

Heart disease in pregnancy and its implications for vaginal delivery: An integrative review

Cardiopatía na gestação e suas implicações para o parto vaginal: Uma revisão integrativa

Enfermedad cardíaca en el embarazo y sus implicaciones para el parto vaginal: Una revisión integrativa

RESUMO

Objetivo: Analisar as evidências científicas disponíveis na literatura acerca da cardiopatía na gestação e suas implicações para o parto vaginal. **Método:** Trata-se de uma revisão integrativa. Realizou-se a busca por artigos; com delimitação nos últimos 5 anos (2016-2021); nos idiomas português, inglês e espanhol; disponíveis na íntegra. Nas seguintes plataformas de dados: BDNF, DOAJ, LILACS, MEDLINE, SciELO, SCOPUS e Web of Science. **Resultados:** Os dados foram organizados e apresentados em figuras e tabelas. Dos 3441 estudos encontrados, 2 estavam disponíveis na BDNF, 10 na DOAJ, 7 na LILACS, 42 na MEDLINE, 1 na SciELO, 130 na SCOPUS e 3249 na Web of Science. Contudo, após a leitura permaneceram apenas os que atendiam aos critérios para inclusão e exclusão descritos na metodologia, 5 estudos. **Conclusão:** Este estudo possibilitou evidenciar a importância do diagnóstico precoce da cardiopatía na gestação, e desta forma promover a prevenção de suas implicações para o parto vaginal.

DESCRIPTORES: Cardiopatías; Gestantes; Parto Normal.

ABSTRACT

Objective: To analyze the scientific evidence available in the literature about heart disease during pregnancy and its implications for vaginal delivery. **Method:** This is an integrative review. The search for articles was performed; with delimitation in the last 5 years (2016-2021); in the Portuguese, English and Spanish; available in full. On the following data platforms: BDNF, DOAJ, LILACS, MEDLINE, SciELO, SCOPUS and Web of Science. **Results:** The data were organized and presented in figures and tables. Of the 3,441 studies found, 2 were available in BDNF, 10 in DOAJ, 7 in LILACS, 42 in MEDLINE, 1 in SciELO, 130 in SCOPUS and 3249 in the Web of Science. However, after reading, only those that met the inclusion and exclusion criteria described in the methodology, 5 studies remained. **Conclusion:** This study made it possible to highlight the importance of early diagnosis of heart disease during pregnancy, and thus promote the prevention of its implications for vaginal delivery.

DESCRIPTORS: Heart Diseases; Pregnant Women; Natural Childbirth.

RESUMEN

Objetivo: Analizar la evidencia científica disponible en la literatura sobre la cardiopatía durante el embarazo y sus implicaciones para el parto vaginal. **Método:** Esta es una revisión integradora. Se realizó la búsqueda de artículos; con delimitación en los últimos 5 años (2016-2021); en portugués, inglés y español; disponible en su totalidad. En las siguientes plataformas de datos: BDNF, DOAJ, LILACS, MEDLINE, SciELO, SCOPUS y Web of Science. **Resultados:** Los datos fueron organizados y presentados en figuras y tablas. De los 3.441 estudios encontrados, 2 estaban disponibles en BDNF, 10 en DOAJ, 7 en LILACS, 42 en MEDLINE, 1 en SciELO, 130 en SCOPUS y 3249 en la Web of Science. Sin embargo, después de la lectura, solo aquellos que cumplieron con los criterios de inclusión y exclusión descritos en la metodología, permanecieron 5 estudios. **Conclusión:** Este estudio permitió destacar la importancia del diagnóstico precoz de la cardiopatía durante el embarazo, y así promover la prevención de sus implicaciones para el parto vaginal.

DESCRIPTORES: Cardiopatías; Mujeres Embarazadas; Parto Normal.

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INTRODUCTION

Cardiopathies in pregnant women are always associated with high levels of morbidity and mortality, either for the mother or the fetus. With the increased risk of clinical decompensation due to the physiological hemodynamic changes of pregnancy, even in stable patients. It has an incidence of 0.2% to 4% internationally, being the main non-obstetric cause of maternal death.^{1,2}

In Brazil, the statistics of international incidence of heart disease are surpassed, reaching about 4.2%.³ Furthermore, it is estimated that about 10 to 16% of maternal mortality worldwide is related to hypertensive disorders. Evidencing how important it is to provide individualized and interdisciplinary care for pregnant women, discussing the risk for the mother and fetus and the chance of heredity of heart disease.⁴

Through a multidisciplinary view of childbirth and puerperium for patients with heart disease, it is essential to observe and take into account the clinical and obstetric evolution throughout pregnancy and their functional situation before delivery. It is required that the hemodynamics of these women be previously stabilized, as well as the screening of possible complications such as infection, arterial hypertension, anemia, arrhyth-

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mia and the adjustment of cardiovascular treatment.⁵

Regarding delivery methods, we observed a tendency in this population to liberally indicate cesarean section (even without proof), for fear of hemodynamic alterations linked to labor and the expulsion period.⁶ However, in cesarean sections, there is a greater risk of blood loss, infections and thromboembolic events, which must be taken into account at the time of its indication. The vaginal delivery route is indicated, except in certain situations, due to obstetric conditions.⁷

Therefore, this study aims to analyze the scientific evidence available in the literature about heart disease during pregnancy and its implications for vaginal delivery.

