

## RESTRUCTURING PERINATAL CARE IN THE PUBLIC HEALTH NETWORK IN THE MUNICIPALITY OF CALDAS NOVAS (GOIÁS)

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**Abstract:** This article describes the development and results of an action research with a qualitative and quantitative approach to Restructuring Perinatal Care in the municipality of Caldas Novas - Goiás, carried out throughof the participatory intervention methodology, whoseThe result was positive in terms of achieving the objectives. Comparing data between the periods before (January to July 2016) and after (August/2016 to March/2017) implementation of the Technical Group for Restructuring Perinatal Care and Maternal, Fetal and Infant Death Surveillance. The study demonstrated a reduction in the Perinatal Mortality Rate, which went from 16.61 to 10.98/1000 live births and stillbirths (NV and MF), also showing a reduction in the classification of preventability of death, going from 89% to 50% early neonatal deaths (MNP) and from 40% to 16% fetal deaths (MF). The implementation of the strategies was classified into degrees, advanced to the Health Regulation Service; intermediary for the sectors of Epidemiology, Primary Care, Medical Center and the Death Verification Service and, to an incipient degree, for Maternity.

**Keywords:** Perinatal mortality. Evaluation of Health Programs. Strategic Action Plan.

## INTRODUCTION

Perinatal mortality is an uncommon phenomenon in developed countries, but common and little valued in less developed countries, where a large part of these deaths is concentrated. It stands out as a result of the greater involvement of the early neonatal element in infant mortality (WHO, 2006 apud MARTINS, 2013).

The concept of perinatal period was modified by the World Health Organization in the tenth revision of the International Classification of Diseases (ICD - 10) when the perinatal period began to correspond to the

beginning of the 22nd completed week or 154 days of gestation, at the time when the birth weight is normally 500 grams and extends up to seven full days after birth, that is, from 0 to 6 days.

By knowing the different aspects of infant mortality and the greater importance of perinatal deaths, alternatives supported by scientific evidence for reducing these deaths can support decisions in health policies at the national level and can be extremely favorable in the implementation of actions aimed at expanding access and improvement in the quality of care for pregnant women, childbirth and newborns at the local level (BRAZIL, 2016).

The research that precedes and encourages this study, entitled “Perinatal Mortality Profile in the Municipality of Caldas Novas (Goiás) in the period from 2010 to 2013” demonstrated that the perinatal mortality coefficient remained at stable levels with little increase in the studied interval, the risk of perinatal death increased 1.33 times compared to the first year of the study, not following the reduction at the level of Brazil or State, as was expected, with evidence of the early neonatal component that stood out in the last year of the research, presenting a mortality coefficient CMNP in 2010 of 6.85/1000 Live Births and in 2013 of 13.64/1000 Live Births, a number twice as high compared to the first year of the study. It also proved the hypothesis that perinatal mortality was related to the proximal determinants of prematurity (GA < 37 weeks) and low birth weight (< 2500g), to intermediaries related to the type of birth, place of death, and, also, for fetal mortality, the moment of death in relation to childbirth, and, to the distal levels of maternal education (< 4 years) (ROCHA, 2015). The thesis proposed to collaborate in the restructuring of perinatal care and consequently reduce mortality from preventable causes related to this period.

The study was of great personal importance, as, in addition to the topic being directly related to professional activities, it was followed by the master's thesis. The social and political relevance of the study is highlighted, contributing to Public Health policies by improving local perinatal care, bringing benefits to society as a whole.

## LITERATURE REVIEW

The term perinatal was proposed by Peller in 1940, when it was considered necessary to statistically analyze the sum of stillbirths (late fetal deaths) and deaths during the first seven days of life, facilitating the comparison of data internationally. At that time, clinicians and epidemiologists understood that the components of perinatal mortality were subject to the same causal factors of a pre- and perinatal nature.

High infant mortality rates were considered a consequence of socioeconomic factors until the end of the 19th century. The nationsThe most developed countries achieved a reduction in the infant mortality rate, mainly because they presented greater development in the socioeconomic sectors and improved sanitary conditions than in the allocation of resources and medical practices (BEZERRA et al., 2007).

In 1978, at the Alma Ata conference, in the former Soviet Union, the World Health Organizationadmitted primary care as a key to achieving a minimum acceptable level of health, establishing a commitment to “Health for all by the year 2000”, with the Infant Mortality Rate being chosen as one of the most important health indicators, setting goals for its reduction by the year 2000, mainly for underdeveloped and developing countries (BRASIL, 1997 apud SILVA; TENÓRIO, 2008).

Due to the reduction in the post-neonatal component of infant mortality from the

1990s onwards, the relative weight of deaths occurring in the neonatal period increased (LANSCK et al., 2002), the neonatal mortality rate being around 20/1,000 births. It began to correspond to more than 60% of infant mortality in the second half of the 90s, with a greater concentration of these deaths in the first days of life (LANSCK et al., 2002; CARVALHO and GOMES 2005).

Many studies have described that the variables associated with early neonatal mortality (prematurity, low birth weight and complications during pregnancy and birth) are associated in a complex way, influenced by maternal and newborn biological characteristics, social conditions and the assistance offered by health services. (NASCIMENTO et al. 2012)

According to Lima et al. (2015, p. 71) "Fetal mortality reflects the woman's health status, the quality and accessibility of primary health care available to pregnant women, as well as the quality of intrapartum care". They are largely classified as potentially preventable and mostly occur at the end of low-risk pregnancies, generally in stillbirths without congenital malformations.

The occurrence of perinatal deaths is linked to the performance capacity of health services and the quality of medical care, which is why they are considered a sentinel event (SILVA et al., 2010).

The concept of risk is associated with that of probabilities, and the link between a risk factor and damage is not always made explicit (BRASIL, MS, 2006). Perinatal mortality results from a complex causal chain, where proximal determinants are triggered by intermediate and distal factors (FONSECA; COUTINHO, 2004).

Aquino et al. (2007) highlight the importance of deepening knowledge on the determination of perinatal mortality, which allows the identification of causes and risk

factors, enabling interventions aimed at reducing it.

To achieve improvement in perinatal indicators, health service actions must continue in an associated and continuous manner throughout the pregnancy, birth and postpartum process (BHUTA et al., 2005 apud MARTINS, 2005). Health services, community, family and other departments of society must join forces to understand and correct the various factors associated with perinatal mortality (MARTINES et al., 2005).

At the Brazilian level, the analysis of the preventability of death would facilitate the adoption of performance monitoring actions according to the level of complexity of health care (basic, medium and high) and the level of prevention (primary, secondary or tertiary) to be carried out. Its results could guide public health actions and policies, the development of scientific studies with a desirable degree of comparability and the application of this type of methodology in the routine of health services (MALTA et al., 2007).

Law 8080/90 (BRASIL, 1990) states in its article 17 that it is the responsibility of states and municipalities to participate in actions to control and evaluate working conditions and environments. In this context, (OLIVEIRA, 2015, p.16), highlights that:

Managers, directors and those responsible for Obstetric and Neonatal Care Services are also responsible for planning and adopting actions to guarantee the quality of work processes. This concept includes the following activities: coordination of the technical team; the adoption of humanization actions and measures; the development of institutional protocols, in accordance with current standards and scientific evidence; supervision of technical staff by a higher-level professional; the evaluation of service indicators; and the traceability of all its processes.

