FACTORS RELATED TO THE NEONATAL MORTALITY
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ABSTRACT
Objective: to identify the factors related to the neonatal mortality. Method: a retrospective and transversal study, with the quantitative approach, using 168 newborns record in a reference maternity in Pará (PA), Brazil who were hospitalized at the neonatology and died before 28 days of life in 2013. Data were analyzed by the descriptive statistic and presented in tables and in a figure. Results: the main neonatal death cause are related to sepsis, extreme prematurity, pulmonary bleeding and respiratory failure. Conclusion: understand those death singularity is essential to base the decisions that promote reduction of these problematic and professional qualification who assist the woman during the prenatal, labor and puerperium, as also at the immediate care to the newborns. Descriptors: Neonatal Mortality; Prematurity; Health Status Indicators.

RESUMO
Objetivo: identificar os fatores relacionados à mortalidade neonatal. Método: estudo retrospectivo, transversal, de abordagem quantitativa, utilizando 168 prontuários de recém-nascidos em uma maternidade de referência materno infantil do Estado do Pará/PA, que estiveram internados na neonatologia e evoluíram a óbito antes de 28 dias de vida no ano de 2013. Os dados foram analisados utilizando estatística descritiva e apresentados em tabelas e uma figura. Resultados: as principais causas da mortalidade neonatal estão relacionadas à sepse, prematuridade extrema, hemorragia pulmonar e insuficiência respiratória. Conclusão: entender a singularidade desses óbitos é essencial para embasar a tomada de decisões que promovam redução dessa problemática e qualificação dos profissionais que assistem a mulher durante o pré-natal, parto e puerpério, como também nos cuidados imediatos aos recém-nascidos. Descritores: Mortalidade Neonatal; Prematuridade; Indicadores Básicos de Saúde.

RESUMEN
Objetivo: identificar los factores relacionados con la mortalidad neonatal. Método: estudio retrospectivo y transversal, con el enfoque cuantitativo, utilizando 168 registros de los recién nacidos en una maternidad de referencia en Pará (PA), Brasil, que fueron hospitalizados en neonatología y evolucionaron hasta la muerte antes de los 28 días en el año 2013. Los datos fueron analizados utilizando estadística descriptiva y se presentan en las tablas y figura. Resultados: las principales causas de mortalidad neonatal están relacionadas con la sepsis, prematuridad extrema, hemorragia pulmonar e insuficiencia respiratoria. Conclusión: para entender la singularidad de estas muertes es esencial para la toma de decisiones para promover la reducción de este problema y la cualificación de los profesionales que ayudan a las mujeres durante el periodo prenatal, el parto y el posparto, y en la atención inmediata al recién nacido. Descriptores: Mortalidad Neonatal; Prematuridad; Indicadores de Salud.
INTRODUCTION

The child mortality and the neonatal (early and late), are considered as an important determinant of the social and economic development and also the population health condition determinant. Those data following is really important to the establishment of public policies to give promotion and attention at the attendance and improvement at the population health.¹

Every year in the world, 3.3 millions of babies, or maybe more, are stillbirth, more than 4 millions die before the 28 days of life, and others 6.6 millions of children die before being 5 years old. The mothers’ death is not decreasing too, the total per year is now 529.000 deaths, oftentimes suddenly or unexpected, that occur during the pregnancy (about 68.000 as a consequence of abortion conducted without safe conditions), during the labor or after the baby birth, letting the families devastated, oftentimes leaded to the poverty because the health care were too late or ineffective. How is it possible that his situation keep with no verification, when the death causes are in great part avoidable?²

Most part of the neonatal death happens in regions with low or medium income, the children born in poorer countries have more death risk, with neonatal death rate of 19% to 44% superior in poor families. Mother and children’s characteristics are analyzed as children death characteristic determinants and its components and socio economical characteristics, prenatal procedures, conducts and mothers’ disease, weigh at birth, prematurity, kind of labor and congenital malformation, are the most investigated determinants.³

The study related to the high child mortality in Brazil points to an understanding at the public policies attendance in the pregnant women monitoring since the prenatal, during the labor and after labor, what are the primary indicatives of the high rate. 20 millions of children were born under-weight per year, many in consequence of a premature labor. This contributes in a substantial way to the high neonatal mortality tax still existent in many regions, mainly in the poor countries.⁴

Epidemiological indicators points out that the 130 millions of children born in the world per year, about 4 millions die in the prenatal period, proportion that varies according to the global mortality rate. The variation in the daily death risk is considerable to this risk and is higher at the first weeks of life.³

Factors related to the neonatal mortality.

