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Analysis of Death Cases of Children Hospitalized at the Koutiala URENI from October 01, 2021 to March 31, 2022

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Abstract

Infant and child mortality remains a major concern worldwide and more particularly in developing countries such as Mali. This is to better understand the reasons for this high mortality in Koutiala in the Sikasso region of Mali. Its objective was to assess the main determinants of deaths of malnourished children under 5 years of age occurring at the URENI (Unit for Recovery and Intensive Nutritional Education) in Koutiala. Materials/Methods: this was a cross-sectional descriptive study that took place in the URENI pediatrics department of the Koutiala reference health center, an exchange with the district management team, the documentary review , Observations on the task of the agents, Interviews of the actors involved in the care, analysis of the medical files of the malnourished children and the individual sheets for the follow-up of the malnourished cases admitted to the URENI. A pre-established framework made it possible to collect data through the admission register of malnourished children. The entry and analysis of the data collected were carried out using SPSS 21.0 and EXCEL 2016 software. Results: Children aged 6 to 23 months who died represented 44.4% and 72.2% were male. 11.1% of the children came from the urban city and 18.1% who were from the rural area; the most frequent type of malnutrition was marasmus with 59.7% followed by kwashiorkor with 20.8%. More than half (88.9%) of the children were seen by referral. Conclusion: this study revealed in Koutiala that marasmus was the most frequent form of malnutrition and many children who died came from outside the health district. It was also noted that infection (sepsis) was the main cause of death of children hospitalized at the URENI in Koutiala.

Keywords: Analysis; Death ; URENI; Koutiala; 2021-2022.

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1. Introduction

In Mali, malnutrition is a public health and even development problem. Infant and child mortality remains a global concern, with one child dying every 4 seconds despite enormous progress [1]. Moreover, the geographical distribution of these deaths shows that developing countries pay the heaviest price, with more alarming levels of mortality and considerable gaps compared to rich countries. From 2005 to 2010, the average global infant mortality rate before the age of 5 was 59‰ with a risk of infant death affecting 42‰ of these children [1]. In 2010, the infant and child mortality rate was estimated at 119‰ in the African region of the WHO against 57‰ worldwide and only 6‰ in industrialized countries [2]. According to the 2011 World Health Statistics of the WHO, the total number of deaths of children under 5 years old is 8.1 million in 2009 [5]. New estimates from the 2014 report show that in 2013, 6.3 million children under five died of mostly preventable causes, about 200,000 fewer than in 2012; nevertheless, this figure still represents nearly 17,000 child deaths per day [3]. More than 70% of these deaths occur in Africa and Southeast Asia, mostly in rural areas, in poor and less educated families [4]. The causes of death of children are multifactorial, of environmental, socioeconomic and cultural orders. Malnutrition is a main cause of infant and child mortality, reported by several authors. [1, 4]. Malnutrition is a pathological state resulting from the deficiency or relative excess of one or more essential nutrients, whether this state manifests itself clinically or is detectable only by biochemical, anthropometric or physiological analyzes [5]. Malnutrition is one of the causes of infant mortality worldwide. Despite excess food production, malnutrition rates remain very high and constitute a major public health problem [6]. According to the SMARTs, the prevalence of global acute malnutrition (GAM) is around 10%, which puts Mali on alert and during the last three years severe acute malnutrition (SAM) was 2.0% in 2019, 1.3% in 2020 and 1.8% in 2021. For the Sikasso region, this prevalence was respectively 6.5% in 2019, 5.8% in 2020 and 6.1% in 2021. That of SAM over the last three years is 1.1% in 2019; 1.0% in 2020 and 0.6% in 2021 [7, 8, 9]. The Sikasso region is one of the centers of high infant and infant-child mortality, since the rates amounted respectively to 111‰ in 2018 the EDSM-VI for infant-child mortality [10]. Pediatric hospital mortality within the CSRéf of Koutiala in the various units should not be overlooked. For the same periods in nutrition in the region of Sikasso, the health district of Koutiala recorded the highest figures with respectively 227; 175 and 166 cases. Those representing case fatality rates of 68%; 63% and 64.84% of all deaths in the region [9].

