

Determining Factors of the Hospitalization of Children Less than 3 Months at Angondjé Teaching Hospital

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Abstract

Introduction: The immaturity of the immune system set one of the particularities of the infant of less than three months and made him a field says at risk.

Objectives: Establish the epidemiological profile of the pathologies affecting the child of less than three months hospitalized in the Department of Pediatrics - Neonatology of Angondje Teaching hospital.

Patients and Method: This is a descriptive and retrospective study over a period of 3 years (October 2012 to December 31, 2015). All children born in the CHUA or elsewhere, without immediate distress at birth, out of maternity for the home and returned to the hospital for the 1st time before 90 days, were included.

Results: 246 children were admitted according to the criteria for inclusion on a total of 2973 children either a prevalence rate of 8.3%. The most frequent pathologies found were newborns sepsis (56.4%), respiratory disorders (18.1%) and digestive (11.7%). For infants, it was respiratory disorders (46.7%), septic (26.2%) and digestive (18.7%). The factors favoring the hospitalization were the hypotrophia at birth, a stained amniotic fluid, mixed feeding, a schooling/student mother and celibacy.

Conclusion: The age of a child less than 3 months is a factor of severity for hospitalization in most cases, this work highlights the situations favoring their admission.

Keywords: Infant Less Than 3 Months; Risk Factors; Hospitalization; CHUA; Gabon

Abbreviations

CHUA: Centre Hospitalier Universitaire d'Angondjé – Angondjé Teaching Hospital; HGOPY: Hôpital Gyneco-Obstétrique et Pédiatrique de Yaoundé – Yaoundé Gyneco-obstetrical and Pediatric Hospital; h: hours; ITNs: Insecticide-Treated Mosquito Nets; USA: United States of America; WHO: World Health Organization

Introduction

The hospitalization of a child is the last resort under the rational medical decision. It takes into account intrinsic factors of a given pathology, i.e. clinical and paraclinical criteria. However, it is still a stressful experience for the family, involving an adaptation of the family habits and sometimes a deterioration of the family's dynamics [1]. The decision to hospitalize a child must, therefore, take into account extrinsic factors that are based on environmental or socio-economic criteria, for a comprehensive approach to the patient especially in

children less than three months. The hospital environment can be reassuring for the family. Studies showed that mother and child separation, even at birth, creates psychological trauma for the mother, but also for the newborn [2-4]. This is even more evident in infants less than three months who are the most fragile entities in pediatrics. This class of children is vulnerable because of few strong diagnostic elements, a context of weak immunity and therefore a high risk of severe infection and mortality [5,6].

We thought opportune through this preliminary work, to make an inventory on the epidemiological aspects of hospitalization of children less than three months. The study was conducted to understand why a child born with a satisfactory adaptation to life is admitted to the hospital before the age of three months. The purpose of this study was to establish the epidemiological profile of pathologies affecting the child of less than three months admitted to hospital at the Teaching Hospital of Angondjé (CHUA).

Patients and Methods

It was a retrospective study of hospitalized patients from October 2012 to December 2015 in the pediatric and neonatal Department of CHUA. The patients consisted in all children born at the CHUA or elsewhere, without immediately notified term or premature distress, who initially left the maternity after birth, and hospitalized for the first time before the age of three months. These children should have a complete and exploitable medical record. The parameters studied were the characteristics of the mother (age, medical history, marital status, level of education, socio-professional category), and the pregnancy follow-up. For children, perinatal criteria (sex, the term of pregnancy, place of birth, Apgar score, the color of the amniotic fluid, birth weight and feeding mode at birth), clinical data of the child at admission (age, reason for hospitalization, diagnosis retained and evolution) were evaluated. The children were divided into two categories, that of neonates (up to 28 days) and that of infants (from 29 to 89 days).

Data collection and analysis: The data were managed on Statview® version 5.0 software. Chi-square test was used to assess differences in categorical data between groups, and risk factors were assessed using Pearson "r" coefficient. A p-value < 0.05 was considered significant.

Results

Characteristics of our population

Over the study period, we found 246 children admitted according to inclusion criteria out of a total of 2973 children, a prevalence of 8.3%. The unusable files were 45. Thus, our population was made up of 201 children less than three months. There were 94 (46.8%) newborns and 107 (53.2%) infants. The sex ratio was 1.678 with a proportion 78 (38.8%) girls and 123 (61.2%) boys ($p < 0.001$).