In Brazil, the child mortality rate had a reduction of 50% between 1990 and 2008. Data presented by the health information system revealed that 20% of the newborns that died in the first Day of life in 2010 had a weight considered suitable, this value is much bigger in North (30%), even considering the high percentage of the ignored. This is not less alarming when we talk about precocious child death, where the North region is in second place with 11.5 neonatal death to each thousand who was born alive in 2010, losing only to the northeast region with 11.6 neonatal death, however, the late mortality is led with a big death number by the north region with 3.1 neonatal death to each thousand alive newborn.¹

The neonatal death is considered potentially avoidable, whereas the health services incorporate in its job routine the characteristic analyses in the occurrence. In this sense, to know those characteristic will contribute to protection and the maternal and child health improvement, allowing the identification of the difficulties and reformulating care practices to a better quality.⁵

This study may bring as benefito the factors profileconstruction related to the neonatal mortality to the purposes development and actions that help to decrease the neonatal death rate. In addition to fill the gaps in the scientifically data basis referring to the thematic in the region and contribute to the management in an effort to portray a loco regional reality. In this perspective, the objective is:

Given the above was formulated this research question: Which factors are related to the newborn mortality in the Maternal Children Reference Hospital in Pará?

To answer it, was formulated the following objective:

- To identify the factors related to the neonatal mortality.

METHOD

A Retrospective and transversal study with a quantitative approach; Data were collected in a public maternity in Pará, reference in maternal attendance in North Brazil, in September and October 2014. The maternity attend the users in urgency and emergence arrangements, in the obstetricals areas. The urgency attendance is conducted in a uninterrupted way, with 24-7 calls. The attendance is conducted through spontaneous demand or referenced from Belem and others cities, and may result in guidance,
consultations with or without prescriptions, clinical observation till 12 hours or hospitalization. Assistance to women and children, in a humanized way and with quality, acting as a general hospital and teaching and research, articulated with the public policies and the Health Unic System Principles and guidelines. The neonatology offers 60 beds divided in ITU, ICU and kangaroo method.

This hospital chose happened because it is a Multidisciplinary Residency in Health practice field, in the maternal-children health care area and for presenting a reference institution of the high risk pregnancy in Pará, receiving for free demand women in serious maternal morbidity situation.

This research used as data basis alive newborn record in FSCMPA (Pará Holy House Foundation), were hospitalized at the neonatology and died before completing 28 days of life from January 1st to December 31st 2013. It was used as a data collection instruments a semi-structured guide with close questions, made by the author herself.

The calculation of the sample size was conducted from a population of 294 newborns who died with the confidence gap of 95% and sampler error of 5%, what originated the sample of 167 participants in this research. Thus, during the data collection were selected and made available 168 newborns’ records and 165 mothers’ records, because three of those mothers had twin sons.

The mothers’ variable was: age, schooling, profession, marital status, home, number of pregnancies, number of labors, number of aborts, kind of previous labors, and pathologies during the pregnancy, prenatal, early prenatal and actual labor. The newborn variables: kind of death, weight during birth, gestational age, procedures in the immediate assistance and death cause.

Data was stored in Excel Electronic Spreadsheet to the process. Regarding to the analysis were used computer resources, through the Excel e Statistic Package for Social Sciences (SPSS) software version 22.0, all in Windows 7.

The study respected the resolution 466/2012, from December 12, 2012 of the National Health Council/Ministry of Health, which treats about researches with human beings. The actual research was submitted to the FSCMPA Ethics Research Committee in March 2014, being approved in June 2014, under CAAE no 31126114.7.0000.5171.

