

## Original Research Article

# Child malnutrition in Toamasina hospital: the determining role of the socio economic conditions of the mother

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## ABSTRACT

**Background:** The severe malnutrition is the background of infant mortality in Toamasina region. In spite of the efforts given to the care of those undernourished, this medical scourge always clamps down in national scale. A wider look shows that it is not only a health problem but also socio economic. Our study has as goal to detect the degree of influence of socio economic conditions of mothers about nutritional and weights condition of the children especially in hospitals.

**Methods:** We led a cross descriptive retrospective study based on hospitalized children records in Intensive Nutritional Recovery Center (INRC) of the University Hospital Center (UHC) of Toamasina during 2017.

**Results:** 150 children have been included in the study. The average age of children is 11 months and there is no particular difference found concerning their gender. The breastfeeding was found in most of the case (90%). Concerning the mother, the average age is 21, 5. Those mothers were singles in 76.67% of the cases and practiced informal activities in 62% of the cases. We have deplored 3 deaths during our study period.

**Conclusions:** The poor socio economic condition of the mothers influences considerably the risk to expose the children less than 5 years to the malnutrition. A combined action between health workers and economists is compulsory so as to get through this scourge.

**Keywords:** Earnings, Malnutrition, Socio economic conditions, Underweight

## INTRODUCTION

A suitable and balanced nutrition is essential to grant good health, the survival and the growth of the child. Malnutrition is regarded as one of the main cause of morbidity and death in children less than 5 years.<sup>1</sup> Malnutrition affects at least 52 millions of children and it is responsible of 12% of children death in this slice of

age.<sup>2-4</sup> Children affected by malnutrition have a higher risk of morbidity, an important decrease of intellectual level and in consequence, the socio economic impact of the country is considerable.<sup>5</sup> Since almost 20 years, surveys conducted in the framework of the demographic and health survey (DHS) have always brought out a very high rate of malnutrition and underweight and which does not decrease in spite of all the strategies of fight led by

the Malagasy ministry of health.<sup>6</sup> With the malaria, diarrhea and acute respiratory infections, it is this malnutrition that which can be considered as background of infant death.<sup>6</sup> In Madagascar, malnutrition is treated by supplement food taken care by institutions like Intensive Nutritional Recovery Center (INRC) in hospital surroundings for the undernourished with complications and the Ambulatory nutritional recovery centers for severe malnutrition without complications (CRENAS) in ambulatory.<sup>7</sup> In spite of all those efforts, this health scourge clamps down in national even international scale. Or, a wider look shows that the socioeconomic conditions of the mothers are a more or less settings decisive for the nutritional conditions of the children. There conciliation of those 2 visions draw a common logic as for the study done by Ali and Thorbecke using on one side the health parameters (weight and height of the children) and on the other side the economic parameters like income and socio economic of the houses.<sup>8</sup>

Concerning health, malnutrition demonstrate itself by a state in which the physical function of the person fades to an extend that he cannot ensure the good execution of body function like growing, physical work, resistance to diseases and recovery from that.<sup>9</sup> Malnutrition in poor country like Madagascar is in the form of undernourishment provoked by the lack of food contribution on a specific type of nutrient (vitamins, proteins, trace elements).<sup>10</sup>

Concerning economics, in poverty context, malnutrition demonstrate itself by lack of food caused by poverty with capacity problems, freedoms and abilities to produce what people need to ensure their survival, their life and their well-being.<sup>11</sup>

To our knowledge, very little study on childhood malnutrition in hospital was conducted in Toamasina according to the socioeconomic conditions of the mother.

This study is going to try to show the degree of influence of socio economic conditions of the mothers on the weigh nutritional conditions of the children particularly in hospital surroundings. Our hypothesis is that an undernourished child is most of the time from family whose socio-demographic conditions are unfavourable.

## METHODS

The study was led in the Intensive Nutritional Recovery Center (INRC) of the pediatric service of the Teaching Hospital of Analankininina Toamasina Madagascar. The city of Toamasina is located in the north coast of the big island.<sup>6</sup> The INRC of the TH record an average activity of 200 admissions each year so the hospital cares of undernourished children from all the East region of Madagascar. Active since 2003, it works in straight collaboration with the Nutritional Education and Recovery Ambulatory Center (NERAC) for the severe

malnutrition who takes the bridging when the children get out of the hospital.