Characteristics of children at birth

The mean term at birth was 37.7 ± 2.5 weeks, with extremes ranging from 34.1 to 42.6 weeks. They were born at term in 75.1% ($n = 151$) of cases. There was no significant difference between the gestational age of newborns and infants ($p = 0.9$). Among children born prematurely (24.9%, $n = 50$), mean gestational age at birth was 34.4 ± 1.2 with extremes ranging from 34.1 to 36.5SA, birth weight ≤ 1500 g was observed in 28% ($n = 14$) of cases.

Eutrophic children at birth were observed in 70.3% of cases ($P = 0.004$), they were hypotrophic in 24% of cases and macrosomes in 5.7% of cases. The place of birth was in public facilities for 70.4% of cases, in private facilities for 21.3% and at home in 1.2% of cases. The proportion of children born in our maternity ward was 48.3% ($n = 97$). The amniotic fluid was colored in 79.2% of cases. The APGAR score > 7 at the 1st and the 5th minutes was observed in 94.6% of cases.

Characteristics of children at the time of hospitalization

The average age was 36.3 ± 26 days with extremes ranging from 2 to 89 days. The average weight was 2585.8 g with extremes ranging from 1450g to 5850g. Of the newborns, 38.3% ($n = 36$) were less than 8 days old and 61.7% ($n = 58$) were 8 to 28 days old. In the infant's group, the proportion of children aged 29 to 59 days was 55.1% ($n = 59$) and the proportion of children aged 60 to 89 days was 44.9% ($n = 47$).

= 48). Mixed breastfeeding was the most observed mode of feeding in 50.2% (n = 101) of cases significantly. Exclusive breastfeeding was observed in 26.9% (n = 54) of cases and exclusive use of breastmilk substitute in 22.9% (n = 46) of cases.

The reason for consultation

Table 1 compares the reasons of the hospitalization between newborns and infants.

| Reasons of hospitalization | Infants (%) | Newborns (%) | p |
|--------------------------------|-------------|--------------|---------|
| Fever | 87 (81.3) | 31 (33) | 0.04 |
| Respiratory distress | 69 (64.5) | 47 (50) | 0.001 |
| Peptic disorders | 46 (43) | 8 (8.5) | ≤ 0.01 |
| Alteration of general state | 27 (25.2) | 6 (6.4) | < 0.001 |
| Dehydration | 20 (18.7) | 7 (7.5) | 0.04 |
| Denutrition | 15 (14) | 3 (3.2) | 0.001 |
| Convulsions | 15 (14) | 4 (4.2) | NS |
| Cough | 15 (14) | 2 (2.1) | 0.05 |
| Incessant crying | 8 (7.5) | 21 (22.3) | 0.004 |
| Anemia | 6 (5.6) | 15 (15.9) | 0.01 |
| Axial hypotony | 6 (5.6) | 15 (15.9) | 0.04 |
| Cough/fever | 5 (4.7) | 1 (1) | NS |
| Bloating | 3 (2.8) | 15 (15.9) | NS |
| Hypothermia | 2 (1.9) | 13 (13.8) | 0.002 |
| Tumor syndrome/lymphadenopathy | 2 (1.9) | 5 (5.3) | NS |
| Generalized edema | 2 (1.9) | 0 (0.0) | NS |
| Icterus | 1 (0.9) | 35 (37.2) | 0.001 |
| Cyanosis | 1 (0.9) | 6 (6.4) | NS |
| Hemodynamics disorders | 0(0.0) | 4 (4.2) | NS |

Table 1: Comparison of reasons of the hospitalization between the newborn and the infant.

Diagnostics found

Figure 1 summarizes the different diagnostics overall and in each group age.