RESULTS

With the intuit of achieve this research objectives, was conducted a complete explanation with table and demonstrative graphics presenting the collected data contents from the records inserted in the inclusion criteria.

| Table 1. Newborns who came to death genitors according to age. FSCMPA, 2013. |
|-----------------|-------|-----|
| Age Group       | n     | %   |
| <=15 years old  | 11    | 6.67|
| 16 a 20 years old| 46    | 27.88|
| 21 a 30 years old| 73    | 44.24|
| > 30 years old  | 35    | 21.21|
| Total           | 165   | 100.00|

It is observed in table 1 the predominance of 73 (44.24%) young genitors, aging from 21 to 30 years old. Similar results were found in studies conducted in some cities in the south and northwest Brazil, which showed a less death occurrence in those age parameters.6,7

With those results, it is verified a consonance with the results presented in spreader studies in Recife where the maternal prevalence was from 16 to 25 years old, being considered suitable to live a pregnancy with favorable conditions to a healthy pregnancy as for the mother as for the baby, because the intercurrence chances in those ages are lower than the older ages.8
It is verified in the table 2, that from the 165 genitors 122 (75.55%) conducted the prenatal corresponding to the majority.

The prenatal in ideal conditions (consult quantities and attention quality) has a main role in the child death prevention, including the growth monitoring and fetal development, the pregnant care, the mother and babies’ precocious health problems identification, and prepare to labor and care orientation after birth. More specifically the contact opportunity between health professionals and the pregnant that occur at the prenatal period, allowing the guidance about health practices during the pregnancy.9,11

As for the prenatal assistance, certain health Professional interventions during the pregnancy may, for sure, change and favor the maternal prognosis. The most important strategies constitute a tripod with specific interventions related to the maternal health promotion, risk prevention and nutritional support during the pregnancy. Promoting the maternal and baby health includes the ideal number recommendation and the prenatal appointments quality, the maternal immunization program establishment, prevention, diagnosis and pregnancy undercurrent diseases treatment.10

When is evaluated the appointment number can be noticed a greater Record of 71 (58.19%) of genitors with less than 6 appointments. The appointment number less than six is statistically related to the neonatal death.6,9In this sense, comparing to the other studies in the same theme we understand that there was a resemblance, because 42.5% and 67.6% of pregnant women said to have done less than 6 appointments.6,11

The absent or inadequate prenatal assistance is being pointed in many studies as the risk factor to the neonatal mortality. Its effect on the neonatal mortality is indirect, as soon as the adequate prenatal assistance may identify some problem and act on time. This would reduce the impact of possible pregnancy intercurrences, preventing, in this way, newborn birth much low weight and neonatal deaths.11,9

The fail at the information register about the prenatal beginning, where 32 (26.55%) were “non-told”, but, may be occurred, by many times the women achieve to the institution in a serious situation, not being possible to fill all the information refereeing to their personal, familiar and obstetric background. Thus, in many records were observed only the most important information to the immediate care.

According to the kind of death, from the 168, most part of the newborn death was precocious 117 (69.64%). The late death had lower incidence 51 (30.36%).

This shows that the newborns who die previous feed more the neonatal mortality data and children death in the studied region. In a study developed in Ceará was seen that 79.5% of the analyzed death occurred in the previous neonatal period and 20.5% in the late neonatal.12 Others researchers also affirmed that there was a high death proportion in the early neonatal period with 72.7% of incidence in Cuiabá.13 Those data corroborates with the results in this research.

