

GESTATIONAL COMPLICATIONS IN ADVANCED AGE: A REVIEW OF THE MAIN CLINICAL AND OBSTETRIC OUTCOMES”

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Abstract: Objective: This systematic review seeks to examine the literature on pregnancy complications in this context. Methodology: Using the PubMed database, 11 articles out of 1939 found since 2019, ensuring a detailed analysis. Results: Advanced maternal age is associated with neonatal complications, such as low birth weight, low Apgar score, perinatal mortality and premature birth. In addition, there is a greater risk of pregnancy-specific hypertensive diseases, gestational diabetes and cesarean section. Placental changes in older pregnant women contribute to fetal complications, such as intrauterine growth restriction and stillbirth, as well as birth complications, such as changes in fetal heart rate and an increase in cesarean sections. Final considerations: Studies reveal a higher risk of complications, such as gestational diabetes and premature birth, in women aged 35 and over. Continuing research is crucial to understanding the implications of late pregnancy and its long-term consequences.

Keywords: Advanced maternal age, Gestational complications, Pre-eclampsia, Gestational diabetes.

INTRODUCTION

Advanced maternal age, generally defined as the age of a woman who has a child at age 35 or older, has become increasingly common due to lifestyle changes and advances in assisted reproductive technology. This phenomenon has led to the use of terms such as “very advanced maternal age” and “extremely advanced maternal age”, commonly applied to pregnant women over 45 years of age. This trend reflects broad social and medical changes that allow women to delay childbearing (Sugai et al., 2023).

The decision to delay motherhood, however, is associated with increased risks for adverse maternal and fetal outcomes, raising significant concerns about the impacts of this choice. Studies in high-income countries

have demonstrated that advanced maternal age is linked to a variety of pregnancy complications, including miscarriage, chromosomal abnormalities, stillbirth, fetal growth restriction, premature birth, pre-eclampsia, gestational diabetes mellitus, and an increase in cesarean section rates. These findings are crucial for understanding the complex fetomaternal interactions in late pregnancy (Frick, 2021).

Specifically, in relation to the fetus, the risk of chromosomal abnormalities increases significantly as the mother ages. The risk of miscarriage in the first trimester also remains a considerable risk factor, even after adjusting for parity, history of prior miscarriages, and the number of induced and spontaneous abortions (Zhou et al., 2023).

From a maternal perspective, pre-eclampsia is a major concern, especially in women over the age of 40, who are at a significantly higher risk of this complication compared to younger women. Furthermore, the risk of cesarean delivery also increases notably in pregnant women over the age of 45, highlighting the challenges that aging imposes on the female body (Frick, 2021).

The aim of this systematic review is to comprehensively and critically examine the existing literature to understand the gestational complications associated with late-life pregnancy, aiming to provide a comprehensive view of the risks and challenges faced by these women, as well as exploring effective management and prevention strategies of these complications.

METHODOLOGY

This literature review was prepared following the PVO strategy, which identifies the Population or Research Problem, Variables involved and the desired Outcome. The research was guided by the guiding question: “What are the gestational complications most

frequently associated with late pregnancy, and how do these complications impact maternal and fetal health, as evidenced by recent scientific literature?”. Specifically, this review focused on older women and the pregnancy complications associated with this demographic, as portrayed in recent literature.

The search for relevant data was carried out in the PubMed - MEDLINE (Medical Literature Analysis and Retrieval System Online) databases, using search terms along with the Boolean operators “AND” and “OR”. The descriptors used were: “Advanced maternal age”, “Maternal complications”, and “Fetal complications”. This initial search resulted in the identification of 1939 articles.

The inclusion criteria adopted for selection were: articles in English, published between 2019 and 2024, which argue the themes relevant to the research. Studies of the type review, systematic review, meta-analysis, comparative cross-sectional study, descriptive study, experimental study, prospective cohort study and retrospective cohort study were considered, all made available in full. Duplicate articles, articles available only in abstract form, and those that did not directly address the proposed topic or that did not meet the other inclusion criteria were excluded.

After rigorous application of the inclusion and exclusion criteria, the number of articles was reduced to 11. These articles were selected to compose the collection of the present study, ensuring a detailed and comprehensive analysis of gestational complications associated with pregnancy at an advanced age and their impacts on maternal and fetal health, as documented in current scientific literature.

DISCUSSION

Recent studies, such as those by Mehari et al. (2020) and Zhang, Wang and Qi (2021), demonstrate a strong association between pregnant women of advanced age and the birth of babies with low birth weight and a low Apgar score in the fifth minute. Mehari et al. (2020) observed that babies born to older mothers are 7.5 times more likely to have a low Apgar score at the fifth minute, in addition to a four times greater chance of perinatal death and premature birth. This study also corroborates results of research carried out in South Africa, Brazil, South Korea and an analysis by the World Health Organization, attributing these results to obstetric complications related to the mother’s advanced age. The study also highlights that newborns born to older mothers are three times more likely to die in the first week of life, compared to babies born to younger mothers. However, there are divergences in studies carried out in Malaysia and Jordan, and the study by Bouzaglou et al. (2020), who found no significant association between maternal age and low birth weight, possibly due to small sample size or other obstetric factors not related to age.

