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Study of the Factors Favoring Acute Malnutrition in Children under Five Years Old in Malian War Refugee Camps "Case of the Saagnognongo camp"

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Abstract **Original Research Article**

Introduction: Reducing infant and child mortality and morbidity as well as the suffering of refugees requires the fight against malnutrition, particularly acute malnutrition which mainly affects children under the age of five. This scourge continues to disrupt the well-being of several families in the Saagniogniogo refugee camp, despite all the appreciable efforts made by the Burkinabé State and its partners. This was a cross-sectional study with a descriptive aim. The objective of the present study was to determine the factors favoring the occurrence of acute malnutrition in children under five years of age in the Malian war refugee camp of Saagniogniogo. ***Materials and methods***: Through a cross-sectional survey, we determined the qualification of health personnel for the management of acute malnutrition, the impact of the living environment and the refugee context and the knowledge of mothers on the child nutrition and hygienic-dietary measures in the Malian war refugee camp of Saagniognogo. We made a reasoned choice to retain all the 7 healthcare providers participating in the infant consultation. For the choice of mothers of children under five years old, we carried out simple random sampling to have a representative sample. We therefore retained 86/115 mothers of children under five years old with reference to the table by KREJCIE and MORGAN. This table has a confidence level set at 95% and precision at 5%. ***Results:*** It appears from our results that the refugee context has considerably reduced the purchasing power of refugees. Of the 86 mothers surveyed, 47, or 54.65%, say they have other sources of income apart from the aid granted and 39 mothers, or 45.35%, are entirely dependent on humanitarian aid. The 47 mothers with other sources of income say that they can only provide one meal per day with their own funds. Of the 5 healthcare providers, 3 or 60% know the MAM classification criteria. ***Conclusion***: This study certainly allowed us to understand that malnutrition in Malian war refugee camps is favored by the mothers' lack of knowledge of hygienic and dietary measures, the environment and living conditions and the qualification of staff. for nutritional monitoring of children under five years old.

Keywords: Contributing factors, acute malnutrition, children under five, refugee camps, Saagniognogo.

INTRODUCTION

War, an avoidable evil, causes millions of victims in the world, with more than 45 million people counted as refugees according to the United Nations (UN) [1].

Worldwide, there are 11.7 million refugees supported by the High Commission for Refugees (UNHCR). This figure corresponds to 1/5 of the world's refugees; 80% of these refugees are in developing countries [2]. In these developing countries, 143 million children under the age of 5 are underweight due to a lack of adequate food [3]. Refugees are dependent solely on humanitarian aid provided by host countries and non-governmental organizations (NGOs). To date, only 32% of this aid is received by refugees [4].

Saagniogniogo, this village located on the outskirts of Ouagadougou welcomes Malian war refugees. These refugees have settled in precarious conditions; however, they must share local infrastructure with the 1500 inhabitants of this village. Access to basic resources and basic services is jeopardized either because of difficulty of access or because of excessive overcrowding in the camps.

These conditions create a significant number of cases of malnutrition among children under five years old. In November 2012, a nutritional survey carried out by Médecins Sans Frontières (MSF) revealed that nearly one in five children, or 17%, was malnourished and that 4.6% of children suffered from severe acute malnutrition after their arrival in the camps. Malian refugees [5].

In one year, 43,000 Malians entered Burkina Faso and 90% of this population settled in the Sahel region. Children represent 21% of this population. They are installed in the different camps of: Ferrerio, Dibissi, Ngatourou-niénié, Saagnioniogo, Djibo; Dori, Bobo and Gandafabou. These refugees are followed by nearly 60,000 animals which can degrade the environment and well water, which compromises the hygiene of the camps [6].

Saagnioniogo, this village, located 35 km from Ouagadougou, has hosted nearly 2,700 Malians since October 2012, in one of the three camps set up by the High Commission for Refugees (UNHCR). After their installation, the problem of malnutrition was highlighted by a nutritional survey carried out by the UNHCR and the Ministry of Health in February 2013. This survey revealed a MAM rate of 4.8% and 0.6% of MAS. The health center is overwhelmed by the influx of patients, which does not allow them to pay particular attention to children under five years old. The curative consultation increased from 2 to 30 consultations per day [7].

