method of collection), caused acute respiratory infections in children in 94% of cases. This respect for the practice of breastfeeding from the first day of birth is particularly important for the proper growth of newborns.

Exclusive breastfeeding is very rare, only 11% of children between 0-6 months received only breast. Our results are similar to those reported by Bagnan-Tossa L. et al (2013) who found 14.71% in their study on the frequency and factors associated with the practice of exclusive breastfeeding from 0 to 6 months at the Hospital of Mother and Child Lagune (HOMEL) of Cotonou. The prevalence observed in our study is lower than that observed at the national level reported by the DHS Benin 2011-2012 that 90% of infants under 6 months are breastfed but 33% are exclusively. The frequency of AME is still very low at HOMEL Cotonou and there is a large gap between the frequency of AME and AM. This result is due on the one hand to the time observed for the resumption of activities after childbirth where 80.29% of mothers observe less than 6 months to take good care (breastfeeding) of their child before launching into income-generating activities and on the other hand to the inadequacy of sensitization of mothers by health personnel where 70% of mothers did not receive any advice on child feeding and to the inadequacy of prenatal consultations of mothers during their pregnancy where 36% of mothers did not go for prenatal consultations

**Weaning** .

The servitude was brutal in 37.5% of cases; our results are lower than those of Savadogo A. S. et al (2007) in the Republic of Mali in their study on malnutrition in children aged 0-5 years (21.91%). 48.56% of mothers stopped breastfeeding their child before 24 months. Of the reasons given by the mothers, 44.71% were due to their mothers' illnesses and 13.46% of cases were associated with other reasons not mentioned. On the other hand, 36.54% of the cases related to pregnancy are reported as the main reason for stopping breastfeeding permanently. This reason is explained by the mothers' understanding of family planning, i.e. 48.55% of the mothers have a new pregnancy less than 24 months after giving birth.

**Supplementary feeding (porridge and family dish)**

86% of the children surveyed receive supplementary food based on cereals that are poor in growth and protection foods. 85% of the children received food and herbal teas before the age of six months, preserved and sometimes prepared in poor hygienic conditions. 67.31% of the children are subjected to the family dish poor in nutrients. Furthermore, the assessment of dietary diversity showed that 76.92% of the children have a low dietary diversity. Our results are comparable to those of Yessoufou G.A. et al (2014) in their study done on the prevalence of acute malnutrition in children under five years old in the Pendjari plain of northwest Benin. Similar results were observed following the Demographic Health Survey in Benin in 2006 (INSAE/MACROINTERNATIONAL, 2006) which stipulates, that the diet of children under five (05) years is composed mainly of cereal porridges and accompanied sometimes by legumes (groundnut and soybean) and the consumption of dairy products, meat, fish, fruits and vegetables rich in vitamin A is very rare. These results can be explained by the low purchasing power of parents (45.67% of mothers are housewives), the insufficient means to cover the needs of all family members (46.64% of divorced and widowed mothers and 73.08% of children are in polygamous households). All this leads us to believe that the malnutrition (wasting, stunted growth and low

weight) observed in children under 5 years of age is due to the failure to breastfeed exclusively for six months, to poor weaning practices and to the consumption by children of a family dish that is poor in nutrients.

**Sibling Rank**

Malnutrition affects children in ranks 1, 2 and 3 in 80.29% of cases. Similar results were observed by Savadogo A. S. et al (2007) in the Republic of Mali in their study on malnutrition in children aged 0-5 years (87%). This observation could be explained by the inattention of young mothers to the care of the child by focusing more on their concern.

**Health status**

The association of malnutrition and diarrhoea was found in 35.10% of cases, this result could be the fact that diarrhoea is frequently encountered in malnutrition due to parasitosis, infections and malabsorption. This is confirmed by a study made by Zebib H. S. et al, (1984) in their study made on protein-energy malnutrition in Niger describing diarrhea as the first morbid association at 36%.

Also, UNICEF in its 1990 review (UNICEF, 1990) did not stipulate that malnutrition in children under five is due to poor weaning practices and diseases such as diarrhoea, acute respiratory infections and others**.** The proportions of children who suffered from fever and ARI are 23.08% and 33.17% respectively. These prevalences are higher than those presented by the EDBS-III statistics in 2006 (INSAE/MACROINTERNATIONAL, 2006) which are: 10% for ARI; 29% for fever and 09% for diarrhea, as well as those presented by the health statistics in 2011 in the department of Atacora which are respectively 7.5%; 13.9% and 4.9% (ANNUAIRE DES STATISTIQUES SANITAIRES DES DEPARTMENTS DE L'ATACORA ET DE LA DONGA, 2011). Diseases would constitute a real obstacle for the survival and development of children as well as for the fight against malnutrition; they deteriorate the nutritional status, and this deterioration in turn promotes the appearance of diseases due to the weakening of the immune system which is similar to the observation of Savadogo A. S. et al (2007). The occurrence of diseases is also conditioned by the accessibility to health centers, and the non-respect of the vaccination calendar. Our results show that 59% of the households are at a distance of more than five (05) kilometers from a health center, which explains the choice of health centers in last position, yet the health status of the child worsens as it takes longer for an effective treatment. Our results are similar to those of Yessoufou G.A. et al (2014) in their study on the prevalence of acute malnutrition in children under five years of age in the Pendjari plain in north-west Benin. 59.13% of children have an incorrect vaccination status. These prevalences are close to those presented by the statistics of the 5th Demographic and Health Survey (EDSB-V) in Benin in 2018. It also emerges from this study that 79% of the cases received in consultation present oedemas which complicates their recovery situation and increases the risk of lethality.

**Conclusion**

Malnutrition is still a public health problem affecting children under five years of age (60.58%), most of whom come from families with a low standard of living (45.67%), polygamous households (73.08%) and sometimes without any level of education (56.73%). This study made it possible to describe the malnutrition situation of children under five years of age who were seen in the pediatric department of the Saint Martin Hospital in Papanè. The levels of malnutrition found highlight the existence of a very serious public health problem with 90.34% wasting, 74.88% stunted growth and 79.43% underweight. This malnutrition seems to be favoured by the limited knowledge of mothers on the practice of exclusive breastfeeding (11%); weaning (24%) on the one hand and on micronutrients on the other hand (vitamin A, iron, iodized salt). Diversification is often carried out early, and is made up of unsuitable foods. The nutritional situation of children is critical and deserves special attention. It is therefore necessary to intervene to treat malnutrition and thus improve the health of children.

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