METHOD

This is a descriptive bibliographic study of the integrative review type, with a qualitative approach, developed in the following order: development of the key question and objective of the study; Definition of inclusion and exclusion criteria for scientific productions; search for scientific studies in databases and virtual libraries; Analysis and categorization of products found; Results and discussion.⁽⁸⁾

To detect the guiding question, the

PICO strategy was used, a methodology that helps in the construction of a research question and in the search for evidence for non-clinical research, where P = Population/Patient/Problem; I = Intervention; and Co = Context (P: Cardiopathy during pregnancy; I: Implications for normal delivery; Co: prevention / health promotion). In this way, the following guiding question of the research was defined: “How can gestational heart disease affect the parturition process in vaginal delivery?”

For the selection of articles, the following inclusion criteria were used: original article, available in full, published in the last 5 years (2016-2021) in Portuguese, English or Spanish, which met the objective of the study. Gray literature was also excluded, such as the publication of repeated studies in several databases and articles that did not answer the guiding question of the study and that allowed access via the Virtual Private Network (VPN) of the University of Pernambuco (UPE). The temporal limitation to the last 5 years aims to highlight current articles.

Data collection took place during February and March 2022 in the following Databases: Nursing Database (BDENF); Directory of Open Access Journals (DOAJ); Latin American and Caribbean Literature in Health Sciences (LILACS); Medical Literature Analysis and Retrieval System Online (MEDLINE); SCOPUS, Scientific Electronic Library Online (SciELO) and the Web of Science.

Articles indexed from the Health Sciences Descriptors (DeCS) were searched: “Cardiopatas”; “Gestantes”; “Parto Normal”. The respective terms from the Medical Subject Headings (MeSH) were used: “Heart Diseases”; “Pregnant Women”; “Natural Childbirth”. The operationalization and the search strategy were based on the combination of the Boolean operator AND and OR, performing the joint and individual search so that the differences could be corrected (Chart 1).

The selection of studies was based

CHART 1 – Database search strategy. Recife, Pernambuco (PE), Brazil, 2022.

Database	Search Terms	Results	Selected
BDENF	Heart Diseases AND (Pregnant Women OR Natural Childbirth)	2	1
DOAJ	Heart Diseases AND (Pregnant Women OR Natural Childbirth)	10	1
LILACS	Heart Diseases AND (Pregnant Women OR Natural Childbirth)	7	0
MEDLINE	Heart Diseases AND (Pregnant Women OR Natural Childbirth)	42	1
SciELO	Heart Diseases AND (Pregnant Women OR Natural Childbirth)	1	1
SCOPUS	Heart Diseases AND (Pregnant Women OR Natural Childbirth)	130	0
Web of Science	Heart Diseases AND (Pregnant Women OR Natural Childbirth)	3249	1
Total		3441	5

Source: Research data, 2022.

on the Preferred Reporting Items for Systematic Review and MetaAnalysis (PRISMA) in order to assist in the development of articles. (9) Duplicate studies were first eliminated by reading the titles and abstracts. To verify those who met the guiding question and the inclusion/exclusion criteria, a full reading was performed. To then create the final sample with the studies relevant to the pre-determined criteria (Figure 1).

The studies were categorized after reading, and the knowledge identified was classified into levels of evidence according to Melnyk and Fineout-Overholt (10): Level I, evidence refers to systematic reviews or meta-analyses of randomized controlled trials or clinical guidelines based on systematic reviews of randomized controlled trials; at level II, evidence from at least one well-designed randomized controlled trial; at level III, evidence from well-desig-

ned clinical trials without randomization; at level IV, evidence from well-designed cohort and case-control studies; at Level V, evidence from a systematic review of descriptive and qualitative studies; at Level VI, evidence from a single descriptive or qualitative study; and at level VII, evidence from authority reports and/or expert committee reports.

A synthesis of the information in the corpus was obtained through an instrument: identification of the original article; authorship of the article; release year; country; methodical peculiarities of the study; and study sample, an analytical reading of the studies was carried out, identifying the key points for the hierarchy and synthesis of ideas.