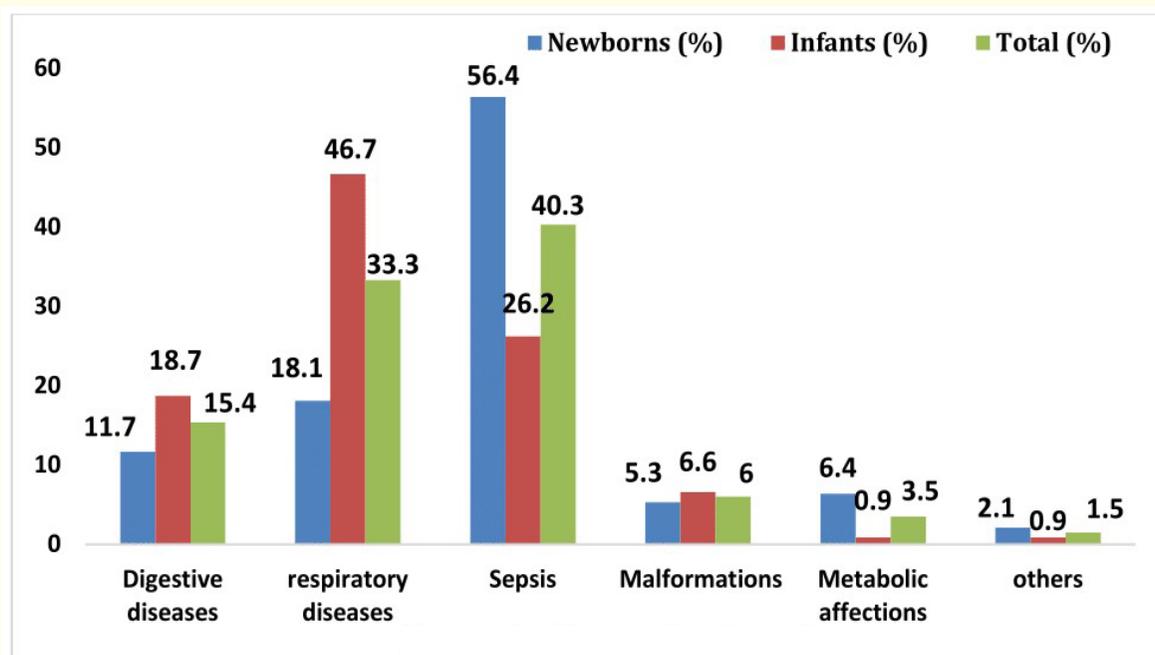


Figure 1: Diagnostics found.

In newborns

The group of sepsis was the most significantly observed ($p < 0.01$) in 56.4% ($n = 53/94$) of cases. Among them, late-stage neonatal bacterial infection was the most significantly observed ($p = 0.02$) in 66% ($n = 35/53$) of cases, followed by early neonatal infection (13.2%, $n = 7/53$) and malaria (5.7%, $n = 3$). Respiratory diseases followed with a proportion of 18.1% (17/94), bronchiolitis was mainly observed (47%, $n = 8/17$), followed by lobar pneumonia (23.5%, 4/17). On the gastrointestinal level, it was mainly non-infectious enteritis in 81.8% (9/11) of cases, 3 of which were associated with vomiting.

In the infant

The group of respiratory conditions was the most significantly observed ($p < 0.01$) with a percentage of 46.7% (50/107). In this group, bronchiolitis was the most observed pathology in 56% ($n = 28/50$) of cases significantly ($p = 0.04$), followed by bronchopulmonary infections with common germs in 26% ($n = 13/50$). Sepsis was second with 26.2% ($n = 28$), malaria was predominantly (57.1%, $n = 16/28$), followed by infectious gastroenteritis 17.8% (5/28), sepsis (10.7%, $n = 3$). Non-infectious gastroenteritis was the most common condition in the group of digestive disorders in 75% (15/20) of cases, followed by unexplained vomiting (15%, 3/20).

Fate of children

The average length of stay in the hospital was 5.7 days with extremes ranging from 2 to 30 days. In 47.8% ($n = 96$) of cases, it was less than or equal to 72 hours. Among them, infants were significantly in the majority with 69 (71.9%) versus 27 (28.1%) newborns ($P < 0.001$). The death rate was 11.5% ($n = 23$). Of these, 16 (69.6%) were premature newborns. The cause of death was infectious in 56.5% ($n = 13$) of cases. Malaria was the cause of death in 21.7% ($n = 5$) of cases. There was no significant difference in sex or the socio-professional characteristics of mothers.

Sequelae were observed in 1% (2) of the surviving cerebral palsy survivors in one child and epilepsy in the second.

Risk factors for hospitalization

The risk factors for hospitalization of children under 3 months of age in our study are shown in table 2.

| Factors | r | p |
|------------------------------------|------|---------|
| Hypotrophia | 0.03 | 0.035 |
| Colored amniotic fluid | 0.3 | 0.03 |
| Executive mother | 0.25 | 0.013 |
| Schooling/student mother | 0.02 | 0.047 |
| Mother single | 0.18 | 0.023 |
| Absence of exclusive breastfeeding | 0.25 | < 0.001 |

Table 2: Risk factors for hospitalization of children under 3 months.