According to the literature data, nowadays, the neonatal mortality (0 to 27 days of life) have the high presentation in proportional terms in the child mortality in Brazil, presenting till 70% of the children death in all Brazilian regions. In this context, the precocious neonatal component represent about 50% of the children death in Brazil, having a bigger importance, raising actions to its control, demanding also mobilization and prioritization in the health managers.14
The classification according to the weight at the birth is divided among the newborns weighing less than 1000g (considering as extreme low weight), newborn weighing from 1000g to 1499g (defined as very low weight), newborn weighing from 1500g to 2499g (defined as low weight) and those weighing 2500g or more (determining normal weight) 15

Analyzing the table 3, it is noticeable a high emphasis in newborns with extreme low weight 64 (38.10%) of occurrences. It allows us to conclude that the most part of the obits is daily related to the extreme low weight factor at birth.

Studies in South Brazil showed that the mortality among the newborns weighing less than 1000 grams was of 75%, decreasing to 47% in newborns weighing from 1000 to 1499g. It is also noteworthy that the Relative Risk (RR) in death between the lower than 1000 grams is 19.8 times bigger when compared to the newborns weighing more than 2500g.7

The weight at birth is a singular factor that exercises high influence about the health state and the children survival chances, mainly when it is about children born with low weight, as soon as the risks to get sick and die at childhood are elevated.6 The main causes of the low weight can be prevented through access and prenatal quality, a better maternal nutrition, the smoking elimination and the opportune infections treatment.8

The frequency of newborns with extreme low weight is related to the maternal health factors and to the origin family’s social condition. The more elevated the proportion of the low weight in a community more is the social determinants participation in its occurrence. 7 In addiction to those factors, there are also the adverse effects implications in adult life, as: the risk elevation of metabolic diffusions and the cardiovascular problems.8-9

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It is verified in the table 4 a higher prevalence 59 (36.20%) with 0 to 3 apgar in the first minute and 115 (70.55%) with 7 to 9 apgar in the fifth minute. It is possible to understand the result of the present study at the first minute and 115 (70.55%) apgar 7 to 9 in the fifth minute. It is possible to understand in the result of this study there was a significant increase in those newborns’ clinical stage in the first minute to the fifth, what can demonstrate a good evolution in the health prognostic of those newborns and that the procedures assistances developed in the labor room were well executed.

When analyzing, in table 4, the apgar lower than 7 in the first and fifth minute we have a percentage respectively of 71.78% and 29.44% of incidence, resulting in this very similar to other studies, where the apgar values under 7 achieved 64.8% and 72.7% in the first minute of life and 39.2% and 46.8% in the fifth minute of life.12,13,20

The scale or Apgar rate index is a parameter that consists in the newborn vitality valuation in his birth and shall not be used as a way to evaluate the reanimation necessity. The observation is made in the very first minute of life, in the fifth and when necessary, in the 10th minute after the birth. Following the established criteria by this index, it is attributed scores from 0 to 2 for each signal (cardiac frequency, respiratory effort, muscle tone, reflex irritability and color) having in this way an addition to 10 points that will result in the Apgar index. If it is less than 7 in the 5th minute, it is recommended to make the score in each 5 minutes till complete 20 minutes of life.19

This scale is an important risk indicator to the prenatal morbid mortality, since it is consisted in a systematic evaluation of the newborn and the identification to an immediate assistance, with the objective to prevent possible sequels.9,20
Regarding to the number of conducted assistance procedures in the labor room, the studied sample revealed that 129 (76.79%) of newborns need three procedures, 22 (13.10%) need two procedures, 5 (2.98%) need a procedure and 12 (7.14%) don't need any procedure.

Those results allow us to see that the most part of those newborns were born in low vitality condition, justifying the previous presented results about the Apgar under 7 in the first minute with 71.78% of incidents; and low than 7 in the fifth minute with 29.44% of incidence, since after it shall be expected a improvement in the newborn vitality after the assistance procedures in the labor room.

Studies conducted previously affirmed that the risk of the assistance procedure is bigger the lower is the pregnancy age and/or the weighing at birth and in the practice, the necessity depends of the evaluation of four situations referring to the vitality: pregnancy in term, meconium absence; breathing or cry; muscle tone.21

It is noteworthy that the airways suction procedures, intubation, heating and intravenous medication, were the most developed in the immediate assistance making 82.57% of the total with 9 kinds of procedures.