For a better understanding and visualization of the main results, the data were organized and presented in the form of figures and tables, presented in a descriptive

way.

RESULTS

The researched studies are ordered by title, author, year of publication, level of evidence, objective and outcome. After reading the selected articles, the studies were categorized, and the knowledge acquired on the topic was classified as a level of evidence, mostly Level VI, Evidence from a single descriptive or qualitative study. The main findings arranged in the objectives and conclusions are directly related to heart disease during pregnancy and its implications for vaginal delivery. (Table 1).

Given the above, it was possible to observe some factors related to heart disease during pregnancy and its implications for vaginal delivery.

DISCUSSION

From the information evidenced in the scientific literature, it was observed that there are several factors that direct the choice of delivery route.

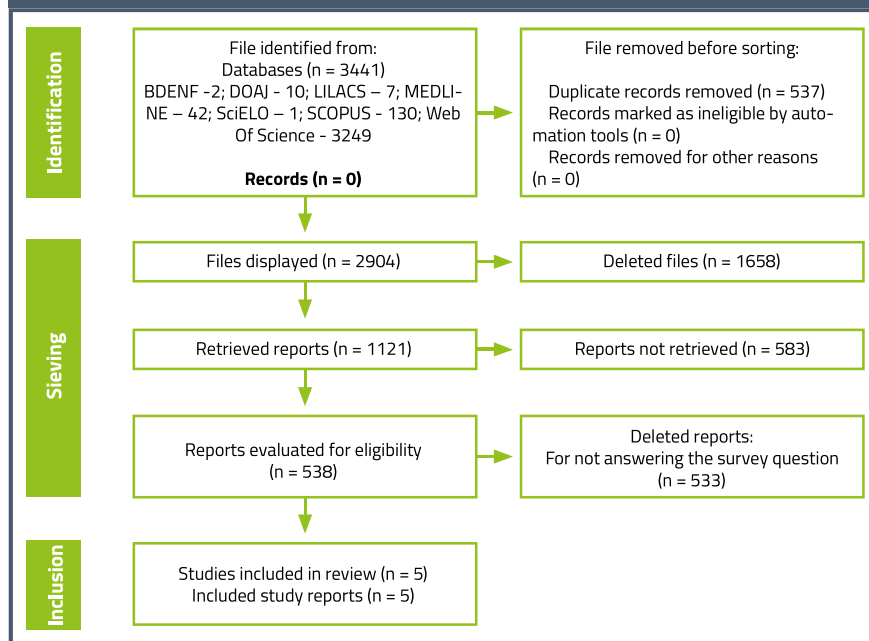
Unfavorable factors associated with heart disease

Stryuk et al.¹² point to unfavorable prognostic factors for the birth of premature babies, such as placental insufficiency, several clinical variants of hypertension, obesity and infectious diseases.

Besides, Ávila et al.¹ reviewed key maternal factors that impair fetal growth and development, including low cardiac output (heart failure and obstructive cardiac injury), hypoxemia (pulmonary hypertension, cyanotic heart disease), drug use (anticoagulants, beta-blockers, diuretics, antiarrhythmics), heredity (genetic transmission), maternal infections (with *Trypanosoma cruzi*) and obstetric complications.

Corroborating, Kazachkova, Kazachkov Vorobiev,¹³ evidenced some obstacles from the birth canal to delivery such as breech presentation, combined mass fetus >3800 g and <2000 g, grade III head extension, placental abruption, and extragenital diseases that lead to deterioration of the

Figure 1 – Flowchart of the selection process of primary studies adapted from PRISMA. Recife, Pernambuco (PE), Brazil, 2022.



Source: Research data, 2022.

pregnant woman's condition.

According to Amorim et al.¹¹ in addition to the possible complications arising from heart disease that arouse fear, anxiety and stress, there are subjectivities that are separated from the health care process, especially with regard to the lack of dialogue and unilateral decision-making about the type, time and route of delivery.

In another study, Amorim et al.¹⁴ point out that women are called attention for having become pregnant and; it is known that the cardiologist gives the opinion, however it is the obstetrician who decides the mode of delivery.

Vaginal delivery as a first choice

The type of delivery must be decided and planned by a multidisciplinary team. The preferred delivery is vaginal delivery, with individualized planning for the patient, cardiovascular disease and her hemodynamic profile. Cesarean section, although controversial, is clinically indicated for situations included in the group of grade IV heart diseases, in labor using oral antio-

gulants, in decompensated heart failure or for obstetric indication.¹⁶

Hammami et al.¹⁵ emphasize in their study that obstetricians should prioritize vaginal delivery with triggering if necessary, use epidural analgesia, if there is no contraindication, and reduce delivery time, especially in women treated with anticoagulants.