Research Question and Study Objectives:

Research question : Why is infant and child mortality high at the URENI of the CSRéf of Koutiala? Main objective : Analyze the main causes of death of hospitalized malnourished children under 5 at the URENI of the CSRéf of Koutiala from October 01, 2021 to March 31, 2022.

Materials/Methods:

This was a cross-sectional study that took place in the URENI pediatric service of the Koutiala reference health center with discussion with the district management team, the documentary review, Observations on the task of the agents, Interviews of the actors involved in the care, the analysis of the audit sheets of the deaths of malnourished children and the individual sheets for the follow-up of the malnourished cases admitted to the

URENI. A pre-established framework made it possible to collect data through the admission register of malnourished children. Data entry and analysis were performed using SPSS 21.0 and EXCEL 2016 software. The results are presented in the form of tables and graphs through Excel 2016 and SPSS 23.0 software. The document was written using Microsoft Word 2016 software.

2. Results

The analysis of the files made it possible to record 72 cases of death, the results of which are represented in the tables and graph below.

Table 1: Distribution of deceased children according to age groups.

Age	Number	Percentage (%)
Less than de 6 months	4	5,6
6 - 23 months	**32**	**44,4**
24 - 59 months	36	50
Total	**72**	**100**

We noted that 50% of the children who died were between 24 and 59 months old with an average age of 26.7 months.

Table 2: Breakdown of deceased children by gender.

Sex	Number	Percentage %
Female	**52**	**72,2**
Male	20	27,8
Total	**72**	**100**

In our study we observed a predominance of the female sex with a ratio of 2.6 in favor of girls.

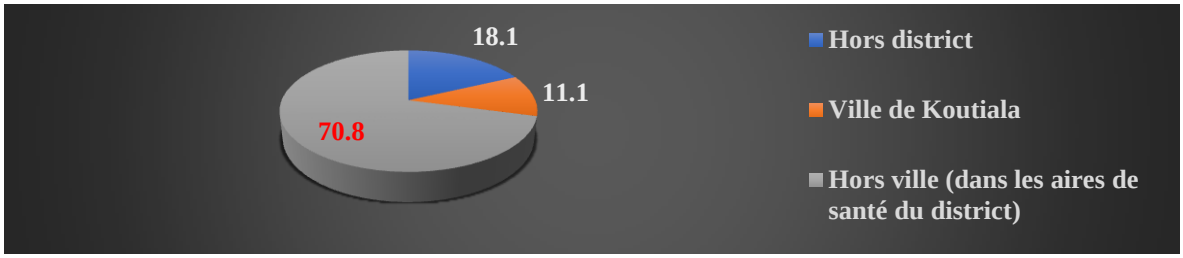

Chart 1: Breakdown of deceased children by origin. In our study, 11.1% of the deceased children came from the city of Koutiala and 70.8% outside the city but in the various CSComs of the health district by reference.

Table 3: Distribution of deceased children by mode of admission.

Mode of admission	Number	Percentage (%)
Live	8	11,1
Reference	**64**	**88,9**
Total	**72**	**100**

More than half of the deceased children were admitted by referral from another health facility.

Table 4: Distribution of deceased children according to the form of malnutrition on admission.

Type	Number	Percentage%
Slump	**43**	**59,7**
Kwashiorkor	15	20,8
Mixed form (marasmus + kwashiorkor)	12	16,7
Spécific cases (less than de 6 months)	2	2,8
Total	**72**	**100**

Marasmus accounted for more than half (59.7%) of children who died.

Table 5: Distribution of deceased children by cause of death.

Causes of death	Number	Proportions
Heart disease	3	4
Septic shock	1	1
Sepsis	**34**	**47**
Pneumonia	7	10
Malaria	24	33
Pneumococcal meningitis	1	1
Pulmonaris tuberculosis	1	1
Occlusive syndrome	1	1
Total	**72**	**100**

In our study, sepsis and malaria represented the most frequent causes of death with 47% and 33% respectively,

followed by pneumonia with 10%.

Table 6: Distribution of deceased children according to length of stay in the program.