We have thus led a transversal retrospective study based on hospitalised children records in the INRC of the TH during 2007.

Are included in the study all of the children of less than 5 years, admitted in the INRC of the pediatric service of Toamasina since 01<sup>st</sup> of January 2017 till 31<sup>st</sup> of December 2017, and we have excluded those whose records were incomplete and those who were out without medical consent.

During the study period, 150 children less than 5 years have been included. We have collected the data relating to the children but also to the mother.

The relative variables to the child are age, gender, weight, weight height ratio, mid-upper-arm circumference, presence of bilateral oedema how it occurred.

And those of the mother are based on the socio-demographic variables of the mother: age, marital status, occupation and level of education.

For the comparative analysis with the socio-demographic variables, the nutritional indicator weight/height (W/H) has been considered. This sign has the advantage of being independent of the age which is in the context of Madagascar, always hard to define with precision. This sign is calculated from the tables of references established by the National Center for Health Statistics (NCHS) and recommended by WHO and adopted by the Malagasy ministry of public health.<sup>12,13</sup> This sign is expressed by the form of « Z score» which is the space between the individual value and the median of the population reference, divided by the standard deviation of the population reference. From the Z score of W/H (W/HZ), we have classified the children in three groups:

- Normal child:  $-2 < W/HZ < +2$ ;
- Skinny child:  $W/HZ < -2$ ;
- Overweight child:  $W/HZ > +2$ .

The height has been measured by height gauge. The weight has been measured by baby scale without clothes.

The data were processed using excel and then introduced into the statistical software SPSS 16 for interpreting and analyzing economic-health.

## RESULTS

During our study period, we have recorded 174 hospitalised children of less than 5 years at the INRC unit of the TH. Among them, 24 children had incomplete records or got out of the hospital without medical consent. So, we have included 150 children in the survey.

The survey shows that malnourished children admitted to the INRC are slightly predominantly female (50.7% of cases) with a sex ratio of 0.97.

We have noted that most of them follow breastfeeding till 6 months as well. The average weighted year is 11, 16 months. At the end of our survey, we have noted 3 deaths (2%) of death rate. Those deaths happened to the children less than one year. Two of those children dwelled more than 100 km from the city, inaccessible by car hence the delay of care. One of them has died from severe sepsis. The characteristics of those children are abstracted in the Table 1.

**Table 1: Characteristics of malnourished children admitted to the INRC.**

Characteristics	Effective (n)	%
<b>Gender</b>		
Male	74	49.33
Female	76	50.67
<b>Age</b>		
0-6 months	17	11.33
6-12 months	25	16.67
12-24 months	36	24.00
24 months-5 years	72	48.00
<b>Exclusive breast feeding</b>		
Yes	67	44.67
No	83	55.33
<b>Method of exit</b>		
Healed	147	98.00
Death	3	2.00

**Table 2: Characteristics of the mothers of malnourished children admitted to the INRC.**

	Effective (n)	%
<b>Age of the mother (in years)</b>		
<18	19	12.67
18-35	131	87.33
>35	0	0.00
<b>Level of study</b>		
Illiterate	3	2.00
Primary	60	40.00
Secondary	84	56.00
Academic	3	2.00
<b>Marital status</b>		
Married	24	16.00
Single	115	76.67
Divorced	9	6.00
Widowed	2	1.33
<b>Activity</b>		
Household	36	24.00
Informal activities	93	62.00
Formal activities	21	14.00

Concerning the maternal characteristics (Table 2), we have found an average age of 21.5 years with extremes going from 16 to 34 years. These mothers are very young in most cases. They are single in most of the case (78%). The level of study is very low as well 2% of illiterate, 40% of primary school, 56% of the high school. Only 2% have been to the University. On average, mothers leave school in college. We also found that 24% of the mothers were housewives, 14% had formal activities.