Research question:

What are the factors favoring the occurrence of acute malnutrition among children under five years old in the Malian war refugee camp of Saagniogniogo ?

GOALS

General objective:

Study the factors favoring the occurrence of acute malnutrition among children under five years old in the Malian war refugee camp of Saagniogniogo

Specific Objectives:

- Determine the living conditions and environment of refugees living in the Saagniogniogo camp.
- Determine the knowledge of mothers of children under five years old on hygienic and dietary measures in the Malian war refugee camp of Saagniogniogo.
- Determine healthcare providers' knowledge of nutritional monitoring and surveillance of children under five in the Saagniogniogo Malian war refugee camp.

ASSUMPTIONS:

ϖ The unfavorable living conditions and environment favor the occurrence of acute malnutrition among children under five in the Saagniogniogo Malian war refugee camp.

ϖ Mothers' insufficient knowledge of health and diet measures favors the occurrence of acute malnutrition among children under five in the Malian war refugee camp of Saagniogniogo.

ϖ Insufficient knowledge of health care providers on nutritional monitoring and surveillance favors the occurrence of acute malnutrition among children under five in the Saagniogniogo Malian war refugee camp.

MATERIALS AND METHODS

Study Location

The village of Saagniogniogo is administratively part of the rural commune of Pabré. It is located 35 km from the capital Ouagadougou. The CSPS supports indigenous populations and Malian refugees.

The CSPS falls under the Sig-Noghin health district. It opened its doors on January 29, 2007 and carries out curative, preventive and promotional care activities.

Services are provided by health personnel made up of state agents and support staff assigned by NGOs. The Saagniogniogo refugee camp is located in the north center of the village and is almost 700m from the CSPS. It is established on a flat land of 16 hectares and has a population of 1911 inhabitants, including 958 men, 961 women, 115 mothers of children under five years old and 256 children under five years old according to the results of the registration biometrics of refugees in Burkina Faso on March 4, 2014. The refugees are more numerous than the villagers for this purpose. The camp is divided into two compartments, one part made up of a few permanent concessions serving as an office for NGOs and CONAREF. The second part is made up of the tents which serve as habitat for the refugees. Everything is surrounded by a mesh fence for the safety of property and people.

Type and Period of Study

We carried out a cross-sectional study with a descriptive aim with a mixed approach, which took place over a period of 3 months from June to August 2014.

Study population

The population of this study consists of:

ϖ Healthcare providers:

These are the agents participating in the consultation of infants and who are involved in nutritional monitoring and surveillance activities.

ϖ Mothers of children under five years old:

Mothers are the people responsible for feeding children. Their knowledge of health and diet measures and their perceptions of living conditions and environment will make it possible to identify the factors favoring the occurrence of acute malnutrition.

Inclusion criteria

For mothers of children

- Being the mother of a child under five years old living in the camp;
- Be present at the time of the study
- Agree to submit to the study.

For healthcare providers

- Be a healthcare provider participating in the consultation of children under five years old living in the Saagniogniogo Camp,
- Be present at the time of the study
- Agree to submit to the study.

Sampling process

Our sample was composed of:

¬ Care providers: 07

¬ Mothers of children under five: 86

That's a total of 93 people to investigate.

Sampling

¬ For the nursing staff, we made a reasoned choice to retain all the healthcare providers participating in the consultation of infants.

¬ For the choice of mothers of children under five years old, we carried out simple random sampling to have a representative sample. We therefore retained 86/115 mothers of children under five years old with reference to the table by KREJCIE and MORGAN. This table has a confidence level set at 95% and precision at 5%.

The method used for data collection was the survey.

Collection techniques

The following techniques were used for the collection of study data:

¬ The questionnaire, to assess the level of knowledge of healthcare providers on nutritional monitoring and surveillance;

¬ The interview with the mothers allowed us to assess the living conditions and environment of the refugees as well as the level of knowledge of mothers of children under five years old on hygienic and dietary measures;

¬ Observation/inspection, to verify the existence of monitoring equipment and to assess the condition of this equipment.