## METHODOLOGY

This article was based on the doctoral thesis in public health, which was structured on monitoring the Restructuring of Perinatal Care in the municipality of Caldas Novas (Goiás), through the description of the experience of ``SIGA MAMÃE`` and ``SIGA BEBÊ`` programs and the RESTRUCTURING TECHNICAL GROUP OF PERINATAL CARE AND SURVEILLANCE OF MATERNAL, FETAL AND CHILD DEATH, using the methodology of a participatory intervention study, action research type, with a quantitative and qualitative approach to defining and evaluating strategies that guided transformations in perinatal care processes carried out in public health services.

The study applied the action research proposal, according to the methodology of THIOLENT, 2008, which suggests the use of 12 steps that interact and adjust to different circumstances.

According to Thiollent (2008, p. 15) apud Prodanov and Freitas (2013, p. 66), any action research has a participatory characteristic: "the participation of people involved in the problems investigated is absolutely necessary. However, anything called participatory research is not action research." It necessarily requires an action that is involved with the problem under investigation, "as long as it is a trivial action", which means a "problematic action worthy of investigation to be elaborated and conducted". In this type of research, researchers actively participate in resolving the identified problem, tracking and supervising interventions developed as a result of the problems.

The research was developed in three stages, initially carrying out a bibliographical survey pertinent to the subject, in a second stage using the quantitative approach to carry out the situational diagnosis and, finally, in the third stage using the qualitative approach

specifically used to describe the action research.

The exploratory phase, considered the master's research "Perinatal mortality profile in the municipality of Caldas Novas in the period from 2010 to 2013", the updated information regarding the period after the research - 2014 to July 2016, the documents provided by the Epidemiological Surveillance coordination - "description of the favorable and unfavorable aspects faced by medical professionals and nurses in Primary Care during prenatal care and suggestions for improving assistance".

All professionals and managers who contribute to assistance to the mother-child binomial and the researcher were considered as interested parties and, as beneficiaries, all pregnant women, fetuses, newborns, managers, management and the community.

The research theme arose from the concern to reduce perinatal mortality in the municipality of Caldas Novas (Goiás), where we had the data, we had the desire to change reality and also the conditions for this, he also considered the recommendation to continue the master's research, Linking professional practice to research activity, it is noteworthy that it also contributed to strengthening the work process, through participatory management based on reality.

The starting point for the execution of the project was the creation of the Technical Group of Restructuring of Perinatal Care, which involved the participation of those responsible for the maternal and child care sectors to facilitate the development of implementation and implementation activities, namely: representatives of ``Maternidade Amor e Esperança`` and Children's Emergency Care (1 obstetrician, 1 doctor pediatrician and 1 nurse technician responsible), of Primary Care (1 general practitioner and the nurse coordinator of the sector) of high-risk prenatal care - Specialized Medical Center -

(1 nurse); the Epidemiological Surveillance Service (1 nurse, 1 psychologist and 1 nursing technician) and the Death Verification Service (1 coordinator). It is noteworthy that the implementation of the GT was an essential axis for the development of the process of improving assistance to the mother-child binomial.

At the same time, the State of Goiás was working on Project SIGA mama and ``SIGA BEBÊ``, which had similar objectives to those of the municipal project, which is why Caldas Novas was invited to participate as PILOT of the state project. Therefore, the research that had as its initial title "Restructuring of Perinatal Care in the Municipality of Caldas Novas (Goiás)" became "Restructuring of Perinatal Care in the Municipality of Caldas Novas (Goiás)". An Experience of the Technical Group for Maternal, Fetal and Infant Death Surveillance and the Implementation of the ``Siga Mamãe`` and ``Siga Bebê`` Program", enriching the research in question.

The hypothesis developed to problematize the research that sought possible solutions was that the Restructuring of Perinatal Care would contribute to the reduction of Perinatal Mortality Rates, bringing improvements to assistance for the mother-child binomial, which led to the main objective of restructuring perinatal care in the public health network in the city of Caldas Novas (Goiás).

The description of the theory occurred in a cyclical manner in the framework and in the development of actions established to solve the problem raised, supporting the discussions of the Technical Group by bringing scientific rigor.

The realization of Seminars, named after meetings in the research in question, were the main strategy used to raise and discuss the topics suggested by the group to contribute and guide the resolution of the problems.

To delimit the field of observation, they were

selected as study population the structural and operational components of the public service network for obstetric and neonatal health care and the surveillance of live births and maternal, infant and fetal mortality, opting for the sample to be qualitatively representative, intentionally selecting a group of people due to the importance they represented in improving the quality of perinatal care. In this context, the study sample included departments and professionals (representatives of the Technical Group) of the public obstetric and neonatal care service network. Private obstetric and neonatal care networks were excluded from the research.

Quantitative analysis was used to carry out the situational diagnosis and analysis of the change in the mortality profile, using secondary data from the Master's research covering the period from 2010 to 2013, from the Health Information Systems of the SUS IT Department (DATASUS) and from the (SIM and SINASC) for the period from 2014 to July 2016.

To assess whether the perinatal care restructuring project was effective, an analysis of the rates and preventability of perinatal deaths was carried out.

The variables related to perinatal mortality and its components were distributed, organized and compared for each available selection, resulting in a new epidemiological profile.

The Perinatal Mortality Coefficients and their components were calculated for the proximal, intermediate and distal determinants. The perinatal and fetal mortality coefficients were calculated through the number of deaths (perinatal or fetal) divided by the number of total births (live births + stillbirths) x 1,000, the early neonatal mortality coefficient was calculated by the number of early neonatal deaths, divided by the number of live births x 1000, to verify the

significant relationship of the studied variables and also whether they would present a risk of death, univariate analysis was performed through the chi-square test and Risk Ratio, applying the data to the Epi Info7 program.

The qualitative analysis was developed through the collection of information derived from the observation of institutional documents, (collection of information resulting from reports, ATA book, direct observation) organized by the Technical Group in tables, separated by type of assistance (primary care and hospital care) and classified by type of actions (immediate, medium-term and long-term). The analysis of information regarding the definition of strategies and actions, those responsible and deadlines for execution, evaluation of effectiveness and correction of failures, was carried out using the Public Health program/project model, suggested by Aguilar and Ander-EGG (1995), resulting in a logical model for restructuring perinatal care. The evaluation was carried out using spreadsheets, the indicators were based on the proposed actions; considering the following score: (2) action developed; (1) developed in part and (0) not developed, the evaluation was based on the parameters suggested in the studies by Ferreira and Vieira da Silva (2005), using as final score (%): Advanced > 75%; Intermediate >50% to ≤75%; Incipient >25% to ≤50%; Not implemented ≤ 25%.

The research was approved and authorized by the Municipal Health Secretary and the participants of the Technical Group - coordinators of the departments involved in assisting the mother-child binomial and in monitoring maternal, fetal and infant deaths.

The learning phase occurred throughout the investigation process and discussions of actions, elucidating decision-making.

Formal and informal knowledge was considered throughout the research, as the

problems arose from the reality experienced to be discussed and theorized with scientific support.

The Planning was proposed by the research participants together with the researcher, being modified and/or corrected during the evaluation and discussion process, with the intention of providing answers to the questions that guided the study and responding to the group's expectations.

The research was disseminated through reports sent periodically to the Municipal Health Department, and in meetings between GT members, containing information on activities already carried out and progress in reducing perinatal mortality. Dissemination to the scientific community occurred after approval of the article for publication in a journal in the area.

