Scoping Review of Degenerative Disease in Pregnancy

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Abstract: This scoping review aims to provide an overview of the existing literature on degenerative diseases occurring during pregnancy, focusing on their prevalence, clinical presentation, management, and impact on maternal and fetal health. Methods: A systematic search was conducted in electronic databases, including 11 relevant studies. These studies were analyzed to identify common degenerative diseases, their associated risk factors, diagnostic strategies, and available treatment options. Results: The scoping review revealed a broad spectrum of degenerative diseases encountered during pregnancy, including gestational diabetes, preeclampsia, and maternal hypertension, among others. These conditions often pose significant challenges to both maternal and fetal well-being. The review also highlighted the importance of early detection and comprehensive management strategies. Conclusion: Degenerative diseases in pregnancy are a complex and multifaceted issue that requires further research and awareness. This scoping review offers a comprehensive overview of the current state of knowledge in this area, serving as a valuable resource for healthcare professionals, researchers, and policymakers to address these challenges and improve the care of pregnant individuals with degenerative disease.

1 INTRODUCTION

Pregnancy is a transformative period in a woman's life, marked by physiological and hormonal changes that support fetal development and maternal well-being. While the majority of pregnancies proceed without significant complications, a subset of pregnant individuals may experience degenerative diseases that can impact both the mother and the developing fetus (Bjelica *et al.*, 2018; Costas and Gomes-Ferreira, 2023). This scoping review aims to provide a comprehensive overview of degenerative diseases occurring during pregnancy, their clinical manifestations, risk factors, management strategies, and their implications for maternal and fetal health.

Degenerative diseases encompass a wide range of conditions that involve the progressive deterioration of specific organs or systems within the body (Sriwahyuni and Nour Srinayahr, 2023). Although a state of relative physiological adaptation often characterizes pregnancy to accommodate the growing fetus, some underlying medical conditions may exacerbate during this period. Understanding how degenerative diseases interact with the unique challenges posed by pregnancy is critical for healthcare providers, as it can inform risk assessment, timely interventions, and improved maternal and neonatal outcomes (Sari *et al.*, 2022).

The occurrence of degenerative diseases during pregnancy is a multifaceted issue that warrants a comprehensive exploration. Several factors, such as pre-existing health conditions, genetic predispositions, and lifestyle choices, may contribute to developing or exacerbating these conditions. Additionally, the interplay between hormonal changes, alterations in the immune system, and the increased demands placed on the body during pregnancy can influence the course of degenerative diseases (Muglia *et al.*, 2022; Friel, 2023).

The clinical manifestations of degenerative diseases in pregnancy are highly variable and may range from subtle changes in symptoms to acute exacerbations. Timely recognition and appropriate management of these conditions are essential for

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preventing adverse outcomes for both the mother and the fetus. In some cases, the management may involve careful medication adjustments, lifestyle modifications, or more aggressive interventions, depending on the severity and type of the degenerative disease (Weimer, 2020).

This scoping review will also address the implications of degenerative diseases in pregnancy, including the potential impact on maternal health, fetal development, and long-term outcomes for both. It is crucial to understand the potential risks and challenges that may arise during pregnancy for individuals with degenerative diseases and to identify gaps in the existing literature that require further investigation.

2 METHOD

We start by conducting a thorough literature review to gather existing research, articles, books, and other publications related to Degenerative Disease in Pregnancy. Utilize academic databases like PubMed, CINAHL, Google Scholar, and other relevant sources to find peer- reviewed articles, books, and academic papers related to Degenerative Disease in Pregnancy. Select studies that are directly related to the research question and the theme. We ensure that it has diverse sources to provide a well-rounded perspective. Extract relevant information from each selected study, including key findings, methodologies, sample sizes, and any data that pertains to Degenerative Disease in Pregnancy. Organize and synthesize the data, identifying common themes, patterns, and divergences in the literature. Group studies that address similar aspects. Evaluate the quality of the studies we have selected.

We consider factors like sample size, research methodology, and the credibility of the sources. This step is crucial for ensuring the reliability of the review. We analyze the findings of the selected studies and interpret them in the context of Degenerative Disease in Pregnancy. We summarize the review's key findings and reiterate the implications for understanding Degenerative Disease in Pregnancy. What can be learned from the literature about the concept? Provide recommendations for future research in the field of midwifery identity. What areas need further exploration, and what research methods might be valuable in addressing these questions?