Data collection instruments

We used the following collection instruments for our study:

¬ A self-administered questionnaire addressed to healthcare providers responsible for nutritional monitoring and surveillance;

¬ A semi-structured individual interview guide addressed to mothers of children under five years old;

¬ A checklist of nutritional monitoring and surveillance equipment.

Administrative and ethical considerations

The collection of data was subject to a request for authorization to investigate bearing the references No. 2014-138/MS/SG/ENSP/DRO of 04/16/2014 was sent by the regional director of the ENSP of Ouagadougou to the head of CONAREF who gave his agreement through authorization No. 14-00296/MAECR/CONAREF/C of July 15, 2014.

Data entry and analysis:

Data were analyzed using SPSS version 25.0 software. The Excel version 2010 spreadsheet was used to design the graphics and the Word software version 2010 was used to enter the texts.

Study results

Results relating to the conditions and living environment of refugees

⎫ Purchasing power

Our results show that the refugee context has considerably reduced the purchasing power of refugees. Of the 86 mothers surveyed, 47, or 54.65%, say they have other sources of income apart from the aid granted and 39 mothers, or 45.35%, are entirely dependent on humanitarian aid. The 47 mothers with other sources of income say that they can only provide one meal per day with their own funds.

⎫ The quantity and quality of food

- The monthly allocation

All the mothers surveyed affirm that they have a monthly allocation of 6 liters of oil for 8 people per person, 6kg of rice per person, 3kg of CSB (corn soya blend), 3kg of beans and 3500 FCFA.

- The number of meals per day

All mothers find that the foods they eat allow them to have only two meals a day.

- The quantity and quality of food

The quantity of food is considered insufficient because it does not provide three meals a day.

The quality of the food is considered satisfactory because the supply contains protein foods, lipid foods and carbohydrate foods.

¬ Eating habits

All the mothers surveyed affirm that the allocation does not take into account their eating habits, which mainly consist of milk and meat. As a result their eating habits have changed.

¬ Congestion

Table 1: Distribution of people per tent, n=86

Number of people per tent	Number of tents per person	%
Tents for 02 people	07	8,14%
Tents for 03 people	20	23,26%
Tents for 04 people	09	10,46%
Tents for 05 people	09	10,46%
Tents for 06 people	18	20,93%
Tents for 07 people	09	10,46%
Tents for 08 people	06	6,98%
Tents for 09 people	03	3,49%
Tents for 10 people	04	4,65%
Tents for 11 people	1	1,62%
Total	86	100%

Source: (COULIBALY K, 2014)

Of the 86 mothers who were the subject of our survey, 50 or 58.14% live in their tent with 5 to 11 people.

Out of 86 mothers surveyed, 58 or 67.43% say they receive nutritional education sessions and 28 mothers or 32.57% have no idea about nutritional education.

All mothers who received nutritional education sessions received it during vaccination sessions or during a consultation.

Monitoring the nutritional status of children

Of the 86 mothers interviewed, 23 or 26.74% stated that the nutritional status of their child was monitored. Among these monitored children, 34.78% are monitored during vaccination sessions and 65.22% do not have a regular monitoring period. On the other hand, 63 or 73.26% of mothers affirm that the nutritional status of their child is not monitored.

- Availability of monitoring equipment

The following table gives the level of availability of the equipment with regard to the previous categorization.

Table 2: Level of availability of monitoring equipment per consultation unit, n=03

Terms	Effective
Not satisfactory	2
Unsatisfactory	0
Satisfying	0
Quite satisfying	1
Very satisfying	0
Total	**03**

Source: (COULIBALY K, 2014)

2/3 of consultation units have an unsatisfactory level of availability of nutritional monitoring equipment.

¬ The reception environment

⎫ Access to drinking water

All the mothers surveyed say they get their water from the taps installed in the camp.

⎫ Latrines

All the mothers say that they use the latrines regularly and that the camp is equipped with 40 latrines for all the 2,800 inhabitants of the camp, or 70 people per latrine.

¬ Ages of mothers surveyed

⎫ Habitats

All the mothers interviewed found their homes to be in poor condition and uncomfortable.