## **RESEARCH PROCESS RESULTS**

The description of the results took place in 2 phases, each distributed in 2 stages, the first phase corresponds to the diagnosis of the situation and the second represents the Action Plan and the direct results achieved with the restructuring process.

### **SITUATIONAL DIAGNOSIS OF PERINATAL MORTALITY IN THE CITY OF CALDAS NOVAS (GOIÁS)**

The situational diagnosis is presented in 3 phases, firstly to support the development of implementation actions or implementation of strategies in the short, medium and long term, the rates and variables related to perinatal mortality were presented, subsequently a survey of the aspects was carried out. favorable and unfavorable aspects of maternal and child care and in the third stage, the diagnosis of the structure and functioning of the sectors involved in the research was described, which took place during the process of describing the specific action plan for each department.

## PERINATAL MORTALITY COEFFICIENTS AND ITS FETAL AND EARLY NEONATAL COMPONENTS IN THE MUNICIPALITY OF CALDAS NOVAS FROM 2010 TO JULY 2016

In the periods from 2010 to 2013 and between 2014 and July 2016, there was a predominance of the fetal component of perinatal mortality with percentages of 54.74% and 52.63% respectively.

It was also observed that fetal mortality, which had been falling since 2010, showed an increase in mortality risk of 3.58 in 2015, falling again in 2016.

In 2013 and 2016, the concentration of the early neonatal component of perinatal mortality was 57.14% and 64.28% respectively. The highest risk of death for the analyzed CMP interval (23/1,000 births) was in 2013.

The perinatal mortality coefficient was at levels considered intermediate (20 – 40/1000 births) in the years 2010, 2012 and 2013; in 2011, 2014, 2015 and 2016 the values found were considered low (<20/1000 births).

In the period analyzed, the average Perinatal Mortality Rate was 19.97/1,000 live and dead births, fetal mortality was 10.24/1,000 live births and early neonatal mortality was 9.08/1,000 live births; demonstrating a greater risk for fetal mortality in the analysis of the period as a whole (RR=1.16), demonstrating a close connection between them and the lack of considerable variations.

In the two intervals analyzed, statistical significance was observed at  $p < 0.05$ ; for the variables: gestational age (GA) and birth weight for both perinatal mortality and its two components. The type of double pregnancy was significantly associated with perinatal mortality and its fetal component.

The perinatal and fetal mortality coefficients were higher for mothers aged 35 and over, presenting statistical significance for the fetal component in the two intervals

analyzed.

Vaginal birth had a risk of death 3.15 times higher than cesarean section, with early neonatal death being higher (3.72 times) in relation to fetal death. The risk of death related to both the type of vaginal or cesarean birth showed a drop in the last period analyzed, while for the early neonatal component this situation was reversed, showing an increase for both types of birth, being more significant for vaginal birth, in which there was an increase in the possibility of death of 2.49 times when comparing the intervals from 2010 to 2013 and 2014 to July 2016.

The moment of death in relation to childbirth demonstrated statistical significance for the two periods analyzed, a drop in the risk of death for the period from 2014 to July 2016 of (10.36 times) is highlighted.

It was observed change in the profile of age at neonatal death, from 2010 to 2013 there was a higher concentration and risk of death for variable (< 24 Hours) 51.16% and RR 0.22 respectively and in the interval from 2014 to July 2016 there was a higher concentration and risk for variable (1 to 6 days), 57.14% and RR 1.21.

The race/color variable was described only for the early neonatal component, due to the unavailability of the field for entering fetal death in the Mortality Information System. This variable did not show a significant association with early neonatal mortality; however, the white race presented a higher risk of death for the two periods studied.

Maternal education of less than 4 years of study showed an association with perinatal mortality and its components in the two periods analyzed, except for the early neonatal component in the period from 2014 to July 2016, with a drop-in risk of 6.70 to 2.09, with this situation being reversed for the fetal component that presented the highest risk in the last period.



| Year of Death         | 2010  | 1011  | 2012  | 2013  | 2014  | 2015  | Jan a julho 2016 | 2010 to 2013 | January, 2014 to July, 2016 | 2010 to July, 2016 |
|-----------------------|-------|-------|-------|-------|-------|-------|------------------|--------------|-----------------------------|--------------------|
| Live Births           | 1021  | 1123  | 1129  | 1173  | 1303  | 1328  | 773              | 4446         | 3401                        | 7847               |
| Fetal Deaths          |       |       |       |       |       |       |                  |              |                             |                    |
| Nº                    | 14    | 12    | 14    | 12    | 10    | 15    | 05               | 52           | 30                          | 82                 |
| Denominator           | 1035  | 1135  | 1143  | 1185  | 1313  | 1340  | 778              | 4498         | 3431                        | 7929               |
| CMF <sup>(*)</sup>    | 13,52 | 10,57 | 12,24 | 10,13 | 7,61  | 11,19 | 6,42             | 11,56        | 8,74                        | 10,34              |
| Early neonatal deaths |       |       |       |       |       |       |                  |              |                             |                    |
| Nº                    | 7     | 10    | 10    | 16    | 9     | 9     | 9                | 43           | 27                          | 70                 |
| Denominator           | 1021  | 1123  | 1129  | 1173  | 1303  | 1325  | 773              | 4446         | 3431                        | 7847               |
| CMNP <sup>(*)</sup>   | 6,85  | 8,9   | 8,85  | 13,64 | 6,90  | 6,79  | 11,64            | 9,67         | 7,89                        | 8,92               |
| Perinatal deaths      |       |       |       |       |       |       |                  |              |                             |                    |
| Number                | 21    | 22    | 24    | 28    | 19    | 24    | 14               | 95           | 57                          | 152                |
| Denominator           | 1035  | 1135  | 1143  | 1185  | 1313  | 1340  | 778              | 4498         | 3431                        | 7929               |
| CMP <sup>(*)</sup>    | 20,28 | 19,38 | 20,99 | 23,63 | 14,47 | 17,91 | 17,99            | 21,12        | 16,61                       | 19,17              |

Table 1: Determination of perinatal mortality coefficients and their fetal and early neonatal components per year from 2010 to July 2016 in the municipality of Caldas Novas (Goiás)

<sup>(\*)</sup> per thousand total births (Live births plus stillbirths)

<sup>(\*)</sup> per thousand live births

Source: Master's Dissertation (2010 to 2013), DATASUS (2014 completed and 2015 provisional) and SIM – SINASC (January/July 2016) Adapted.