Lengh of stay	Number	Percentage %
Less than a day	**45**	**62,5**
5 days or more	17	23,6
3 - 4 days	10	13,9
Total	**72**	**100**

In our study, more than half (62.5%) of the children died within one day of hospitalization.

3. Constraints/Limitations of the study

Data collection was not exhaustive due to missing information in some clinical files. Insufficiency in the archiving of the files of admitted children and in the filling of the files (many abbreviations, some illegible writings, omission of certain information); The 6-month period covered by our study does not allow us to confirm with certainty the consistency of our observations over time, nor to make a comparative study of them. Despite these limitations, we were able to compare our results with those of other authors and conduct the following comments and discussions.

4. Talks

Sociodemographic and economic characteristics: In our study, the female sex was predominant with a ratio of 2.6 in favor of girls. Studies by BAZIE H in Ouagadougou in 2009 [11] and SANOU R. in Ouagadougou in 2012 [12] found a sex ratio in favor of boys of 1.03. The same is true for Cantagrel and his colleagues Arch Fr pédiatr 2000 [13], BAMBA D. at Finkolo in 2012 [48] with respectively a sex ratio of 1.3 and 1.7 in favor of boys. This predominance would be due to the fragility and exposure of little girls in homes. The average age of the deceased children was 26.7 months, which is comparable to those of BAMBA D in Finkolo in 2012 [13] who found an average age of 23.7 months in his study. This would be explained by the weaning which is frequent in this slice, especially if it is badly done In our study, 11.1% of the deceased children came from the city of Koutiala and 70.8% outside the city but in the health district. SANOU R. in his study in Ouagadougou in 2012 [12] on the other hand found that 79.93% came from the city of Ouagadougou. BARRY BOUBACAR OUMAR SANGARÉ in Gao in 2009 [15] meanwhile found 51.1% of the children came from the outlying districts of Gao. This high death rate is explained by the distance traveled before reaching the center, especially those coming from outside the district:

Aspects of caring for deceased children:

More than half (88.9%) of the children were received by referral from another health facility in our study. This

result is lower than that of AHMED I. at the CHU Yalgado OUEDRAGO in 2011 [16] who found 90.5% in his study. In our study, we noted a late recourse to health care through the assessment of the duration in the center before the death of children. More than half (62.5%) of the deceased children only stayed less than 24 hours in the service before their death compared to 23.6% who lasted more than 5 days in the service before their death. This could be explained by the socio-economic level of parents and geographical accessibility (distance from CSCom village and CSCom CSRéf) and decision-making which is generally made by the head of household alone, without taking into account the opinion of mothers of children.

Clinical aspects:

In our study, marasmus was the dominant clinical form with 59.7% followed by cases of kwashiorkor at 20.8%. This predominance was also reported by BARRY BOUBACAR OUMAR SANGARÉ in Gao in 2009 [16], during which the slump represented 54.4% against 29.3% of kwashiorkor and DIARRA SO. [56] who found a predominance of marasmus with 54.5%. Contrary to our result, SANOGO M. [14] found a predominance of kwashiorkor with 92.9%. Indeed, marasmus would be the most widespread form of severe acute malnutrition in the health district of Koutiala, this would be explained by the attachment of our rural populations to socio-cultural practices, especially the prohibitions on certain proteins of animal origin such as eggs. , multiple and close pregnancies of the woman, illnesses, inadequate nutrition of the breastfeeding woman and often the burden and occupation of the woman. We note that 47% of the children died as a result of sepsis (pulmonary and digestive) followed by malaria 33% and pneumonia 10% in our study. This is due to the immune system weakened by malnutrition, which promotes the occurrence of sepsis in these children.

Declaration of conflict of interest:

The authors declare no conflict of interest during this study.

5. Conclusion

This study was to study the main causes of death of malnourished children under 5 years old at the URENI of the CSRéf of Koutiala from October 01, 2021 to March 31, 2022 The results show that marasmus constituted the majority of the reason for admission of children to the URENI of Koutiala (59.7), the main causes of death were sepsis with 47% followed by malaria 33%. It was noted that 62.5% of children died in less than 24 hours after their admission to URENI.

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