⎫ Living conditions in the camp

Of the 86 mothers interviewed, 33 or 38.37% find that the conditions in the camp are acceptable and 53 or 61.63% find that the conditions are bad. Furthermore, none of them find that the living conditions in the camp are good.

Results relating to mothers' knowledge of health and diet measures

The age of the mothers is between 17 and 45 years old. The following table gives the distribution by age group.

Table 3: Distribution of mothers by age, n=86

Age groups of mothers surveyed (year)	Effective	%
[17-25]	31	36,05%
[26-30]	20	23,25%
[31-45]	35	40,70%
Total	**86**	**100%**

Source: (COULIBALY K, 2014)

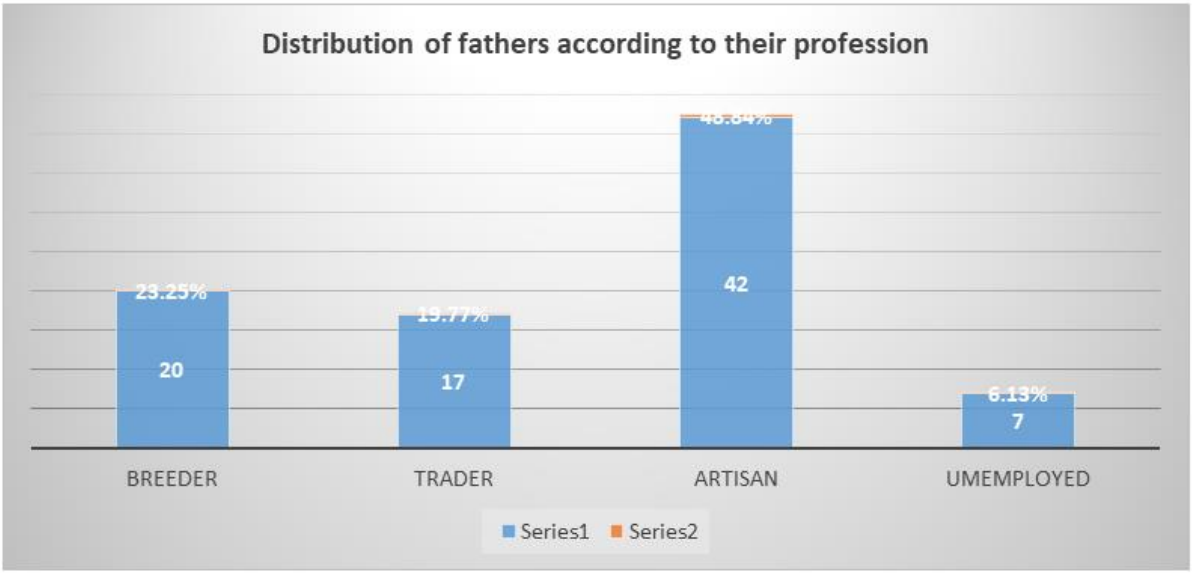
The majority of mothers surveyed 51 or 58.30% were aged between 17 and 30 years old.

¬ Marital situations of mothers
Married women accounted for 86.04%.

¬ Educational level of mothers
The majority of women surveyed were non-literate with 90.70%.

¬ Profession of mothers
We found that of the 86 mothers surveyed, 57 or 66.28% are housewives, 27 or 31.40% are artisans and 2 or 2.32% are traders.

¬ Profession of the father of the family
The distribution of fathers according to their profession is given by the following graph



Graph 1: Distribution of fathers according to their profession
Source: (COULIBALY K, 2014)

It appears from our results that 42 or 48.84% of fathers are artisans, 17 or 19.77% are traders, 20 or 23.25% are breeders and 7 or 6.13% are unemployed.

¬ Mothers' knowledge of weaning

19/86 or 22.09% of mothers do not know the exact age at which weaning begins. And 67 of the mothers questioned, or 77.90%, know that other foods must be added to breast milk from 6 months onwards.

Ablactation

All 86 mothers interviewed indicated brutal ablation as a method of stopping breastfeeding to prevent the child from attaching to the breast.