| VARIABLES                | TYPE OF DEATH     |       |                  |                  |       |       |                  |       |       |                  |                  |       |              |      |                  |                  |        |       |                  |       |       |       |      |       |       |  |
|--------------------------|-------------------|-------|------------------|------------------|-------|-------|------------------|-------|-------|------------------|------------------|-------|--------------|------|------------------|------------------|--------|-------|------------------|-------|-------|-------|------|-------|-------|--|
|                          | FETAL             |       |                  |                  |       |       | EARLY NEONATAL   |       |       |                  |                  |       | PRINATAL     |      |                  |                  |        |       |                  |       |       |       |      |       |       |  |
|                          | 2010 to 2013      |       |                  | 2014 to Jul/2016 |       |       | 2010 to 2013     |       |       | 2014 to Jul/2016 |                  |       | 2010 to 2013 |      |                  | 2014 to Jul/2016 |        |       |                  |       |       |       |      |       |       |  |
| CM                       | RR                | P     | X <sup>two</sup> | CM               | RR    | P     | X <sup>two</sup> | CM    | RR    | P                | X <sup>two</sup> | CM    | RR           | P    | X <sup>two</sup> | CM               | RR     | P     | X <sup>two</sup> |       |       |       |      |       |       |  |
| SEX                      | Feminine          | 9.56  | 1.15             | 0.777            | 0.083 | 10.75 | 1.71             | 0.21  | 1.56  | 10.57            | 1.33             | 0.44  | 0.58         | 7.95 | 1.09             | 0.96             | 0.0024 | 20.04 | 1.24             | 0.39  | 0.74  | 18.51 | 1.25 | 0.47  | 0.52  |  |
|                          | Masculine         | 8.3   |                  |                  |       | 6.26  |                  |       |       | 7.93             |                  |       |              | 8.59 |                  |                  |        | 16.17 |                  |       |       | 14.79 |      |       |       |  |
| GESTATIONAL AGE          | < 37 SEM          | 66.4  | 24.2             | <0.05            | 175.1 | 73.96 | 57               | <0.05 | 182.5 | 48.17            | 21.3             | <0.05 | 116.4        | 63.9 | 24.5             | <0.05            | 122.8  | 111.4 | 22.3             | <0.05 | 291.7 | 133.1 | 34.1 | <0.05 | 302.2 |  |
|                          | ≥ 37 SEM          | 2.75  |                  |                  |       | 1.3   |                  |       |       | 2.26             |                  |       |              | 2.6  |                  |                  |        | 5     |                  |       |       | 3.9   |      |       |       |  |
| WEIGHT                   | < 2,500g          | 99.2  | 31.7             | <0.05            | 275.6 | 74.7  | 46.7             | <0.05 | 176.1 | 72.6             | 33.3             | <0.05 | 194.3        | 70.4 | 27.5             | <0.05            | 138.7  | 164.8 | 31               | <0.05 | 462.6 | 143.3 | 33.7 | <0.05 | 312.3 |  |
|                          | ≥ 2,500g          | 3.14  |                  |                  |       | 1.6   |                  |       |       | 2.8              |                  |       |              | 2.6  |                  |                  |        | 5.3   |                  |       |       | 4.2   |      |       |       |  |
| TYPE OF PREGNANCY        | Pair              | 53.8  | 5.4              | <0.05            | 12.3  | 0.0   | 0.0...           | 0.9   | 0.003 | 11.4             | 1.4              | 0.8   | 0.07         | 18.2 | 2.3              | 0.94             | 0.005  | 64.5  | 3.6              | <0.05 | 8.3   | 18.2  | 1.1  | 0.7   | 0.2   |  |
|                          | Only              | 10.0  |                  |                  |       | 8.6   |                  |       |       | 8.0              |                  |       |              | 8.1  |                  |                  |        | 17.9  |                  |       |       | 16.6  |      |       |       |  |
| MOTHER AGE               | 35 and +          | 21    | 2.5              | <0.05            | 4     | 32.9  | 5.4              | <0.05 | 20.7  | 0.0              | 0.0...           | 1.4   | 3.4          | 0.4  | 0.5              | 0.4              | 22     | 15.6  | 1.9              | 0.12  | two   | 36.2  | 2.5  | <0.05 | 6.6   |  |
|                          | < 35              | 8.4   |                  |                  |       | 6.07  |                  |       |       | 7.3              |                  |       |              | 8.7  |                  |                  |        |       |                  |       |       | 14.7  |      |       |       |  |
| TYPE OF DELIVERY         | Vaginal           | 21.05 | 2.82             | <0.05            | 13.34 | 19.84 | 5.02             | <0.05 | 17.25 | 17.92            | 3.72             | <0.05 | 16.29        | 20.4 | 4.1              | <0.05            | 15.34  | 38.6  | 3.15             | <0.05 | 30.5  | 39.8  | 4.7  | <0.05 | 37.3  |  |
|                          | Cesario           | 7.46  |                  |                  |       | 3.48  |                  |       |       | 4.81             |                  |       |              | 5.1  |                  |                  |        | 12.23 |                  |       |       | 8.5   |      |       |       |  |
| MOMENT OF DEATH          | Before childbirth | 10.7  | 23.8             | <0.05            | 40.3  | 8.1   | 13.4             | <0.05 | 19.8  |                  |                  |       |              |      |                  |                  |        |       |                  |       |       |       |      |       |       |  |
|                          | During childbirth | 0.4   |                  |                  |       | 0.6   |                  |       |       |                  |                  |       |              |      |                  |                  |        |       |                  |       |       |       |      |       |       |  |
| AGE AT NEONATAL DEATH    | < 24 hours        |       |                  |                  |       |       |                  |       |       | 4.9              | 1.04             | 1     | 0            | 3.6  | 1.3              | 0.6              | 0.3    |       |                  |       |       |       |      |       |       |  |
|                          | 1 to 6 days       |       |                  |                  |       |       |                  |       |       | 4.7              |                  |       |              | 4.8  |                  |                  |        |       |                  |       |       |       |      |       |       |  |
| PLACE OF OCCUR. OF DEATH | Hospital          | 200   | 18.7             | <0.05            | 17.6  | 200   | 25.4             | <0.05 | 24    | 125              | 13.2             | 0.12  | 2.33         | 125  | 15.7             | 0.08             | 2.9    | 300   | 14.9             | <0.05 | 26.01 | 300   | 19   | <0.05 | 33.5  |  |
|                          | Others            | 10.7  |                  |                  |       | 7.9   |                  |       |       | 9.5              |                  |       |              | 7.9  |                  |                  |        | 20.1  |                  |       |       | 15.8  |      |       |       |  |
| MATERNAL SCHOOLING       | < 4               | 25.9  | 3.1              | <0.05            | 5.6   | 63.5  | 8.5              | <0.05 | 16.9  | 35.4             | 6.7              | <0.05 | 24.4         | 16.9 | 2.1              | 0.98             | 0.0004 | 60.3  | 4.4              | <0.05 | 27.6  | 79.4  | 5.1  | <0.05 | 11.8  |  |
|                          | ≥ 4               | 8.3   |                  |                  |       | 7.4   |                  |       |       | 5.3              |                  |       |              | 8.1  |                  |                  |        | 13.6  |                  |       |       | 15.5  |      |       |       |  |
| RACE                     | White             |       |                  |                  |       |       |                  |       |       | 9                | 1.2              | 0.69  | 0.15         | 10.1 | 1.5              | 0.34             | 0.9    |       |                  |       |       |       |      |       |       |  |
|                          | Brown + Black     |       |                  |                  |       |       |                  |       |       | 7.5              |                  |       |              | 6.4  |                  |                  |        |       |                  |       |       |       |      |       |       |  |

Subtitle:

CM: Mortality Coefficient

RR: Relative Risk

P values: p<0.5 - Statistical significance of the Variable

X<sup>2</sup>: Chi-square test value

## SURVEY OF FAVORABLE AND UNFAVORABLE ASPECTS RELATED TO PERINATAL CARE

The option of analyzing institutional documents to survey the favorable and unfavorable aspects regarding assistance to the mother-child binomial (Table 1) and suggestions for improving care and epidemiological surveillance of mortality and live birth statistics (Table 2), were considered because they demonstrate the reality experienced by the team and to support the actions to be established, highlighting that the suggestions for improvement were related to unfavorable aspects, which reinforces the importance of working together.