Corroborating this, it is emphasized that the best type of delivery for a pregnant woman with heart disease is vaginal delivery, with analgesia (pain increases the effort of the heart and heartbeat) and, if necessary, with the aid of relief forceps, which shed less blood and more slowly than a cesarean, and this is crucial for a woman with heart disease.^{17,18}

Using the crosses to perform the search, a small sample was achieved. Although the search response was considerable, still, few articles met the objective of the study. In the selected articles, the different comparison systems and small sample size were evidenced as a limitation.

However, it was possible to observe that the choice of the vaginal delivery route is

Tabela 1 – Síntese dos principais achados acerca da cardiopatia fetal e estratégias de enfrentamento para a equipe de saúde. Recife, Pernambuco (PE), 2022.

N	Title/Database	Authors (Year)	Country	Level of Evidence	Objective	Results
1	Promotion of maternal health from the experience of childbirth of women with heart disease (Promoção da saúde materna a partir do vivido do parto de mulheres cardiopatas.) / BDEF	Amorim, Thaís Vasconcelos et al. (2017) ¹¹	Brazil	VI	To understand the meanings of the parturition process from the experience of the gestational risk of women with heart disease.	In addition to the possible complications arising from heart disease that arouse fear, anxiety and stress, subjectivities that are separated from the health care process reside, especially with regard to the lack of dialogue and unilateral decision-making about the type, moment and route of delivery.
2	Cardiovascular disease and associated comorbid conditions as determinants of adverse perinatal outcomes in pregnancy - an analysis of the results of the register of pregnant BEREG. / MEDLINE	Stryuk, R I et al. (2018) ¹²	Russia	VI	To analyze the prevalence and structure of cardiovascular diseases, associated comorbidities and to assess their effects on pregnancy and perinatal outcomes in actual clinical practice.	Unfavorable prognostic factors for the birth of premature babies were: placental insufficiency, several clinical variants of hypertension, obesity and infectious diseases.
3	Manifestations of pathomorphosis at pregnant women with heart diseases. / DOAJ	Kazachkova, E. A; Kazachkov E. L; Vorobiev I. V (2017) ¹³	Russia	VI	To study the structure of heart diseases in pregnant women, the characteristics of the medical-social portrait, the course of pregnancy and the perinatal outcomes in patients with heart diseases in the light of pathomorphosis.	Birth canal obstacles to delivery: breech presentation, combined mass fetus >3800 g and <2000 g, grade III head extension, placental abruption, and extragenital diseases leading to deterioration of the pregnant woman's condition.
4	Daily life of high-risk pregnancy due to heart disease: phenomenological study of care relationships (Cotidiano da gravidez de risco por cardiopatia: estudo fenomenológico das relações assistenciais.) / SciELO	Amorim, Thaís Vasconcelos et al. (2016) ¹⁴	Brazil	VI	Unveiling the daily care relationships of being-there-woman in high-risk pregnancy due to heart disease.	Women meant that they had been charged by doctors for becoming pregnant and; know that the cardiologist gives the opinion, but the obstetrician is the one who will decide the route of delivery.
5	Predictors of maternal and neonatal complications in women with severe valvular heart disease during pregnancy in Tunisia: a retrospective cohort study. / Web Of Science	Hammami, R., et al. (2021) ¹⁵	Tunisia	VI	To determine the predictors of maternal cardiac, obstetric and neonatal complications in pregnant women with severe valvular heart disease.	Obstetricians should prioritize vaginal delivery with triggering if necessary, use epidural analgesia if there is no contraindication, and shorten delivery time, especially in women treated with anticoagulants.

Fonte: Dados da pesquisa, 2022.

the best option for pregnant women diagnosed with heart disease. Since vaginal delivery has fewer complications and lower risk for heart disease. However, it is necessary

that more studies that address this topic be produced and so that it is possible to build a more elaborate discussion about the best way of delivery for pregnant women with

heart disease.

This study can promote the dissemination of the importance of performing an early diagnosis of pregnant women with

heart disease so that it is possible to plan the moment of delivery, anticipating possible complications.

CONCLUSION

This study highlighted the implications of heart disease for pregnancy and fetal development, as well as the vaginal route as

the best choice aiming at a lower number of complications. In addition to carrying out the follow-up from the first moment, the health team, through a multiprofessional follow-up, plans the entire labor, thus being prepared for possible complications.

However, there is a shortage of articles that discuss how important this topic is, essential in the prevention and health pro-

motion of pregnant women and newborns, although there has been an increase in the number of articles in recent times. Finally, it was concluded that this study showed that when it comes to benefiting the pregnant woman and the newborn, vaginal delivery is the best option.

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