



Prospective of infant morbidity and mortality in mothers of patients from 6 to 59 months admitted in two reference hospitals in Niamey, Niger

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ABSTRACT

Mothers arrive in pediatric institutions with a medical background psycho-emotionally burdened which affects the quality of the treatments. The aim of this study was to characterize the medical experience of mothers of patients from 6 to 59 months old admitted at the hospital in terms of morbidity and infant mortality. It's a descriptive cross-sectional survey conducted from 16 January to 2 May 2016 in two reference hospitals in Niamey. The mothers were interviewed on the medical history of their children. The study concerned 287 mothers of hospitalized children from 6 to 59 months old. 74% of them were between 18 and 35 years old; 62.02% not in school and 87.45% without income-generating activities. Among the children from 6 to 59 months old hospitalized or dead in the past, boys were leading in number with respectively, 64.52% and 53.92%. The findings from this study revealed that the hospitalizations and infant death most concerned the children from 6 to 11 months old with respectively, 42% and 48%. The results also showed that 15.38% of mothers were unsatisfied of the treatment during their last stay at the hospital. The morbidity was correlated with the sex ($P = 0.035$) and with the age group ($p = 0.004$) whereas the mortality was correlated with the age group only ($P = 0.0001$). Thus mothers still feel the past medical situation of their children that must be taken into account in the relations among the cures.

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INTRODUCTION

In the African region countries of the World Health Organization (WHO), infant morbidity and mortality still remain major public health problems. The infant mortality rate was estimated at 119‰ compared to 57

‰ at the global level and 6‰ in industrialized countries (WHO, 2012). In these countries, more than 70% of the death of children under five years are due to five major diseases: pneumonia, diarrhea, malaria, measles (Krug et al., 2004 ; WHO, 2004 - 2005). It's reported

that the prevalence of anaemia is high in children from 6 to 24 months old and it varies according to the sex and age group (Abdou et al., 2015). It is also established that malnutrition, by weakening the child's immune functions, contributes in large part to this mortality (Stéphane, 2004). In addition to this, there is a delay in the use of care by the persons in charge of the child (Sadou et al., 2016). As a result, patients often arrived at the hospital in an emergency case, sometimes made of hyperthermia (convulsive), anemia or respiratory distress (Sanou, 2012). Therefore, these symptoms represent both the main reasons for consultation and the causes of early childhood death (occurring within 72 hours) in the sub regions (Sanou, 2012; Bazié, 2009). Thus, the daily lives of mothers in our countries are made up of illnesses, hospitalizations and infant death. In order to better understand the state of mind of the consulting mother, it is essential to learn about the morbidity and infant mortality recorded by them. The objective of this study was to characterize the medical experiences with mothers of patients from 6 to 59 months old admitted in the hospital.

MATERIELS AND METHODS

Patients

The study took place from 16 January to 2 May 2016 in two reference hospitals in Niamey (National Hospitals of Niamey (HNN) and National Hospital of Lamordé). It concerned mothers of children from 6 to 59 months old hospitalized in pediatrics' emergency services.

Materials

- Children's health booklets;
- A semi-structured interview questionnaire;
- Calendar of local events.

Operating Protocol

The mothers were received on their arrival in the nurses' room for admission procedures. After stabilization and control of any medical complication in the child, the mother is interviewed on the past event of hospitalizations and death of their children. In

order to minimize the effects of methodological limitations (absence of civil status documents or health booklets) and the risks of sub-records of information, the study was more focused on the history of events of major morbidities (hospitalizations) and infant death (including neonatal mortality).

Inclusion criteria

Any consenting mother with a child from 6 to 59 months old hospitalized during the period of the study in the pediatric emergencies.

Exclusion criteria

Mothers with obese children, or with edema and those with children less than 6 months old or weighing less than 4000 g body weight were excluded from the study.

Non - inclusion criteria

Any mother of hospitalized children from 6 to 59 months old who was not consenting or whose child was clinically unstabilized.

Ethical consideration

The study was approved by the National Ethics Committee (n°010/2015/CCNE/ July-29-2015) and the Academic Scientific Council of the Abdou Moumouni University, and authorized by the officials of the two hospital centers. The protocol was consistent with the Helsinki declaration of 1975 revised in 2008: Participation in the study was voluntary. The purpose of the study was explained to the mothers and their informed consent was obtained.

Statistical analyses

The data were entered on the EPI-data 3.1 software and analyzed with the Stata 12 software. The Chi2 test at the 0.5% threshold of significance was used to search for correlations between the studied parameters.

RESULTS

Table 1 collects the socio demographic characteristics of mothers. The majority of the

mothers were from the urban community of Niamey (CUN), (68.64%) followed by those from the region of Tillabéry (29.27%) - this region enclave the CUN. Among them, 74% was between 18 and 35 years old; 62.02% have not been to school and 87.45% without income-generating activities.