### PERINATAL MORTALITY RESTRUCTURING ACTION PLAN

#### OPERATING PLAN

The operational plan for the development of the study was described separately during development for each sector, facilitating the methodological process.

Action planning took place during meetings to discuss information about the favorable and unfavorable aspects of assistance in surveying proposals for improving services. The execution of the established actions took place in the weeks following the meetings and the information processed at each meeting regarding the difficulties encountered in developing the actions supported the content covered for subsequent meetings.

For each department, 02 Logical Models of Implementation or Implementation of strategies were developed: one to present the description of the organizational context, the theory applied to the establishment of the action, the justification, the objective, the evaluation, the obstacles, the correction or redirection of actions, the presentation of the necessary resources and budget and also

the conclusion and discussion of the results, and, another for present the The actions to be carried out by the sectors, through a combined table, demonstrating the specific objectives, the actions, those responsible for each task, the duration of the actions, the necessary resources, the evaluation and correction of the actions.

The evaluation indicators were selected according to the establishment of the actions that covered the strategy to be developed.

Table 3 shows by sector the actions established as priorities and the obstacles to carrying out the actions, the actions to overcome the obstacles and also the percentage of completion (final evaluation) of the same:

The process of intersectoral coordination and implementation or implementation of protocols were established and achieved by all sectors.

The strategy of articulation was the first action developed, it was noticed that all professionals wanted this work system and that it must be used by all health departments or programs, as it facilitates the elaboration and development of actions aimed at improving the quality of care.

Even though approval of the protocols did not occur in all departments, they were implemented and/or prepared by all sectors that were part of the study.

Among the limitations and operational obstacles faced in carrying out the study, the lack of studies related to action research applied to the health area, the high turnover of medical professionals, nurses and directors of units in the public health network and the carrying out of the project in an election year, negatively influencing all aspects of this plan.

It is noteworthy that the only direct actions took place in the implementation of the GT, in the development of GT meetings for death surveillance and restructuring of care, in the implementation of electronic prenatal records

|                            |   | Favorable aspects  | Unfavorable aspects  |
|----------------------------|---|--|--|
| Prenatal care              | Basic care                              | <ul style="list-style-type: none"> <li>• Carrying out usual risk prenatal care;</li> <li>• Existence of dad's prenatal care with exams;</li> <li>• Existence of the group of pregnant women;</li> <li>• Mom test availability;</li> <li>• Availability of prenatal exams;</li> </ul> | <ul style="list-style-type: none"> <li>• Low maternal adherence to prenatal care;</li> <li>• Negligence during high-risk pregnancies;</li> <li>• Inadequate physical examination;</li> <li>• Lack of systematization of assistance and the referral and counter-referral process;</li> <li>• Lack of integration between health sectors;</li> <li>• Lack of reception by health professionals;</li> <li>• Lack of adequate guidance regarding warning signs for labor and newborn care;</li> </ul> |
|                            | High Risk PN                            | <ul style="list-style-type: none"> <li>• Existence of a high-risk prenatal clinic;</li> </ul>  | <ul style="list-style-type: none"> <li>• Non-systematization of assistance;</li> <li>• Lack of integration between health sectors;</li> </ul>  |
| Hospital care              | Assistance to labor It is to childbirth | <ul style="list-style-type: none"> <li>• 99% of births are hospitalized;</li> <li>• Availability of obstetricians for pre-delivery and delivery care;</li> <li>• Availability of a pediatrician to assist the newborn in the delivery room;</li> </ul>                               | <ul style="list-style-type: none"> <li>• Inadequate physical examination;</li> <li>• Non-systematization of assistance;</li> <li>• Lack of adequate guidance regarding childbirth;</li> <li>• Failure to use the partograph;</li> </ul>  |
|                            | Hospital care to RN                     | <ul style="list-style-type: none"> <li>• Presence of a doctor to provide immediate assistance to the newborn;</li> <li>• Existence of a childcare clinic;</li> </ul>   | <ul style="list-style-type: none"> <li>• There is a lack of systematization of references and counter-references;</li> <li>• Lack of systematization of childcare assistance;</li> <li>• Lack of integration between health sectors;</li> <li>• Lack of reception by health professionals;</li> </ul>  |
| Epidemiological monitoring | Program YES SINASC                      | <ul style="list-style-type: none"> <li>• 100% coverage of birth and mortality events;</li> </ul>   | <ul style="list-style-type: none"> <li>• Lack of structuring of a maternal, fetal and infant death surveillance group;</li> <li>• Lack of integration between health sectors;</li> </ul>   |
| Regulation                 |   | <ul style="list-style-type: none"> <li>• Existence of a regulation service;</li> </ul>   | <ul style="list-style-type: none"> <li>• Non-availability of exams in a timely manner</li> <li>• Lack of integration between health sectors</li> </ul>   |
| Political factors          |   | <ul style="list-style-type: none"> <li>• Regional assistance network organized to offer pregnant women timely access to services capable of resolving childbirth and obstetric and neonatal emergencies;</li> </ul>  | <ul style="list-style-type: none"> <li>• Non-availability of programs to prevent health problems for pregnant women;</li> <li>• Numerous pregnant women coming from other states without a culture of prenatal care;</li> <li>• Lack of neonatal ICU in the municipality;</li> <li>• Professionals without employment contracts;</li> <li>• Lack of refresher courses;</li> </ul>  |
| Socioeconomic Factors      |   |  | <ul style="list-style-type: none"> <li>• Low socioeconomic level of the family;</li> <li>• Early pregnancy;</li> <li>• Low education level of the pregnant woman;</li> </ul>   |
| Maternal factors           |   |  | <ul style="list-style-type: none"> <li>• Lack of maternal responsibility (adherence to prenatal care and treatment of pathologies);</li> </ul>   |

Frame 1: Survey of favorable and unfavorable aspects

Source: Organized by the author (2017)

## SUGGESTIONS

- Promote integration in the health network;
- Provide pregnant women with medicines and vitamins;
- Provide continuous training to professionals who care for pregnant women and newborns;
- Continue prenatal care at the ESF or at the high-risk outpatient clinic until the seventh month and forward to the hospital obstetrics outpatient clinic for continuation;
- Establish a referral and counter-referral process for patients referred to obstetrics and pediatrics. Ensuring patient assessment and carrying out exams when requested;
- Establish a gestational age so that the pregnant woman can be evaluated by an obstetrician-gynecologist;
- Facilitate access to exams in the maternity ward;
- Facilitate the referral of pregnant women to high-risk prenatal care;
- Increase the number of obstetrics outpatient clinics;
- Improve the quality of care for pregnant women in the reference maternity hospital;
- Improve the professional-patient relationship;
- Valuing patients' complaints;
- Value referrals from doctors at Basic Units;
- Promote regular meetings with the purpose of identifying potential, correctable factors, from prenatal care to childbirth and postpartum care;
- Provide integrated Electronic Medical Records, facilitating the identification of health history and assistance received;
- Develop protocols and systematize maternal and child care.

Frame 2: Suggestions for improving maternal and child care

Source: Organized by the author (2017).