Saccone et al. (2022) highlighted that advanced age is a risk factor for infertility, with an increase of 10% at age 34 and 85% at age 44. The meta-analysis also indicated an increased risk of stillbirth, perinatal mortality, intrauterine growth restriction, neonatal death and admission to the neonatal ICU for pregnant women over 40 years of age.

Cooke and Davidge (2019) reported that the placenta undergoes changes related to advanced maternal age, contributing to the emergence of pathologies that interfere with the healthy development of the fetus, such as intrauterine growth restriction and stillbirth. The study found a significant correlation between low birth weight and low placental weight in pregnant women over

35 years of age, evidenced by imaging tests that showed a decrease in the uteroplacental spiral vasculature in these women. Cooke and Davidge (2019) also analyzed hormones and placental biomarkers that were elevated in older pregnant women, again correlating advanced maternal age with poor placental development.

Cooke and Davidge (2019) further described how the interaction between genome, epigenome, and the quality of the environment early in development are fundamental in health programming. A prospective cohort study in the United States showed a significant relationship between maternal age over 35 years and an increased likelihood of developing obesity in these mothers' adult children, in addition to suggesting a higher incidence of autism and cognitive impairment in children of pregnant women. advanced age. The study also mentioned that children born to older mothers had high blood glucose and blood pressure levels, indicating an impact of maternal age on the cardiovascular health of offspring.

Zhen et al. (2022) linked advanced maternal age with an increase in complications during childbirth and changes in fetal heart rate, which may indicate fetal distress. A 1.38 times higher incidence of these complications was observed in pregnant women over 30 years of age. Reducing gestational age in older pregnant women can also cause several problems for the premature fetus, such as hyperbilirubinemia, neonatal pneumonia, acidosis, hypocalcemia, apnea and neonatal scleroderma.

The retrospective comparative cross-sectional study by Mehari et al. (2020), conducted between November and December 2017, analyzed medical records to investigate the effects of advanced maternal age on health during pregnancy. The results indicated a significant association between high maternal

age and increased risk of pregnancy-specific hypertensive disease (GHD), gestational diabetes, puerperal hemorrhage, need for cesarean section, perinatal death, premature birth, low birth weight and low Apgar score at birth. fifth minute. Specifically, the relationship between maternal age and DHEG was highlighted, with it being four times more common in older women.

Lin et al. (2019) also addressed the impact of maternal age on the incidence of gestational diabetes mellitus and DHEG, highlighting the role of gestational and pre-gestational body mass index (BMI). It was observed that older women frequently gain weight before and during pregnancy, which may be related to insulin resistance and the progressive degradation of the beta cells of the islets of Langerhans, making it difficult to control glucose levels in the face of placental production of hormones against -insulin. Furthermore, progressive damage to the endothelium of blood vessels can lead to vasoconstriction and sclerosis, increasing the risks of hypertension. Therefore, maintaining healthy habits and controlling BMI are essential to prevent complications such as macrosomia, shoulder dystocia, premature birth and cesarean section.

Huang et al. (2023) observed that women aged 35 and over have a higher risk of cesarean birth compared to younger women. The main reasons include prolonged labor, slow labor progress, impaired uterine contractility, and uterine dysplasia. Notably, pregnant women aged 40 or over and their obstetricians often opt for a cesarean section, even without explicit medical indications, to avoid birth complications.

In contrast, Ahmad, Sechi, and Vismara (2024) presented a longitudinal study that highlighted potential benefits of late-life motherhood. Older women tend to have higher social, economic and cognitive levels,

providing better access to resources and quality of life for their children. The study also reported reduced rates of hospitalization and accidents in children up to three years old, as well as superior linguistic, behavioral and emotional development, compared to children of younger mothers. These benefits can be attributed to greater access to social resources and a more established mother-child relationship.

FINAL CONSIDERATIONS

Advanced maternal age, defined as motherhood after age 30, is associated with complications such as pre-eclampsia and cesarean section. This article investigates the most common pregnancy complications and

their impact on maternal and fetal health. Studies show that women aged 35 and over are at greater risk of cesarean section, gestational diabetes, gestational hypertension, postpartum hemorrhage, perinatal mortality, premature birth, low birth weight and low Apgar score. These findings highlight the importance of maternal age in gestational and postpartum outcomes, supporting health policies and professional training. However, additional research into the ongoing health of the mother and child after birth is needed to identify possible long-term consequences for this group. Continuing these studies is essential to better understand the implications of late pregnancy and to identify potential late complications for women of advanced age.

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