Findings related to provider knowledge of nutritional monitoring and surveillance

Professional characteristics of healthcare providers

The staff consists of 1 doctor, 1 state nurse, 1 certified nurse and 2 auxiliary health workers.

¬ Knowledge of healthcare providers on methods for assessing nutritional status

All healthcare providers, i.e. 5/5, cited as methods of assessing nutritional status: measurements (PBMH), indices (P/T) and indicators (E-T). Furthermore, 2/5 or 40% of healthcare providers cited other methods in addition to these methods which are among others: measurements (weight and height), indices (P/A, T/A, BMI), the indicators (Z-score). But none of the healthcare providers cited the MUAC/A.

Healthcare providers' knowledge of nutritional monitoring

¬ Knowledge of healthcare providers on interpreting growth curve trends

All healthcare providers, i.e. 5/5, know that the ascending curve is synonymous with good growth, 4/5, i.e. 80%, know that the plateauing curve indicates a sign of danger, and 4/5, i.e. 80%, know that the descending curve indicates a sign of seriousness.

¬ Knowledge of healthcare providers on the components of PMA/nutrition

Of the 5 health care providers surveyed, 2, or 40%, know that nutritional education is one of the components of PMA/nutrition, only 1/5, or 20%, cited nutritional monitoring and porridge demonstration. Furthermore, 2/5 or 40% do not know the components of PMA/nutrition.

¬ Knowledge of healthcare providers on the classification criteria for MAM and SAM

⌋ Knowledge of healthcare providers on MAM classification criteria

Of the 5 healthcare providers, only 3 or 60% know the MAM classification criteria.

⌋ Knowledge of healthcare providers on SAM classification criteria

4/5 or 80% of providers know the MAS classification criteria.

DISCUSSION OF RESULTS

Results relating to the living conditions of refugees

¬ refugee context

⌋ Purchasing power of refugees

The refugee context has reduced the purchasing power of refugees. Something that no longer allows them to meet their daily needs. According to DUPIN H. and RAIMBAULT A. M. one of the major factors in the occurrence of acute malnutrition is low purchasing power [8]. Of the 86 mothers surveyed, 47, or 54.65%, say they have other sources of income apart from the aid granted, however a significant number of 39 mothers, or 45.35%, are entirely dependent on humanitarian aid. This does not allow them to ensure their daily ration. MSF indicate that the refugees in the Mbéra camp are entirely dependent on humanitarian aid and the insufficiency of this aid is a cause of the occurrence of 13% of cases of acute malnutrition in this camp [9].

Quantity and quality of food

- Quantity of food

All the mothers surveyed affirm that they have a monthly allocation of 6 liters of oil for 8 people per person, 6kg of rice per person, 3kg of CSB (corn soya blend), 3kg of beans and 3500 FCFA. They claim that the food they receive allows them to have only two meals a day. This amounts to saying that the food perceived is of insufficient quantity. Something that does not ensure that children have a sufficient and balanced diet. DUPIN H. and RAIMBAULT A. M. find that an unbalanced food intake is a factor in the occurrence of malnutrition [8].

- Food quality

Our results show that the perceived food is of satisfactory quality. The endowment contains foods with high carbohydrate, lipid and protein values. This allows children to have a balanced diet. According to DUPIN H. and RAIMBAULT A. M. depriving children of foods with high biological values is a factor that can promote the occurrence of malnutrition [8].

Congestion

A large part of the mothers surveyed 50/86 or 58.14% are 5 to 11 people living together in the same tent. This result is not far from that of ZONGO J.M. who found in his study that 67.4% of households have more than 5 people [10]. In a context of resource scarcity, this situation can lead to the establishment and resurgence of cases of malnutrition.

¬ Change in eating habits

All the mothers surveyed, 100%, affirm that the refugee context has changed their eating habits, something which can lead to a disruption in the children's diet and cause malnutrition. According to CARINE E. and OULD MAHFOUDH M. one of the immediate causes of the occurrence of malnutrition in the Mbéra camp is a diet unsuitable for the needs of children [11].