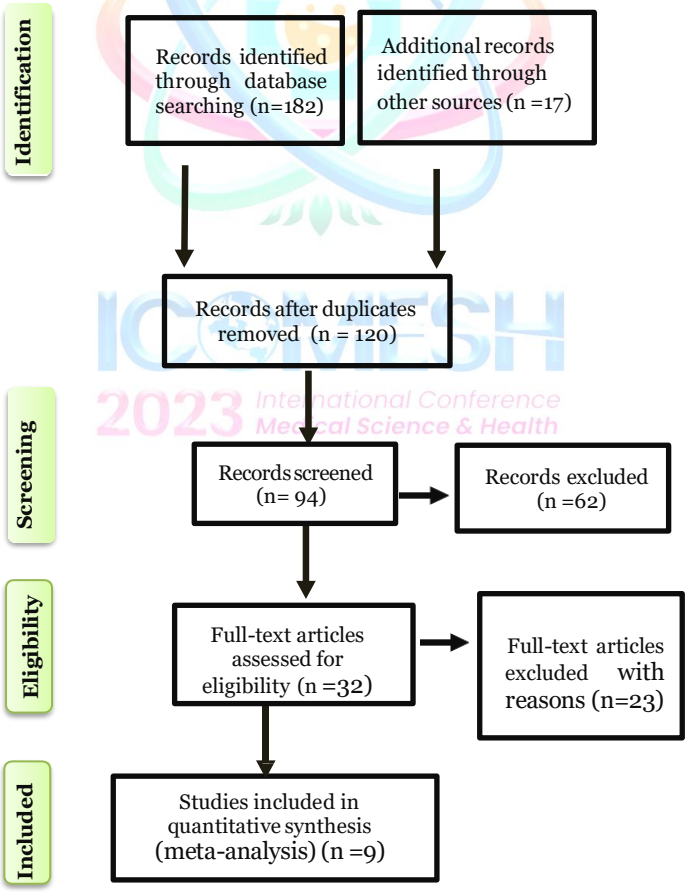

Figure 1: Flow diagram of the study selection process

Table 1: Data Charting

No	Article Title	Country	Purpose	Type of Research	Participants	Results	References
1.	Pre-Pregnancy Obesity, Excessive Gestational Weight Gain, and the Risk of Pregnancy-Induced Hypertension and Gestational Diabetes Mellitus	Poland	to assess the relationship between several categories of maternal weight and the risk of developing Hypertension and diabetes in pregnancy, and the relationship of these complications with the results of the newborn	cohort study	912 polish pregnant women	The research discovered that surpassing the recommended levels of weight gain during pregnancy increased the likelihood of pregnancy-induced hypertension (PIH) but decreased the risk of gestational diabetes mellitus (GDM). However, various studies Showed conflicting results regarding the connection between excessive gestational weight gain and GDM. Additionally, the study highlighted the significance of considering maternal edema as a crucial influencing factor when assessing the link between maternal weight and complications during pregnancy. It is important to note that the study excluded women who had pre-existing hypertension or diabetes.	(Lewandowska et al., 2020)
2.	Longitudinal Metabolic Profiling of Maternal Obesity, Gestational Diabetes, and Hypertensive Pregnancy Disorders	Finland	To assess levels, profiles, and changes in the levels of metabolic measures during pregnancies complicated by obesity, gestational diabetes (GDM), or hypertensive disorders.	Cohort study	741 pregnant women	At all three checkpoints, women classified as obese (with a body mass index – BMI – of 30kg/m2 or higher) displayed notably elevated levels of various markers related to very-low-density lipoproteins, several fatty acids, and most amino acids. They exhibited less favorable metabolic profiles than those with a normal BMI (ranging from 18.5 to 24.99 kg/m2). The fluctuations in metabolic measures during pregnancy were less pronounced in obese women compared to those with a normal BMI. Metabolic changes associated with gestational diabetes mellitus (GDM), preeclampsia, and chronic hypertension resembled those observed in cases of obesity. Even after accounting for GDM and hypertensive disorders, the correlations with obesity remained significant. However, many of the connections between GDM and hypertensive disorders lost significance after adjusting for BMI and other pregnancy-related conditions.	(Kivelä, et.al, 2021)