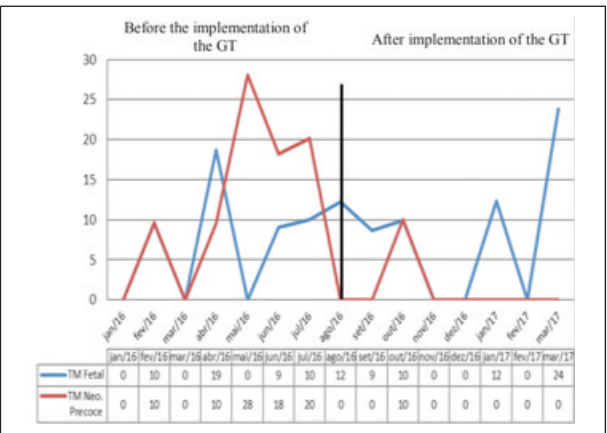
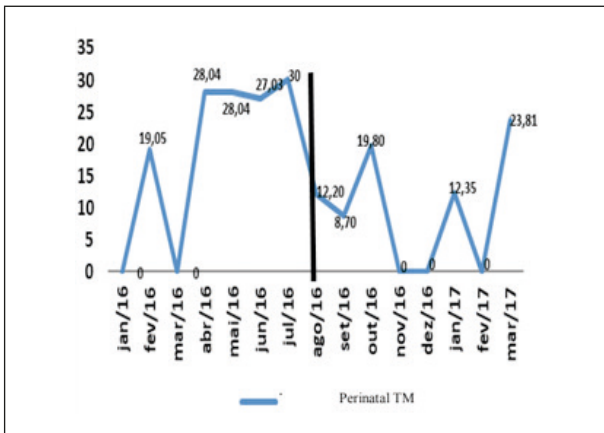
in primary care through the state programs ``SIGA Mamãe`` and ``SIGA Bebê``, and in the provision of USGs and prenatal exams, however, even though some actions have not yet been developed or finalized, a great impact of this work was observed in reducing perinatal deaths, assuming that this reduction was relatively due to greater surveillance of the pregnancy and birth process by committed professionals than actually developing actions.

By guiding strategies and techniques for articulating actions, knowledge and subjects, it is possible to in fact enhance the guarantee of comprehensive, resolute and humanized care.

This must be implemented by building links between professionals and the population, driven by the collective construction of strategies that generate transformations in service practices, with the ethical principle being "defense and affirmation of a life worth living". The involvement of the three spheres of municipal, state and federal government and the coordination between health workers, managers, civil society and the instances of participation and social control of the SUS in each context are necessary for this construction (BRAZIL, 2009).

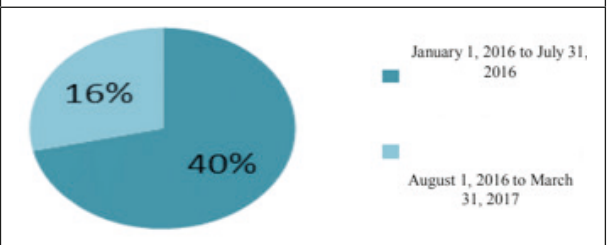
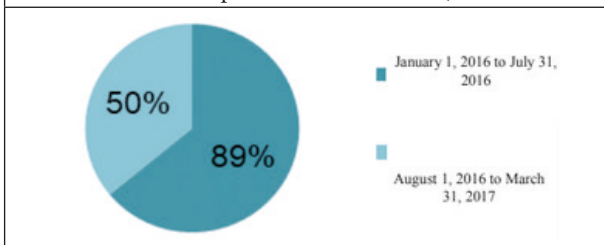
| MOTHERHOOD LOVE AND HOPE – MAE   | BASIC ATTENTION   | SPECIALIZED MEDICAL CENTER (High-risk prenatal care)  | HEALTH REGULATION SERVICE   | EPIDEMIOLOGICAL SURVEILLANCE CENTER   | DEATH VERIFICATION SERVICE   |
|--|---|---|---|---|--|
| <ul style="list-style-type: none"> <li>• Improve links between hospital units, AB and collaborating units;</li> <li>• Improve the health professional and patient relationship;</li> <li>• Improve medical records and prenatal, childcare and newborn care forms;</li> <li>• Establish service flows to prenatal care, postpartum women and newborns</li> <li>• Establish a reference and counter-reference process;</li> </ul>   | <ul style="list-style-type: none"> <li>• Improve links between hospital units, AB and collaborating units;</li> <li>• Improve the health professional and patient relationship;</li> <li>• Implement the Prenatal Action program;</li> <li>• Improve medical records and prenatal, childcare and newborn care forms;</li> <li>• Establish prenatal, postpartum and newborn care flows (Structuring Home and childcare visits until the 5th day of life)</li> <li>• Establish a reference and counter-reference process;</li> <li>• Ensure that from 28 weeks onwards the pregnant woman is monitored every fortnight and from 36 weeks of gestation weekly or daily if necessary;</li> <li>• Monitor pregnant and postpartum women (drug addiction and mental problems) involving guardianship council and social worker when necessary;</li> </ul> | <ul style="list-style-type: none"> <li>• Maintain integration with sectors that provide perinatal care;</li> <li>• Improve notes in medical records;</li> <li>• Ensure that from 28 weeks onwards the pregnant woman is monitored every fortnight and from 36 weeks of gestation weekly or daily if necessary;</li> <li>• Establish a flow of high-risk prenatal outpatient clinics;</li> </ul> | <ul style="list-style-type: none"> <li>• Maintain integration with sectors that provide perinatal care;</li> <li>• Optimize Prenatal exams (USG; Hemograms; EAS);</li> <li>• Establish flows for scheduling and carrying out exams;</li> <li>• Implement testing for screening of Group B Streptococcus for prenatal care;</li> </ul> | <ul style="list-style-type: none"> <li>• Implement the technical group for restructuring perinatal care and maternal, infant and fetal death surveillance;</li> <li>• Develop a protocol of standards and routines for the functioning of the WG for restructuring perinatal care and maternal, fetal and child death surveillance;</li> <li>• Strengthen links between the hospital unit, PHC and collaborating units;</li> <li>• Monitor data relating to perinatal care on a monthly basis;</li> </ul> | <ul style="list-style-type: none"> <li>• Maintain integration with sectors that provide perinatal care;</li> <li>• Maintain the quality of the definition of causes of death, especially regarding maternal, fetal and infant deaths;</li> <li>• Perform a necropsy for all infant and fetal deaths, or only for the placenta and annexes when the family does not allow a necropsy of the body;</li> <li>• Establish care flows for the body and family;</li> </ul> |
| <p><b>Medium-term actions</b></p> <ul style="list-style-type: none"> <li>• Develop protocols to standardize care and care for pregnant women with clinical complications, in labor, childbirth, the postpartum period and the newborn;</li> <li>• Implementation of the program for all medical records of pregnant women in labor;</li> <li>• Enable the right to a companion during the pregnant woman's hospitalization;</li> <li>• Statistical survey (notification of pregnant women in premature labor due to urinary tract infection);</li> </ul> | <ul style="list-style-type: none"> <li>• Implementation of prenatal care protocols;</li> <li>• Implement the family planning program;</li> </ul>  | <ul style="list-style-type: none"> <li>• Develop high-risk prenatal care protocols;</li> </ul>  | <ul style="list-style-type: none"> <li>• Develop a protocol for regulating medical care and carrying out examinations for pregnant women and newborns;</li> </ul>   |   |  |
| <p><b>Short-term actions</b></p>   |   |   |   |   |  |





