

INTRAUTERINE HYPOXIA

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Abstract: Oxygen restriction in the intrauterine phase is called fetal hypoxia, which can trigger several complications, such as growth retardation, seizures, paralysis and damage to various organs. Asphyxia at birth is the fourth leading cause of perinatal death in Brazil and intrauterine hypoxia corresponds to 63.36% of deaths at birth. The presence of maternal fever is a risk factor that sensitizes the fetus to this situation. This work aims to catalog the studies on fetal hypoxia that are available with their full texts free of charge to the public. This is a quantitative study on the topic "fetal hypoxia", using inclusion and exclusion criteria pre-established by the authors. With the application of the keywords, 192 studies can be found in the PC database and 35 in the VHL, with this number reduced to 5 and 4, respectively. In addition, the work demonstrates the need for fetal monitoring to mitigate future health complications.

Keywords: Fetal hypoxia, oxygen deficiency, fetal growth retardation.

INTRODUCTION

For fetal development, the presence of oxygen is undoubtedly necessary, and the deprivation of this element is called hypoxia, which may be a risk factor for complications in the intrauterine phase. Situations of maternal-fetal infection sensitize the fetus to this situation, due to the release of pro-inflammatory cytokines conferring a synergistic effect on hypoxia (Fahey, 2017).

According to the World Health Organization (WHO), intrauterine hypoxia is the fourth leading cause of neonatal and perinatal death in Brazil, in addition, it corresponds to 65.36% of deaths in terms of birth weight due to intrauterine hypoxia (Borges, 2021). In addition, there is the possibility of triggering lesions in various organs, with the central nervous system being the most affected by this deprivation,

neurological sequelae such as the mental retardation and paralysis are the most common (Groenendaal, 2020).

In Brazil, the national average of fetal mortality corresponds to 10.5/1000 live births, the Northeast region has the highest rate, equivalent to 12.6/1000 live births (Leal et al., 2018). Studies carried out show that 67.3% (n= 24,423) of infant and fetal deaths analyzed in the 2018 period can be classified as preventable (Pereira, 2021)

Heart rate assessment is used to monitor intrauterine fetal oxygenation, as it is a non-invasive procedure, in addition to mitigating the risks of exposure to hypoxia in the long term (Silveira, 2020). In pregnant women with some clinical or obstetric comorbidity, placental dysfunctions are potentiated, with the placenta responsible for the supply of fetal oxygen, which may include the risk of hypoxia (Nomura, 2009).

Adherence to quality prenatal care mitigates maternal and child complications, social issues influence due to public policies that encourage this practice. Globalized countries have an incidence of 4 per 1000 live births, however, in developing countries this rate corresponds to 33 per 1000 live births (Lawn, 2005). The Brazilian Ministry of Health (MS) recommends, for low-risk pregnant women, the daily monitoring of six fetal movements in one hour of observation from the 34th week of pregnancy, however, there is no standardization of this monitoring (Nomura, 2009).

In order to reduce perinatal mortality in high-risk pregnant women, in developed countries, there is a high rate of cesarean sections and instrumental deliveries, as they have a higher rate of fetal assessment and surveillance (Baber, 2011). In this context, this work aims to catalog and demonstrate the studies available in the literature on intrauterine hypoxia and its complications,

their full texts being available free of charge in the indexed databases Periódico Capes (PC) and Virtual Health Library (BVS).

METHODOLOGY

The study is classified as quantitative-qualitative, in the literature review format. To carry out the development of the work, the Descriptors in Health Sciences (DECS) were used: fetal hypoxia; oxygen deficiency; fetal growth retardation, which followed the following steps: definition of the theme, definition of inclusion and exclusion criteria, literature search, analysis and separation of works and development of the study.

Works in English, Portuguese or Spanish, published in the last five years (2017-2022) with full text availability free of charge in the indexed databases Periódico Capes and Biblioteca Virtual em Saúde (BVS) were included. The excluded works were those that were repeated within the database, in addition to those whose content did not fit the proposed theme.