## DISCUSSION

Our study shows that severe malnutrition in the children of less than 5 years is still a real challenge for our country, particularly in our region where here is only one INRC which ensures the nutritional care of the children in hospital surroundings.

It appears that our study records an almost equal proportion between genders.

In Madagascar, previously, the social consideration enhances the value of the boys more than the girls. Our study shows that concerning nutrition, parents don't make too much distinction between both sexes. The literature found the same observation as well.<sup>14</sup> A high rate of breastfeeding has been found in our context in 90% of the cases before 6 months. According to the 2008 demographic and health surveys (DHS) in 2008, Madagascar is the second sub-Saharan country to have an exclusive and highest rate of breastfeeding at 77%.<sup>6</sup> This shows us that malnutrition generally happens after the diversification age of 6 months. The mothers ensure drastically breastfeeding but the diversification is still non-compliant. Our study reflects this reality while finding an average age of around 11 months. In our region, the economy concerns especially the trade because of the existence of the fluvial port. The cost of living is high and most of the families live under the poverty line. Those who live in the countryside try to do agriculture but in a craft and inadequate way. So the diversification is seen most of the time based on rice and cassava. This has a capital impact on the development and the children's state of nutrition.<sup>15</sup>

If this study has as a main question the role of the socioeconomic conditions of the mother on the nutritional state of the children, the information from the survey try to corroborate that hypothesis.

The average age of the mothers around 21.5 years (min 16 and max 34) shows that they are much too young to take care of their children correctly. As a matter of fact, a too young mother does not have the maturity needed so as to suitably ensure the care of her child.<sup>16</sup> Or, the recent observations show that Malagasy girls tend to become pregnant earlier and earlier. This could be linked to several factors such as lack of distraction, poverty which lead them to use all their means to avoid the family home,

or the ancestor belief which tends to organise an arranged marriage for their daughter.

Most of them (78%) are single. A lot of them have stopped school in secondary school and more than 77% have no occupation. Their social situation shows some precarity which is not neutral at all for the nutritional and health situation of the children. And if the discussion keeps going on the fact that the mothers in a precarious situation are the source of the children's malnutrition in young child, our study tends to confirm that hypothesis.

Those different results converge to the other study in the same region and even from other countries.<sup>17,18</sup>

Since 1990, the successive Malagasy government have tried to make an effort to fight against malnutrition especially for children less than 5 years. That struggle which took the national nutrition politic form and having been in integral part of the health politics insist on the increase of breastfeeding, the fight against vitamin A, iron and iodine deficiency.<sup>19</sup> These actions are reinforced by the supervision and promotion of the growth of the children of less than 5 years, the nutrition and the health of the women and girls particularly pregnant and breastfeeding women insisting on the access of primary care and the access to drinkable water and hygiene of the local.

In short, these are actions of health orientations. Or, if we consult the combined study led by Thorbecke between anthropometric parameters (health) and the economic parameters (income), it has been concluded that if malnutrition physically appears as a health problem, the real source is located in economic problems through weakness of income. Following the conclusion that the percentage of the poor depends on the average income and on the distribution of income and that the percentage of the poor determine the rate of malnutrition, the physical weakening is only an appearance, the problem of the malnutrition and the lack weigh is economic.

Experiences tell us that children who get out of the INRC come back few times later because the economic condition et durable in which they live never give a warranty of a sufficient healthy and lasting nutrition which topple them over to the malnutrition.

To remedy that the sanitary actions whether in hospital or in ambulatory local will never be enough to decrease the rate of the malnutrition as all the politics has fixed since 90.<sup>1</sup> We should topple over to economic sanitary actions insisting on the ability either to produce by themselves or by getting decent incomes. If sanitary actions of corrective characters like nutritional supplementation or admission to the INRC or NERAC are vitally needed for the restoration of the children's state, more strategic and preventive actions are essential to keep lasting physical and sanitary conditions.

For all social politics, vulnerable household like young mothers or single deserve a specific attention concerning the reinforcement of participation in economic activities and in monetary resources to move away from malnutrition whom children are the most affected. And this must get to the hospital center to do their duty of reference care.