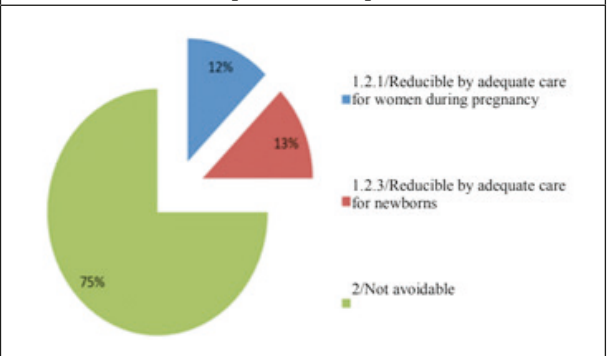
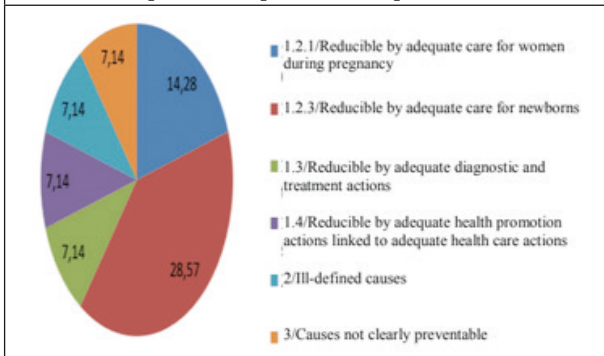
Graphic 1: Evolution of perinatal MT, comparison between the periods 01/01/2016 to 07/31/2016 (prior to the implementation of the GT on 08/01/2016 to 03/31/2017 (after the implementation of the GT)

Graphic 2: Fetal and early neonatal mortality rate, intervals January to July 2016 and August/2016 to March/2017



Graphic 3: Avoidability of early neonatal death in the pre- and post-GT implementation periods

Graphic 4: Preventability of fetal death in the pre- and post-GT implementation periods



Graphic 5: Percentage by Group of preventability of perinatal mortality prior to the implementation of the GT

Graphic 6: Percentage by Group of preventability of perinatal mortality after the implementation of the GT

Source: SIM-Federal, adapted. Collection date:04/10/2017.



## **DIRECT RESULTS ACHIEVED WITH ACTION RESEARCH**

Soon after the implementation of the GT, the sharp drop in perinatal mortality rates and their components was observed, however it showed fluctuations with specific increases in the months of October (municipal election) and January (political transition) (Graphs 1 and 2), periods that also culminated in the disarticulation from GT.

A reduction in mortality rates due to preventable causes was also noted, assuming that there was an improvement in the quality of prenatal and newborn care, being 39% for the early neonatal component and 24% for the fetal component.

## **CONCLUSION**

The general objective of this study was to develop the Restructuring of Perinatal Care in the Municipality of Caldas Novas (Goiás) and its results demonstrated that the methodology developed was suitable for it.

The action strategy established for this study had an auspicious beginning, comprising the proposal for a participatory project, however, with many stumbling blocks along the way, presenting a need for constant reformulation. It is believed that the main purpose of integrated work between health teams is to establish the promotion of communication, optimization of public resources at the healthcare, financial and administrative level, avoiding parallelism of actions and unnecessary expenses. It was extremely important to know the principles and actions developed by each department to mutually contribute to improving perinatal care, reducing mortality and stimulating community development. The establishment of a participatory and integrated intervention facilitated the development of this process.

We remember that the Technical Group was created to restructure perinatal care and carry out surveillance of maternal, fetal

and infant deaths, and this research showed that it is possible, through small actions substantiated by real problems, participatory work and the commitment of the components of the GT and the on-site work team, promote better quality assistance for the mother-child binomial.

We also emphasized that the work was carried out during a very turbulent period in relation to the moment experienced, of professional instability, the election for mayor and councilors and also restrictions on public spending. However, the perinatal mortality rate identified for this interval was the lowest found in the last 7 years. We can conjecture that this impact was due to personal transformations, changes in the work process and the reorganization of the municipal health network and not due to financial and equipment investments.

This study corroborated the statements of Cecatti (2005) in which the author emphasizes that only the improvement of professional and institutional care for childbirth, regardless of women's conditions, are capable of significantly reducing the morbidity and mortality event, placing health professionals as co-responsible of the care process, and also, to the study by Mendes (2014), which observed a significant reduction in mortality after implementing the intervention plan to combat perinatal mortality for the Municipality of Piri-piri, in Piauí, the author relates the relevance of this study highlighting the fact that the reproduced experience developed in a context of restricted financial and technological resources and emphasizing actions on the work process and the organization of the local system.

## REFERENCES

AGUILAR, M. J.; ANDER-EGG, E. **Avaliação de Serviços e Programas Sociais**. 2. ed. Petrópolis: Vozes, 1995.

AQUINO, T. A. et al. **Fatores de risco para a mortalidade perinatal no Recife, Pernambuco, Brasil, 2003**. Cad. Saúde Pública, Rio de Janeiro, v. 23, n.12, p. 2853-2861, dez, 2007 Disponível em: < <http://www.scielo.br/pdf/csp/v23n12/05.pdf> >. Acessado em: 22 de março de 2014.

BEZERRA-FILHO, J.G. et al. **Mortalidade infantil e contexto socioeconômico no Ceará, Brasil, no período de 1991 a 2001**. Rev. Bras. Saúde Matern. Infant., Recife, 7 (2): 135-142, abr. / jun., 2007. Disponível em: < <https://www.scielo.br/j/rsp/a/GkGgc9BwWcHNzW73cHcnGJz/abstract/?lang=pt> >. Acessado em:12 ago. 2015.

Brasil. Ministério da Saúde. Secretaria de Ciência, Tecnologia e Insumos Estratégicos. Departamento de Ciência e Tecnologia. **Síntese de Evidências para Políticas de Saúde: reduzindo a mortalidade perinatal**, 3. ed. – Brasília, DF: 2016. 44 p. Disponível em: < [https://bvsmms.saude.gov.br/bvs/publicacoes/sintese\\_evidencias\\_politicas\\_mortalidade\\_perinatal\\_3ed.pdf](https://bvsmms.saude.gov.br/bvs/publicacoes/sintese_evidencias_politicas_mortalidade_perinatal_3ed.pdf) >. Acessado em: 23 nov. 2016.

CECATTI, J.G. **Saúde da mulher: enfoque da evidência científica para a prevenção da morbidade e mortalidade materna**. Rev. Bras. Saúde Mater. Infant. 5 (1), Mar 2005. Disponível em: < <https://www.scielo.br/j/rbsmi/a/3kGCJ9s4NBLWQtxPPjZZGTL/?lang=pt> >. Acessado em 27 de ago. 2015.

DE CARVALHO, M.; GOMES, M. A. **A mortalidade do prematuro extremo em nosso meio: realidade e desafio**. Jornal Pediatria, Rio de Janeiro, 81 (1 Supl.); (S111- S118). 2005. Disponível em: < <http://www.scielo.br/pdf/jped/v81n1s1/v81n1s1a14.pdf> >. Acessado em 03 de maio de 2015.

FONSECA, S. C.; COUTINHO, E. S. F. **Pesquisa sobre mortalidade perinatal no Brasil: revisão da metodologia e dos resultados**. Cad. Saúde Pública, Rio de Janeiro, 20 Sup 1: S7-S19, 2004. Disponível em: < <https://www.scielosp.org/pdf/csp/v20s1/02.pdf> > Acessado em 03 de maio de 2015.