Characteristics of mothers

The mean age of mothers was 27.7 ± 5.5 years with extremes ranging from 16 to 48 years. The proportion of 25- to 35-year-olds was the most represented with a percentage of 80.6% ($n = 162$). The level of study was university in 41.8% ($n = 84$), secondary in 28.4% ($n = 57$), case and primary in 26.4% ($n = 53$). There was no statistically significant difference.

Executive mothers were the most significantly represented socio-professional category ($p = 0.023$) with a proportion of 41.8% ($n = 84$). The proportion of schooling/student mothers was significant ($p = 0.047$) with a percentage of 33.3% ($n = 67$) of cases. Unmarried mothers accounted for 24.9% ($n = 50$) of cases. Single mothers were observed in 69.3% of cases ($p = 0.023$). Pregnancy follow-up with a

PNC > 4 was in 51.7% (n = 104) of the cases. The prenatal assessment was performed in 59.7% (n = 120) of cases. Mothers were primiparous in 48.3% (n = 97) of cases. In 22.6% of cases, they had between 1 and 2 other children and in 29% of cases, between 3 and more. Intercurrent pathologies were found in 28.8% (n = 58) of the cases. Of these cases, toxemia was most prevalent in 39.3% (n = 79) of cases followed by infection and malaria in 20.9% (n = 42) and 19.9% (n = 40) respectively of cases.

Discussion

The retrospective method of our study did not allow us to explore some parameters about the own and family history of children. The retrospective method also justifies a large number of unexploited cases in this study. But this study is rich in interest because it screened an issue never studied in Gabon, and little in our sub-region, given the paucity of the subject in the literature. It allowed us to make the first audit of pathologies leading to hospitalization in children less than 3 months at CHUA without pretending to extrapolate the results in this group age in Gabon.

Prevalence

The prevalence of children less than three months admitted in CHUA was 8.3%. Epidemiological studies on the hospitalization of children under three months of age are poorly documented, unlike neonatology. In Brazzaville in 2005, 6.3% of children admitted to pediatric emergencies were newborns discharged from maternity [7]. In Oakland (USA), the hospitalization rate for newborns after discharge from hospital ranged from 1 to 3.7% among a total of 33,276 infants [8]. In France in general, it is annually from 2 to 3%, in Finistère specifically the re-hospitalization rate of the newborn was 3.6% in 2011 [9]. In Casablanca, 13.5% of children admitted to the pediatric emergency department of the Abderrahim Harouchi Children's University Hospital in 2012 was 3 months old. Of these, 73.3% were less than two months old [10].

Risk factors

Our study reported an average age of 36.3 days and a higher proportion of hospitalizations for less than one month (46.7%). Of those children less than one-month-old, 38.3% were less than eight days old. This high rate can be justified by the high rate of early maternity leave observed in our maternity hospital. Unfortunately, the retrospective nature of our study did not allow us to evaluate this parameter. However, in a study conducted in a maternity hospital in Libreville in 2016, the duration of hospitalization is less than 3 days for vaginal deliveries and less six days for cesarean deliveries with an average duration of hospitalization for women who had recently given birth, the Caesarean section of 3.48 ± 0.2 days [11]. We define early maternity leave when the return home of the mother and her child is between day 0 and day 2 for a vaginal birth and between day 0 and day 4 for a cesarean birth, day 0 being the day of delivery [12]. It has already been validated as a re-hospitalization factor for the newborn already [12-14].

The intense pressure regarding activity in our maternity ward (which only has a capacity of 18 beds for an annual birth rate of about 1600 / year), like the other maternity hospitals in the sub-region, obliges the practice of the exit sometimes very early (< 24h - 48h) parturient [14]. This early return at home of the newborn let few time for pediatricians for a complete clinical examination with a strict research of the existence of risk factor. It is even more noticeable when there is no coordination between the pediatric service and the maternity ward, as some escape even the precious "time" of the examination of the newborn. We can, therefore, explain why about 6% of our patients are hospitalized for malformations, because most could have been screened at birth if these newborns had been examined or monitored correctly. We observe that many children return home when they have anamnestic criteria for further monitoring. In fact, we found that 24% of our study population was hypotrophic, 5.7% macrosomes, 24.6% premature, 79.2% had tinted amniotic fluid, and only 26.9% were exclusively breastfed. However, it is well established in the literature that these different characteristics are risk factors for hospitalization [7], reduced development and a significant source of morbidity and morbidity [15-17].