Generally, besides the sanitary actions we should give to the household means to ensure their well-being in activities and suitable work, a suitable sanitary and economic measure for the poorest (access to drinkable water, hygiene) and a lasting preventive social politics.

## CONCLUSION

Malnutrition which affects essentially children less than 5 years is a scourge which has harmful and dramatic consequences not only on their health and development but also on the economy of the whole country

We have seen through our study that the problems are not only sanitary. The socioeconomic level of the mothers plays an essential role in the malnutrition to happen.

It is true that without the INRC which is legitimate, legal and human, the risk of death are real for those undernourished children. But the mothers need more ongoing economic and strategic support to avoid the spectrum of malnutrition. Preventive measures followed by follow-up actions are essential to avoid both the chronic characteristic of malnutrition and the relapse to the same situation. It is about the additional combination of sanitary and economic actions towards the malnutrition.

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## REFERENCES

1. Ministère de la Santé Publique. Politique Nationale de Santé, République de Madagascar. 2005.
2. United Nations International Children's Emergency Fund (UNICEF), World Health Organization (WHO) and The World bank. UNICEF-WHO-World Bank Joint Child Malnutrition Estimates. Levels and Trends in Child malnutrition. UNICEF, NewYork; WHO, Geneva; The World Bank, Washington DC. 2012.
3. Émile E. La performance des politiques de santé malgaches de 1996 à 2006. Thèse de Doctorat en Economie, Toamasina. 2010.
4. Black R, Victora CG, Walker SP, Bhutta ZA, Christian P, de Onis M, et al. Maternal and child undernutrition and overweight in low-income and middle-income countries. *Lancet*. 2013;382:427-51.

5. République de Madagascar. Plan National d'action pour la nutrition 2012-2015. République de Madagascar, Antananarivo, 2012.
6. INSTAT Madagascar. Enquête Démographique et de Santé 2008, Ministère de l'Économie et des Finances, 2008.
7. Razafimanantsoa F, Razafindramaro N, Raherimandimby H, Robinson A, Rakoto Alson O, Rasamindrakotroka A. Anthropometric profile of schoolchildren in Antananarivo. *Pan Afr Med J*. 2013;16:62.
8. Ali A, Thorbecke E, The State and Path of Poverty in Sub-Saharan Africa, Some Preliminary Results, African Economic Research Consortium, Nairobi, 1998.
9. FAO. Enquête d'évaluation de la malnutrition à Madagascar, Direction Division de l'Information. 2007.
10. Hacquemand J. La faim dans le monde et politiques agricoles et alimentaires. Conseil Economique et Social. 2008.
11. Kasy E. La malnutrition vers le changement d'approche en matière de gouvernance pour la lutte contre la pauvreté, 3ème JSDC CAMES Université Félix Houphouët Boigny. 2017
12. World Health Organization (WHO). Child growth standards: weight-for-height. 2006.
13. Ministère de la santé publique de Madagascar. Dépistage et prise en charge de la malnutrition aiguë, Antananarivo. 2009.
14. Ahmed T, Ahmed AM. Reducing the burden of malnutrition in Bangladesh. *BMJ*. 2009;339:1060.
15. Engebretsen I, Tylleskär T, Wamani H, Karamagi C, Tumwine JK. Determinants of infant growth in Eastern Uganda: a community-based cross-sectional study. *BMC Public Health*. 2008;8:418.
16. Bhutta Z, Das J, Rizvi A, Gaffey MF, Walker N, Horton S, et al. Maternal and child nutrition 2: Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? *Lancet*. 2013;382:452–77.
17. Beiersmann C, Bermejo Lorenzo J, Bountogo M, Tiendrebeogo J, Gabrysch S, Yé M, et al. Malnutrition determinants in young children from Burkina Faso. *J Trop Pediatr*. 2013;59(5):372-9.
18. Ergin F, Okyay P, Atasoylu G, Beser Nutritional status and risk factors of chronic malnutrition in children under five years of age in Aydin, a western city of Turkey. *Turk J Pediatr*. 2007;49:283–9.
19. Repoblikan'i Madagasikara. Politique Nationale de Nutrition, Primature, Antananarivo. 2004.

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