LANSKY, S. et al. Mortalidade perinatal e evitabilidade: revisão da literatura. Rev Saúde Pública. V. 36, n. 6, p:759-72, 2002. Disponível em: < <https://www.scielosp.org/pdf/rsp/2002.v36n6/759-772/pt> > Acesso em 22 maio 2015.

\_\_\_\_\_. **Lei nº 8.080, de 19 de setembro de 1990**. Dispõe sobre as condições para a promoção, proteção e recuperação da saúde, a organização e o funcionamento dos serviços correspondentes e dá outras providências. 1990a. Disponível em: < [http://www.planalto.gov.br/ccivil\\_03/Leis/L8080.htm](http://www.planalto.gov.br/ccivil_03/Leis/L8080.htm) >. Acessado em: 07 ago. 2016.

LIMA, K. J., et al. A invisibilidade dos óbitos fetais nas políticas de saúde. Apresentação: PÔSTER S A N A R E, v.14, Suplemento 1, 2015. Disponível em: < [https://web.archive.org/web/20180411210005id\\_/https://sanare.emnuvens.com.br/sanare/article/viewFile/695/397](https://web.archive.org/web/20180411210005id_/https://sanare.emnuvens.com.br/sanare/article/viewFile/695/397) >. Acessado em: 10 abr. 2017.

MALTA, D. C. et al. **Lista de causas de mortes evitáveis por intervenções do Sistema Único de Saúde do Brasil**. Epidemiol. Serv. Saúde, Brasília, v.16, n. 4, p. 233-244, out./dez. 2007 Disponível em: < <http://scielo.iec.gov.br/pdf/ess/v16n4/v16n4a02.pdf> >. Acessado em: 07 ago. 2016.

MARTINES, J. et al. **Neonatal survival: a call for action**. Lancet 2005; 365: 1189–97. Disponível em: <[http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736\(05\)71882-1.pdf](http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(05)71882-1.pdf)>. Acessado em: 23 nov. 2016.

MARTINS, E. F. et al. **Tendência da mortalidade perinatal em Belo Horizonte, 1984 a 2005**. Rev. Bras. Enferm. 63, n. 3, p. 446-51, maio-jun, Brasília, 2010. Disponível em: < <https://www.scielo.br/j/reben/a/LTcdXSbFRtJ8WJfjw6hhFRq/?format=pdf&lang=pt> >. Acessado em: 23 nov. 2016.

MARTINS, E. F. et al. **ÓBITOS PERINATAIS INVESTIGADOS E FALHAS NA ASSISTÊNCIA HOSPITALAR AO PARTO**. Esc Anna Nery (impr.) 2013 jan -mar; 17 (1):38-45. Disponível em: < <https://www.scielo.br/j/ean/a/rYsGrMxQCVVzJgVCwNtdKCM/?format=pdf&lang=pt> >. Acessado em: 23 nov. 2016.

MENDES, Y. M. M. B. **Enfrentamento Da Mortalidade Perinatal: Resultados de múltiplas intervenções no município de Piripiri/PI**. Monografia apresentada ao Curso de Especialização. Área: Saúde Materna, Neonatal e Lactente, do Departamento de Enfermagem da Universidade Federal de Santa Catarina. FLORIANÓPOLIS, 2014. Disponível em: < <https://repositorio.ufsc.br/handle/123456789/173249> >. Acessado em: 15 nov. 2016

\_\_\_\_\_. Ministério da Saúde. Secretaria de Atenção à Saúde. Pré-natal e Puerpério: Atenção Qualificada e Humanizada: Brasília: Ministério da Saúde, 3. ed. 2006. (Série A. Normas e Manuais Técnicos, Série Direitos Sexuais e Direitos Reprodutivos. Caderno nº 5).

\_\_\_\_\_. Ministério da Saúde. Secretaria de Atenção à Saúde. Política Nacional de Humanização da Atenção e Gestão do SUS. Acolhimento e classificação de risco nos serviços de urgência / Ministério da Saúde, Secretaria de Atenção à Saúde, Política Nacional de Humanização da Atenção e Gestão do SUS. – Brasília: Ministério da Saúde, 2009. 56 p. : il. color. – (Série B. Textos Básicos de Saúde) ISBN 978-85-334-1583-6 1. Humanização do atendimento. 2. Saúde Pública. 3. Gestão do SUS. I. Título. II. Série. CDU 35:614.

\_\_\_\_\_. Ministério da Saúde. Secretaria de Vigilância em saúde. Coordenação Geral de Informação e Análise Epidemiológica. **Protocolos de codificação especiais em mortalidade**. 60p. Brasília: Ministério da Saúde, 2013. Disponível em: < <https://svs.aids.gov.br/daent/cgiae/sim/documentacao/protocolos-codificacoes-especiais-mortalidade.pdf> >. Acessado em: 03 maio 2015.

NASCIMENTO, R. N. et al. **Determinantes da mortalidade neonatal: estudo caso-controle em Fortaleza, Ceará, Brasil**. Cad. Saúde Pública, Rio de Janeiro, 28(3):559-572, mar, 2012. Disponível em: < <https://www.scielo.br/j/csp/a/7y7d3jLbmLwbTpCjRRDC3jQs/?form> >. Acessado em: 03 mai. 2016.

OLIVEIRA, F. A. M. Avaliação da atenção perinatal em maternidades de risco habitual em município do Sul do Brasil. 163 f. Dissertação (mestrado) – Programa de Pós-Graduação em Enfermagem, Setor de Ciências da Saúde. Universidade Federal do Paraná. Curitiba, 2015. Disponível em: < <https://acervodigital.ufpr.br/handle/1884/37962> >. Acessado em: 03 nov. 2016.

ORGANIZAÇÃO MUNDIAL DA SAÚDE. Classificação Estatística Internacional de Doenças e Problemas relacionados à Saúde. São Paulo: EDUSP, 2008.

PELLER, S. Proper delineation of the neonatal period in perinatal mortality. *Amer. J. publ. Hlth*, 55: 1005-11, 1965. Disponível em: < <https://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.55.7.1005> >. Acessado em: 23 jan. 2016.

ROCHA, T. R. **Perfil da Mortalidade Perinatal no Município de Caldas Novas – GO no Período de 2010 a 2013**. Tese (Mestrado em Saúde Pública). Universidad Americana, 2015. 105 f. Asunción-Paraguay.

SILVA, J.S.A.; TENÓRIO, T.G.S. **Mortalidade Infantil: Avaliação do Perfil Epidemiológico do Município das Correntes - PE, no período de 1997 a 2007**. Monografia (Especialização em Gestão de Sistemas e Serviços de Saúde) – Departamento de Saúde Coletiva, Centro de Pesquisas Aggeu Magalhães, Fundação Oswaldo Cruz. Disponível em: < <https://www.arca.fiocruz.br/bitstream/handle/icict/36837/779.pdf?sequence=1&isAllowed=y> > Acessado em: 02 jan. 2017.

SILVA, Z. P. et al. Morte neonatal precoce segundo complexidade hospitalar e rede SUS e não SUS na Região Metropolitana de São Paulo, Brasil. Cad. Saúde Pública, Rio de Janeiro, v. 26 n. 1, p.123-134, jan, 2010. Disponível em: < <http://www.scielo.br/pdf/csp/v26n1/13.pdf> >. Acessado em 02 jan. 2017.

THIOLLENT, M. **Metodologia da pesquisa-ação**. São Paulo: Cortez, 2008