Maternity stay is a time used for detecting complications in the mother and child relationship, and to provide the necessary assistance to the mother before returning home [14]. Early re-hospitalization is not universally accepted. Despite the fact that it is well-managed in

developed countries (absence of maternal and neonatal risk factors, home-based hospitalization services, midwives and home care nurses, etc.) the controversy about the risk in the neonate persists [12]. Some authors think that the three days of hospitalization required, after a regular delivery, is insufficient for an optimal surveillance of the adaptation to the extrauterine life of the newborn and the good health of the mother [18,19].

The configuration of our health facilities and the high demand constrain us to early return at home. We should, according to our results, lead a great reflection on the methodology to be put in place for a better organization. These early exits in our maternity need a precise identification of risk situations, and a structured follow-up downstream of maternity as recommended by WHO and UNICEF [20]. The socio-economic factors of the mothers represent a risk of re-hospitalization for the patients in our results since we observed that the children of the single mothers, students, and executives are the most hospitalized. Similarly, these mothers are young with an average age of 27.7 ± 5.5 days. We can explain this fact by the inexperience of these enterprising and young mothers on one hand, and on the other hand, they do not have enough time for optimal monitoring of their child. As a result, they are anxious and helpless in front of the slightest discomfort and are more likely to head for pediatric emergencies rather than a regular pediatric consultation. It results more in comfort hospitalizations for surveillance at younger ages. Le Goffic found in 2011, that children of single and unemployed mothers are the most admitted to hospitalization because of socio-familial isolation [9]. In our context, the opposite could have been observed. In Africa in general, and Gabon in particular, there is an important family support in the maintenance of the mother and child relationship after birth. Thus, unlike France, the hospitalization rate of children of this class of women in our study could be explained by the fact that, several people, by taking part in the care of the child, increase the risk of the occurrence of infections, viral or bacterial.

Another factor which can't be dissociated from the factors studied is the configuration of our pediatric emergency services. This service is almost always the responsibility of intern students, who still lack the experience in terms of triage. They are therefore most brought to admit these very young patients in hospital, more for safety than for the severity of the disease. This fact justifies that in this study, the length of hospital stay is less than 72 hours in almost half of the cases and very significantly in our patients of more than one month.

Reasons for consultation and causes of hospitalization

The different reasons of presentation listed were the same for infants and newborns. However, the proportions were very different. Thus, if the first three reasons for consultation in infants were hyperthermia, respiratory discomfort, and digestive disorders, in neonates we observed rather in order of growth respiratory distress, jaundice and hyperthermia. This difference is not very surprising and depends on the physiological particularities of the newborn or infant. Hyperthermia, for example, is the third reason for consultation in newborns, whereas infectious diseases dominate, this may be explained by the fact that newborns have a limited thermoregulatory capacity and are more likely to suffer from the interior temperature. This already limited thermal regulation is easily compromised by environmental factors such as drafts, the proximity of cold surfaces, ambient temperature, and sepsis. In general, the most observed pathologies in our study were in the order of increasing infectious (40.3%), respiratory (33.3%) and digestive (15.4%) pathologies and this justifies that fever is the main reason for consultation in infants. If in newborns this order has been respected, in infants, the respiratory diseases are first, followed by infectious and digestive pathologies. Mabilia, *et al.* in Brazzaville also found as significant causes of hospitalization of neonates severe sepsis (22%), accompanied by bronchopulmonary infections (23%) and isolated fevers (13%) [7]. Few studies in the literature address the hospitalization of children under three months in general. But in the young population, we can see the difference in the cause of admission between our study and Western studies. In France, the reasons of hospitalization of a newborn after returning at home vary from 23.3 to 46% for digestive diseases, 19 to 28% of respiratory illnesses and from 8.1 to 36, 7% for infectious diseases [9]. Escobar, *et al.* in the USA found that hospitalization was mainly due to jaundice (34.3%), followed by food difficulties (26%) and sepsis (11.1%) [8]. Still, in the USA, Young, *et al.* found in the record analysis of 21 hospitals in the Utah and Idaho areas that newborns were re-hospitalized.