Results relating to the living environment of refugees

Isolation

⌋ Access to food

Most mothers 57/86 or 66.28% say they do not have access to food. And none of the mothers surveyed have easy access to food. All the mothers affirm the lack of market in the host village and in the camp and the nearest market is 35 km away. Something that does not allow children to have a diversified diet. According to the July 2012 SMART survey carried out in the Tilla camp, it appears that the rate of acute malnutrition is 14.8% and one of the major causes of this phenomenon is difficult access to basic resources [12].

⌋ Access to primary health care

- Nutritional education

The majority of mothers surveyed 58/86 or 67.43% say they receive nutritional education sessions and a significant number of 28 mothers or 32.57% have no idea about nutritional education. All mothers who received nutritional education sessions received it during vaccination sessions or during a consultation at the CSPS. Our results are close to those of OUEDRAOGO T. who found in his study that 90/131 mothers (68.7%) claimed to have received nutritional advice [13]. Nutritional education is the appropriate channel to give

mothers the necessary knowledge to ensure adequate nutrition and monitoring for their children.

Nutritional monitoring

The majority of mothers interviewed 63/86 or 73.26% of mothers affirm that the nutritional status of their child is not monitored. Our results are very less satisfactory than those of ZONGO J. M. who found in his study that out of 304/330, or 92.12%, claimed to have already been in contact with the CNRS services for nutritional monitoring and all the mothers were satisfied with the progress of the activity [10]. Nutritional monitoring is the safest way to assess the nutritional status of the child and failure to do so limits the early detection of nutritional diseases.

- Availability of nutritional monitoring equipment

None of the 3 consultation units has a very satisfactory level of availability of nutritional monitoring equipment; our results show that 2/3 of the consultation units have an unsatisfactory level of availability and 1/3 of the consultation units have an unsatisfactory level of availability. satisfactory level of availability. This result is almost similar to that of ZONGO J. M. who found in his study that 3/14 health facilities have a satisfactory level of availability of equipment and 2/14 have an unsatisfactory level of availability [10]. The availability of monitoring equipment is imperative for regular monitoring and assessment of the nutritional status of children under five to enable good psychomotor development.

¬ The living environment of refugees

Access to drinking water

All the mothers interviewed say they have access to water through taps. This result is more satisfactory than that of ZONGO J. M. he finds in his study that the main source of drinking water supply is drilling (80.3%). But a significant portion of households (13%) drink water from traditional wells [10]. Water is a potential source of several diseases; consumption of drinking water helps to compensate for the occurrence of certain nutritional disorders.

⎫ Latrines

All the mothers interviewed say they used the latrines, but the number of latrines is significantly lower than our expectations of 10 people per latrine. Our results are more satisfactory than those of the SMART survey of July 2012 in Niger which found that 82% of the population practices open defecation [12]. The lack of latrines increases the risk of proliferation of diarrheal diseases and digestive disorders which can hinder the healthy growth of children.

⎫ Habitats

All of the mothers interviewed found that their homes were in poor condition and uncomfortable. The tranquility of the environment, the security and comfort of the living environment promote good psychomotor development in children. MELLA P. is of the same opinion; she finds that a family living in comfort and tranquility can better take care of the basic physical, psychological and social needs of the child [14].

Living conditions of refugees in the camp

From our results it appears that 53/86 or 61.62% of mothers say that living conditions are bad. Doctors Without Borders (MSF) found that precarious living conditions were one of the major factors influencing acute malnutrition, from which 13% of children suffered in the Mbéra camp in Mauritania [15]. It is therefore important to understand that poor living conditions do not promote good growth in children.

¬ Knowledge of mothers on the practice of exclusive breastfeeding

Almost all mothers do not know how to conduct exclusive breastfeeding. They indicate that breastfed infants should be given water or other drinks. This result is not satisfactory. MILOGO M. in his study finds that exclusive breastfeeding is practiced by 45.56% of mothers compared to 54.44% who use other foods in addition to breast milk [16]. Exclusive breastfeeding is the basis of good infant nutrition and its absence or insufficiency can endanger the health and nutrition of the baby.