Table 2 gives the distribution of socio demographic characteristics of children in the past who were hospitalized and/or dead according to the sex and age. In total, 32.40% of mothers had a hospitalized child and 35.54% had a dead one. The gender study of the concerned children showed that there were more boys hospitalized (64.52%) and dead (53.92%). The age distribution of hospitalizations and death places the age group 6 -11 months the first with respectively, 42% and 48% followed by 12 - 24 months with 41% hospitalizations and 37% of death. Hospitalizations were statistically correlated with sex (P = 0.035) and age (P = 0.004). As for mortality, it was only with age (P = 0.0001).

Table 3 shows the distribution of the causes of death by sex and the age group of children. The main causes of death among

boys were fever with 44% and diarrhea with 35%. In girls, the same causes were also found with relatively less fever, (38%) than diarrhea, (45%). The main causes of death in children from 6 to 11 months old were diarrhea with 44% and fever with 38%. In children of the age group of 12 - 24 months the same causes were found with always a predominance of diarrhea with 50% versus 30% of fever.

Table 4 reports the use of pediatric care institutions, the non-satisfaction of mothers and the average duration of previous hospital stays of mothers. Mothers had more frequented hospital structures for boys - 60 hospitalizations on 55 deaths: 110% vs. 70.22% among girls. However, mortality at the hospital was more important with girls, with 15.15% vs. 13.33% for boys. The mothers had stayed longer in hospital with the boys with 9 days ± 2 vs. 7 days ± 2 in girls. 15.38% of mothers were less satisfied with the care given to children in the age group of 6 - 11 months. For this same age group, the mothers remained not only for the longest interned (8 ± 2 days) and had recorded more hospital mortality with 19%.

Table 1: Socio demographic characteristics and medical history of maternal.

Characteristics	(N%)
Geographical origin	
CUN	197(68,6)
Tillabéry	84 (29,27)
Other	6 (2,09%)
Age groups	
< 18 ans	11(3,83)
18 - 35 ans	211(73,51)
> 35 ans	65 (22,66)
Education level of mother	
Not in school	178(62,02)
Primary	91(31,71)
Secondary	14(4,88)
Superior	4 (1,39)
Income generating activity	
With	36(12,54)
Without	251(87,45)
Medical experience of the children of the Mother	
History of hospitalization	93 (32,40)
History of death	102 (35,54)

Table 2: Distribution of morbidity and infant mortality by sex and age groups.

Characteristics	Hospitalized	<i>p</i>	Dead	<i>p</i>
	Sex (N%)			
Girls	33 (35,48) b	0,035	47 (46,07) b	0,650
Boys	60 (64,52) a		55 (53,92) a	
Age group (month)				
6 -11	39 (41,94) a	0,004	48 (47,06) a	0,0001
12- 24	38 (40,86) b		38 (37,25) b	
25- 59	16 (17,20) c		16 (15,69) c	

Table 3: Distribution of causes of infant death by sex and age group

Characteristics	Fever	Diarrhea	IRA	Other
	(N%)			
Girls n = 47	18 (38,30) c	21(44,69) b	2 (4,25) d	6 (12,76) d
Boys n = 55	24 (43,64) b	19 (34,54) d	4 (7,27) a	8 (14,55) b
6 -11 n = 48	18 (37,5) d	21(43,75) c	3 (6,25) b	6 (12,5) e
12 -24 n = 38	12 (31,58) e	19 (50) a	2 (5,26) c	5 (13,16) c
25 -59 n = 16	11 (68,75) a	0 (0,00) e	1 (6,25) b	4 (25) a

Nb: The majority of mothers reported a pronounced state of wasting in dead children

Table 4: Rates of use of care institutions, hospital mortality, non-maternal satisfaction and length of hospital stay

Characteristics	* Use of care institutions (UCI)	Hospital mortality *	**Non-satisfaction (NS) ** *)	*** Duration Average Stay (days)
N (%)				
Girl	33 (70,22) b	5 (15,15)a	3 (9,09) b	7 ± 1 b
Boy	60 (109,9) a	8 (13,33)b	7 (11,66) a	9 ± 2 a
6 -11	39 (81,25) c	7 (18,94)a	6 (15,38) a	8 ± 2 a
12 -24	38 (106) a	4 (10,52)c	4 (10,53) b	7 ± 1 b
25 -59	16 (100) b	2 (12,5)b	0 (0,00) c	7 ± 2 b