In infants, we observed a predominance of respiratory diseases (46.7%) with lead wire bronchiolitis in 56% of cases. Similarly, bronchiolitis was mainly observed (47%) in respiratory diseases in the newborn. In fact, a child under 3 months of age is a risk factor for the

use of emergency care and hospitalization for bronchiolitis [25]. The incidence of bronchiolitis is poorly evaluated in Africa. However, there are several studies about prevalence in hospital. In Mali in 2014, Diamoutene found a prevalence of 3.5% at the reference health center of commune V of Bamako, among them, 18.9% were less than 3 months old [26]. In the General Paediatrics Department of HGOPY in Yaoundé, bronchiolitis ranked third in all low respiratory infections recorded in 2013, with a hospital frequency of 9.4% and a peak frequency between the age of 2 and four months [27]. At the pediatric complex in Bangui, the mean age was 5.8 months with 87.7% infants under 12 months of age [28]. These rates, however, are still high and are justified by the fact that bronchiolitis is the most common low respiratory infection with an incidence that is increasing year by year. It constitutes a real public health problem in the world [27] with a high rate of hospitalization given the urgency and the importance of the use of care that it generates, especially in children under 3 months of age [25].

Infectious diseases came in 2nd position (27.1%), among them, malaria was the most observed condition in 55.2% of cases. This result is regular because malaria is endemic and epidemic in Africa and according to WHO, 90% of malaria cases in 2016 in the world occurred in our Region [29]. One of the useful preventive measures to struggle this scourge is the use of insecticide-treated mosquito nets (ITNs). In Gabon, despite the means implemented for a better availability of ITNs, in average only 36% of households have at least one, and just 39% of children under five are sleeping under an ITN [30]. This lack of use of ITN contrasts with the progress made in this area in the sub-Saharan region, although we know the weight of infant mortality due to malaria [29]. In fact, 80% of households in the sub-Saharan region has had at least one ITN, and 54% of the population at risk have slept under an ITN in 2016 according to the WHO [31]. In our study, malaria was the cause of death in 21.7% of cases.

In the group of digestive disorders, non-infectious gastroenteritis was the predominant condition observed either in the newborn or the infant. This data justifies the significant rates of dehydration and undernutrition seen in the reasons for consultation. In Escobar's study, it is rather dietary difficulties that constitute the most observed digestive pathology, and in that of Le Goffic, gastrointestinal pathologies were dominated mainly by poor weight gain (59%), followed by regurgitations (32%) and only 1.5% presented with diarrhea [8,9]. This difference can be explained by the lack of hygiene and dietary errors that most often accompany the preparation and use of artificial feeding that was practiced in 73.1% of cases in our study.

Conclusion

The age of the child under three months is a major factor of hospitalization in most cases. The main causes of hospitalization in our study were sepsis, respiratory diseases, intestinal disorders. We also identified some risk factors. Improving the quality of life of this class of children requires understanding these parameters.

Conflict of Interest

The authors declare no conflict of interest.

Contribution of the Authors

Dr. Kuissi Kamgaing designed the protocol and edited the manuscript. Dr. Minto'o Rogombé provided the collection and statistical analysis of this work, read and assured the English translation of the manuscript. Drs. Minko and Mimbila read and corrected the work. Professor Ategbu supervised all the work. All authors have approved the latest version of this manuscript.

Bibliography

1. De Reuck F. "The influence of separation of a child, due to hospitalization, on family dynamics". *Médecine and Hygiène Thérapie Familiale* 1.29 (2008): 171-174.
2. Thibault P, *et al.* "Impact of hospitalization of an infant during breast-feeding: mother-child investigation". *Revue Recherche en soins infirmiers* 102 (2010): 50-58.