¬ Mothers' knowledge of weaning

Our survey reveals that 67 of the mothers questioned, i.e. 77.90%, know that other foods must be added to breast milk from 6 months onwards and a significant number of 19/86 i.e. 22.09% of mothers do not know the exact age to start complementary feeding. Our results are similar to those of OUEDRAOGO T [13]. He mentions in his study that 91/131 mothers or 69.87% know the age required for weaning. In fact, inadequate food intake and at inappropriate times weakens the child and makes him vulnerable to nutritional diseases. In addition, of the 86 mothers interviewed, 84 or 94.67% indicate that porridge must be introduced after the age of 6 months and 17 or 19.77% also indicate milk and 4 or 4.65% also indicate the soup. This result is less satisfactory than that of MILOGO M. who found in his study that 64.45% of women use simple cereal-based porridge or family dishes as complementary food before 6 months [16]. The quality of this porridge leaves something to be desired, since it is made only from local cereal flour without added nutrients.

¬ Knowledge of healthcare providers on the rate of monitoring of children under five years old

Our results show that all healthcare providers know the rate of nutritional monitoring of children under five years old. This constitutes a major asset for the prevention of malnutrition. Our results are more satisfactory than those of BAMBIO D. who found in his study that only 71.47% of healthy infant consultation station managers (CNRS) know the frequency of visits

from 0 to 11 months and 28.57% from the third to the fifth year of life [17].

¬ Knowledge of healthcare providers on methods for assessing nutritional status

Our results show that all healthcare providers, i.e. 5/5, know the three main methods of assessing nutritional status, namely measurements, indices and indicators. Furthermore, none of the providers was able to cite all the components of the various methods. BAMBIO D. found a similar result in his study. He states that no CNRS post manager was able to fully cite all the anthropometric measurements to be noted during the consultation [17].

¬ Knowledge of healthcare providers on interpreting growth curve trends

The majority of providers 80% know how to interpret the trends of the growth curve. This result does not seem satisfactory to us because knowledge of trends in the growth curve is essential for correct monitoring of the nutritional status of children. Our results are superior to those of ZONGO J.M. from his study it appears that 50% of healthcare providers do not know how to interpret the trends of the growth curve [10].

Knowledge of healthcare providers on the classification criteria for MAM and SAM

The present study reveals that 60% of healthcare providers know the MAM classification criteria. In addition, 80% of providers know the MAS classification criteria. This result is higher than that of OUEDRAOGO T. from his study it appears that respectively 8/32 25% and 7/32 21.88% providers know the classification of moderate acute malnutrition and severe acute malnutrition [13]. Knowing the classification of acute malnutrition allows for a correct diagnosis of this pathology and allows providers to intervene in a timely manner. A failure to carry out this task has very harmful consequences on the nutritional status of children.

CONCLUSION

We wanted to make our modest contribution to the fight against this scourge through this cross-sectional study with a descriptive aim which focused on the factors favoring the occurrence of acute malnutrition in children under five years old in the camp. of Malian war refugees from Saagniogniogo. To do this, we explored the living conditions and environment of refugees as well as the knowledge of mothers on hygienic-dietary measures and that of healthcare providers on nutritional monitoring and surveillance, through a survey that used observation, interview guide and self-administered questionnaire as a technique. The three hypotheses put forward at the start of our study were confirmed following the analysis of the data collected. Our study highlighted insufficiencies in the living conditions and environment of refugees linked to the low quantity of humanitarian aid, overcrowding, the poor condition of habitats, and isolation. This study detected insufficiencies in the knowledge of mothers linked on the one hand to their low level of education, and on the other hand to their lack of knowledge of how to conduct exclusive breastfeeding and ablation. This study also detected inadequacies in the knowledge of healthcare providers, which are linked to their low experience and a lack of continuing training. We also made recommendations aimed at improving the living conditions and environment of refugees in the short and medium term and strengthening the knowledge of mothers and healthcare providers.

Aware that our study did not address all the factors favoring the occurrence of this problem, we believe that other studies will be able to continue the work that we have undertaken. A study addressing the knowledge, skills and practices (KAP) of children's parents and caregivers could help to further elucidate the inadequacies noted by this study and provide much more guidance on effective actions to be taken to improve the nutritional status of children in Malian war refugee camps.

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