* TX (CUI) = (Death /hospitalization) x100

** TX (NS) = (number of mothers not satisfied/total mothers) x 100

*** DMS = (total number of days/# of cases) x 100

DISCUSSION

In this study, 32.40% of mothers stayed at least once in a hospital structure for their children. Boys, are more concerned with hospitalizations 64.52% $P = 0.035$, and 53.92% of mothers spent more time in hospital for the latter, $p = 0.004$. Indeed, there is sexual discrimination between girls and boys linked to biological or sociocultural factors (Grira, 2007). The age group of 6 -11 month with 42% is more concerned with hospitalizations and also by deaths with 48% ($P = 0.0001$). Our results are higher than those found in Congo Brazzaville (28%) despite an even greater age range of 1 - 11 months (Mabiala-babela et al., 2009). On the other hand, while in France, infant mortality represents in childhood (0 -14) years only 1.04% of all deaths (Plantaz, 2004) and Madagascar, 7.35% in children from 1 to 5 years old, (Ranaivoarisoa et al., 2011), the History of death Infants reveals an overall mortality of 35.54% among mothers. This clearly shows that the home environment influences the child's health (Akoto and Hill, 1988). Infant morbidity and mortality are higher in rural than urban areas. This, because not only is the city a factor in the modernization of behaviour (Caselli et al., 2002), but also because it is characterized by a more concentrated presence of socio-collective infrastructures that contribute to improvement of health indicators (Morrisson and Linskens, 2000). However, our results contrast with these assertions given 68.64% of the mothers reside in the urban community of Niamey (CUN). This could be related to the fact that the study took place in two urban hospital structures, the young age of mothers with 74% aged 18 and 35, their non-enrolment with 62.02% or the absence of income-generating activities at, 87.45% of them. The main causes of death reported by mothers are respectively diarrhea in girls with 44.69% and in boys, fever with 43.64%. The causes of death found in our series are stackable to those noted in several countries on the African continent. In Congo Brazzaville, between 1 and 4 years, mortality is dominated by severe

sepsis (22.4%) and malaria (22%) (Mabiala -babela et al., 2009). In Mali, in the pediatric service of CHU Gabriel Touré , malaria (23.9%), diarrhea, (20.4%) and malnutrition (31.7%) are the main causes of death (Sidibé et al., 2003). In the Bamako district, the causes of neonatal and infant child death are Acute Respiratory Infections – IRA- , (23.3%), malaria and diarrhea, (13.3%), malnutrition (10%) (Diakité , 2006). At the CHU-pediatric Charles de Gaulle, the IRA (30.6%), severe malaria (25.3%) and infectious gastroenteritis (22.3%) were the most lethal (Sib, 2006). In Senegal, mortality is dominated by neonatal (22%), infectious, (20), respiratory (16%), and neurological (12%) disorders (Sylla et al., 2009). Pediatric Emergency services manage situations for which the presence and medical care are necessary in a short time (Xavier, 1981). In the present study in the length of stay is long and particularly in the mothers of boys, 9 ± 2 vs. 7 ± 1 in girls. The study of Hospitalizations shows that children from 6 to 11 months old are those for whom the mothers remained the longest interned, (8 ± 2 days) and those for whom they are also less satisfied with the benefits with 15.38%. The reasons for their lack of satisfaction are mainly related to the lack of hospitality, the physical conditions of hospitalization and the cost of care and hospital stay. Moreover, while it is recognized that the capacity to take charge of emergencies contributes greatly to the reputation of a health facility (Xavier, 1981), in this study, hospital mortality remains among the highest. It is 15.15% for girls vs. 14% for boys and 19% for children from 6 to 11 months old. However, our results are less than 30% found in Senegal (Sylla et al., 2009), but they are approaching those reported in Burkina Faso, which are 18.09%, (Dabiré, 2004), while, hospital mortality is only 2.4% in Tunisia (Ghorbal, 2009). Also, the care of pediatric emergencies remains a health priority in our countries and on its quality will depend the future of the patient (Xavier, 1981) and that of the community.

Conclusion

The situation as described in this study challenges and shows the gap between countries with high health systems and those that are still developing in terms of morbidity and mortality. In addition, for more success, our pediatric benefits need to integrate more, the psycho-emotional dimensions that circumscribe any morbid episode of the Child. Indeed, mothers experience a medical history often marked by high morbidity and infant mortality, punctuated by hospital memories with negative emotional burden. It is therefore important to take this into account in the health-care relationship and to adopt appropriate measures to make pediatric emergency services more attractive, welcoming and competent. Then, the government and its partners must continue the efforts to reduce the three main failures in the management of the child: the delay in the use of care, the difficulties of transport and access to appropriate treatment.

COMPETING INTERESTS

The authors do not declare any competing interests.

AUTHORS CONTRIBUTIONS

SK participated in carrying out the work of this research and is the holder of the article, KM, AS field technical supervision, and HS was the director of the research. All declare having read and approved the final version of the manuscript.

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