3. Danesi N. "Separation at birth or in the first months of life for necessary hospitalization: a trauma that can harm the child and his family". *Spirale* 3.51 (2009): 83-92.
4. Sheldon L. "Hospitalising children: a review of the effects". *Nursing Standard* 12.1 (1997): 44-47.
5. Pantell RH., et al. "Management and outcomes of care of fever in early infancy". *Journal of the American Medical Association* 291.10 (2004): 1203-1212.
6. Leviton A., et al. "Maternal infection, fetal inflammatory response, and brain damage in very low birth weight infants. Developmental Epidemiology Network Investigators". *Pediatric Research* 46.5 (1999): 566-575.
7. Mabila Babela R., et al. "Early neonatal presentation to the pediatric emergency department, Brazzaville (Congo)". *Archives de Pédiatrie* 14.2 (2007): 133-137.
8. Escobar GJ., et al. "Rehospitalisation after birth hospitalisation : patterns among infants of all gestations". *Archives of Disease in Childhood* 90.2 (2005): 125-131.
9. Le Goffic A. "Ré hospitalisation des nouveau-nés à terme durant leur premier mois de vie : étiologies et facteurs de risque au sein des CHRU de Brest et CH de Morlaix". HAL Gynécologie et obstétrique (2013).
10. Benhayoun F., et al. "Nourrissons de moins de trois mois hospitalisés aux urgences : quelles particularités ?" Les rencontres de l'Association des Pédiatres de Langue Française, Marrakech, Maroc. Consulté le (2013).
11. Sima Ole B., et al. "Length of stay in maternity after delivery by caesarean section: pilot study carried out at the maternity ward of Owendo University Hospital in Gabon". *Bull Med Owendo* 15.42 (2014): 24-32.
12. HAS. Postpartum maternity leave: conditions and organization of the return home of mothers and their newborns. High Authority of Health (2014).
13. Kehila M., et al. "Early postpartum discharge: results and risk factors for re-hospitalization". *Pan African Medical Journal* 24 (2016): 189.
14. Ouattara S., et al. "Feasibility and outcome of home follow-up of childbirths early exits maternity in Bobo-Dioulasso, Burkina Faso". *Medecine et Sante Tropicales* 24 (2014): 49-54.
15. Kangulu IB., et al. "Low birth weight risk factors in semi-rural Kamina, Democratic Republic of Congo". *Pan African Medical Journal* 17 (2014): 220.
16. WHO. "Santé de la mère, du nouveau-né, de l'enfant et de l'adolescent". OMS (2017).
17. Siritwachirachai T., et al. "Antibiotics for meconium-stained amniotic fluid in labour for preventing maternal and neonatal infections". *Cochrane Database of Systematic Reviews* 11 (2014): CD007772.
18. Berkane N. "Early exits in maternity: advantages, disadvantages and methodology of implementation". *Journal de Gynécologie Obstétrique et Biologie de la Reproduction* 44 (2015): 119-125.
19. Boubred F., et al. "Hospital readmission after postpartum discharge of term newborns in two maternity wards in Stockholm and Marseille". *Archives de Pédiatrie* 23.3 (2016): 234-240.
20. WHO. Home Visits for Newborn Care: A Strategy to Improve Child Survival. WHO /UNICEF Joint Statement. Genève (2009).
21. Young PC., et al. "Early Readmission of Newborns in a Large Health Care System". *Pediatrics* 131.5 (2013): e1538-e1544.

22. WHO. "Nearly half of deaths are now registered with their cause". Geneva (2017).
23. Kedy Koum DC., *et al.* "Morbidity and risk factors for neonatal mortality in Douala Referral Hospital". *Pan African Medical Journal* 20 (2015): 258.
24. Mekame A. "Epidemiological and therapeutic aspects of neonatal anemia at the Angondjé University Hospital Center – Gabon [Mémoire DES de pédiatrie]". Libreville : Université des sciences de la santé Faculté de Médecine et des Science de la Santé (2017).
25. Marguet C. "Treatment of bronchiolitis: what remains of effective?" *Réalités pédiatriques* 202 (2016): 15-18.
26. Diamoutene O. "Epidemiological, clinical and therapeutic aspects of bronchiolitis in the pediatric department of the reference health center of the commune v of Bamako district [Thèse de doctorat de médecine]". Bamako: Université des sciences, des techniques, et des technologies de Bamako Faculté de Médecine et d'Odonto-Stomatologie (2014).
27. Bogne JB., *et al.* "Acute Bronchiolitis of Infant under 24 months in Yaoundé (About 296 Cases)". *Health Sciences and Diseases* 14.4 (2013): 1-6.
28. Bobossi Serengbe G., *et al.* "Epidemiological, clinical and therapeutic aspects of acute bronchiolitis in infancy at the pediatric complex of Bangui (Central African Republic)". *Medicine d'Afrique Noire* 51.4 (2004): 217-222.
29. WHO. "Malaria. Facts Sheets".
30. UNFPA. "Demographic and Health Survey of Gabon 2012: Synthesis Report".
31. WHO. Key points: World malaria report (2017).

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