Corroborating with this result, studies affirm that the endotracheal tube using in newborns is associated to the intra-hospital death, thus is probable that the newborns need to use the endotracheal tube, did it in association to other technology, as airways suction and venous medication use.21

Regarding the variant pregnancy age, according to the one established by Vaz (2011), we distributed the newborns and classified in <30 weeks (Newborns extreme pre-term), from 30 to 33 weeks and 6 days (Really premature newborn), from 34 to 36 weeks and 6 days (Newborn late pre-term), from 37 to 41 weeks and 6 days (Term newborn), > or 42 weeks (Newborn after-term).

In this way was possible to observe that the most part of the newborns participants of the research fixed in the extreme and really premature pre-term zone, presenting itself respectively in 44 (27.67%) and 42 (25.15%). This demonstrate that the neonatal mortality suffers a strong influence of the pregnancy age, because from the total of 159 newborns, only 36 (22.64%) are classified as “Term Newborn”, it is, was born in the right time. This result was similar to the others researches where from all the newborns who died, only 11.3% was born with the pregnancy age considered termed.5,9,21

The neonatal death probability decrease meaningfully as the pregnancy length increase: among the pre-termed alive newborn, the neonatal mortality is presented 28 times higher than the alive newborn from the termed pregnancy.9,22

Isso reforça os resultados encontrados nesta pesquisa onde a prevalência de RNs prematuros, abaixo de 37 semanas foi de 123 (77,35%). In others South Regions in Brazil, 93.1% of the premature who died were premature. In another study conducted in South Brazil, 93.1% of the children who died were premature.7

Having the knowledge of that information is extremely relevant, as soon as the prematurity is a variant that is really related to the neonatal mortality. This result serves like an alert to the responsible for the health care development.

Our efforts need to be concentrated in the prematurity prevention, in the qualified service providence to mothers with risky pregnancy and their premature newborns and/or low weigh at birth, using adequate and personal equipment trained to attend this premature population who need a fast and specialized attendance. The premature and low weigh at birth reduction will carry decisively in the neonatal mortality.
Factors related to the neonatal mortality.

It is verified in the figure 1, that the 25 kinds make 78.13% of the total death causes presented for the newborns. It is still noteworthy, that the causes sepsis, extreme prematurity, pulmonary bleed and respiratory failure were the most highlighted making 58.77% of the total of 78.13% (12 death causes) put on rank. Similar results were registered in researches about the same thematic, where considering the death cause, the data points to a higher frequency the extreme prematurity. (IG<30 weeks) and the hyaline membrane disease (HMD), 27 (46,5%) and 9 (15,5%) newborn, respectively.

In Rio de Janeiro cities, the death cause with a higher concentration was the anguish respiratory syndrome of the newborn, followed by non specific bacterial septicemia in the newborn, asphyxia at birth and premature newborn. In the other hand in Pernambuco the five basic main causes identified in the death declaration were: prematurity, hypoxia, conditions and maternal complications of the placenta and labor.

The main neonatal death case groups were related to the prematurity, infections, asphyxia/hypoxia, congenital malformations, maternal factors and related to pregnancy and to the respiratory diseases. The prematurity is considered as the main death cause in all the countries region, indicating problems at the prenatal assistance, in the moment of labor and to the new-born. Among the infections, the one with higher evidence is referred to the neonatal septicemia, with large rates in North and Northeast, and lower in South and Southeast. In the other hand, the congenital malformations have larger importance in South Brazil, with a cause distribution similar to the development countries.

CONCLUSION

This study achieved the purposed objective. The higher neonatal mortality risks were in the most part associated to the prenatal quality assistance, attendance at the birth and to the cares received by the newborns.

Although the indicators show an improvement in the basic care in Brazil, the prenatal quality is still unsatisfactory. Provide different attendance with the professional delivery in many requirement levels and offer all the necessary exams the conduction of this allowing the diagnosis and the disease treatment and the complications prevention that determine a higher maternal and newborn morbidity mortality, may provide results superiors to the current pattern, allowing substantial advances in the health care.

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