RESULT

With the application of only DECS, 227 works can be found, however, with the application of inclusion and exclusion criteria,

7 works can be selected. In addition, 2 studies were repeated within the databases, as shown in table 1.

The nine papers with relevance were based on relevance to the academic community. In addition, they were cataloged by title, authors, year, objective and indexed base, as shown in table 2.

FINAL CONSIDERATIONS

Since intrauterine hypoxia is a public health problem, it is necessary to adapt protocols to assess fetal well-being in pregnant women with pre-existing complications (Rudge, 2005). To mitigate this problem, it is necessary to stimulate research on the pathophysiology of fetal hypoxia, for a better understanding of the subject.

The integrative literature review is responsible for demonstrating the current knowledge on the proposed subject, helping how to find the studies, in addition to the descriptions (Santos, 2019). Topics relevant to the community must have a diversity of written works.

Criteria	Newspaper: Capes	BVS
in filters	192	35
idioms	191	34
last 5 years	42	13
excluded for being repeated	16	1
excluded because they did not fit the proposed theme	21	8
total	5	4

Table 1 - demonstration of the amount of work found according to each inclusion and exclusion criteria

Source: authors, 2022

Title	Authors	Year	Goal	indexed base
Influence of hypoxia as a noxa on the early origin of obesity and its complications during intrauterine life	Bacia Valdés, José Maria ; Valdés Alonso, Maria del Carmen ; Pérez Martínez, Margarita ; Perez Gesen, Cecília	2019	To describe the effects of hypoxia as a noxa during intrauterine life and its influence on the early origin of obesity and its complications	BVS
Causes of stillbirths in Chile from 2002 to 2015	San Martin Roldan, David ; Sabando Franulic, Vezna ; Germain Aravena, Alfredo ; Pons Guerra, Andrés.	2019	To describe the causes of stillbirths in Chile between 2002-2015	BVS/ Newspaper: capes
Fetal death: obstetric, placental and fetal necroscopic factors	Giraldi, Laura M.; Corrêa, Thiago Ricardo K.; Schuelter-Trevisol, Fabiana; Gonçalves, Carlos Otávio.	2019	to investigate maternal risk factors (obstetric and placental) and necropsy findings associated with fetal death based on data obtained from the Death Verification Service (SVO) in Florianópolis, Santa Catarina, Brazil.	BVS
Multinucleated normoblastemia in a newborn secondary to hypoxia	Kayki, Gozdem ; Bozkaya, David ; Buyukeren, Melek ; Tavil, Betül ; Yigit, Sule	2017	To detect normoblasts in newborn peripheral blood smears.	BVS/ Newspaper: Capes
Quality indicators of care for neonates with selected pathologies: a pilot study	Saturno-Hernandez, Pedro Jesus; Poblano-Verastegui, Ofelia; Flores-Hernandez, Sérgio; Angel-Garcia, Daniel; O'Shea-Cuevas, Gabriel Jaime; et al.	2018	To develop and pilot quality indicators of care for newborns with relevant conditions in Mexico (prematurity, neonatal sepsis, perinatal asphyxia and intrauterine hypoxia)	Newspaper: Capes
Analysis of the health situation: fetal mortality in the 10th health region of Ceará	Katherine Jeronimo Lima; Cristianne Soares Chaves; Edsângelo de Oliveira Gomes ; Maria Aparecida de Lima ; Elanny Cristina Pascôa Candeira ; et al.	2017	To analyze the health situation, in the context of fetal mortality, in the 10th Health Region of Ceará.	Newspaper: Capes
Abortions in the eastern macro-region of Maranhão: socioeconomic and clinical factors	Coelho, Isadora Sayonara Ferreira ; Coelho, Lara Beatriz de Sousa ; Costa, Ana Carla Marques da ; et al	2021	To analyze the situation of abortions that occurred in the eastern macro-region of Maranhão and characterize the socioeconomic and demographic profile of the data from 2010 to 2018.	Newspaper: Capes

Table 2 - demonstration of the work by title, authors, year, objective and indexed base

Sources: authors, 2022

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