No	Article Title	Country	Purpose	Type of Research	Participants	Results	References
3.	Asprosin in the umbilical cord of newborns and maternal blood of gestational diabetes, preeclampsia, severe preeclampsia, i ntrauterine growth retardation and macrosomic fetus	Turkey	to compare maternal blood and newborn venous-arterial cord-blood aspro sin levels in pathological and healthy pregnancies	quantitative	30 pregnant women with gestational diabetes, 30 with preeclampsia, 30 with severe preeclampsia, 30 with intrauterine growth retardation, 29 with macrosomic fetuses and 30 healthy pregnant women	Pregnant women diagnosed with gestational diabetes, preeclampsia, severe preeclampsia, or carrying larger-than-average fetuses exhibited notably elevated levels of asprosin compared to the control group. Conversely, those with intrauterine growth retardation showed a significant decrease in asprosin levels. Asprosin levels in both venous and arterial cord blood closely mirrored maternal levels. Regarding cord blood asprosin levels in all newborns, venous levels were higher, although this difference did not reach statistical significance.	(Baykus et al., 2019)
4.	Gestational Diabetes and Hypertensive Disorders of Pregnancy by Maternal Birthplace Author links open overlay panel	US	to identify the differences in gestational diabetes mellitus and hypertensive disorders of pregnancy rates by maternal place of birth within race/ethnicity groups.	cross-sectional study	8,574,264 women	Among various race and ethnic groups in the United States, women born outside the country exhibited higher rates of gestational diabetes mellitus but lower rates of hypertensive disorders during pregnancy compared to those born within the US. This trend was consistent across most racial and ethnic categories.	(Shah et al., 2022)
5.	The Influence of Preeclampsia, Advanced Maternal Age and Maternal Obesity in Neonatal Outcomes Among Women with Gestational Diabetes	Portugal	to analyze adverse fetal or neonatal outcomes in women with gestational diabetes, including fetal death, preterm deliveries, birthweight, neonatal morbidity and mortality, as well as the synergic effect of concomitant pregnancy risk factors and poor obstetric outcomes, such as advanced maternal age, maternal obesity and preeclampsia in their worsening.	cohort retrospective study	301 pregnant women	The presence of both gestational diabetes and preeclampsia was the sole factor associated with adverse neonatal outcomes, including neonatal morbidity, low birthweight, very low birthweight, and preterm deliveries. This combination can serve as a predictive indicator for these outcomes in women experiencing gestational diabetes.	(Nunes et al., 2020)
6.	Impact of new definitions of preeclampsia at term on identification of adverse maternal and perinatal outcomes	UK	to investigate the ability of the American College of Obstetricians and Gynecologists and International Society for the Study of Hypertension in Pregnancy definitions of preeclampsia at term gestational age (37 0/7 weeks) to identify adverse maternal and perinatal outcomes.	prospective cohort study	15,248 women	A comprehensive definition of preeclampsia, when contrasted with a traditional one, proves more effective in identifying women and infants at risk of unfavorable outcomes. The broader definition, aligned with the International Society for the Study of Hypertension in Pregnancy, particularly in its incorporation of maternal end- organ dysfunction, appears to demonstrate greater sensitivity than the definition provided by the American College of Obstetricians and Gynecologists. Enhancing this broad definition further by encompassing uteroplacental dysfunction optimizes the identification of women and infants at risk, especially when considering angio-genic factors.	(Lai et al., 2021)

No	Article Title	Country	Purpose	Type of Research	Participants	Results	References
7.	Prediction of hypertension in pregnancy in high-risk women using maternal factors and serial placental profile in the second and third trimesters	India	To evaluate the role of placental profile markers in the second and third trimester of pregnancy in predicting hypertensive disorders of pregnancy (HDP) in women at high risk of preeclampsia.	Quantitative research study.	160	Among 160 high-risk women, 72 (45%) experienced hypertensive disorders during pregnancy. Elevated serum β hCG levels were notably observed in women who developed preeclampsia, particularly at 20-24 weeks (p = 0.001) and 28-32 weeks (p = 0.018). Placental thickness was consistently lower across all hypertensive disorder subgroups, significantly so in the case of preeclampsia at 20-24 weeks (AUC - 0.743; sensitivity - 75%, specificity - 66.3%) and 28 weeks (AUC - 0.764; sensitivity - 75.0%, specificity - 78.7%). The uterine artery S/D ratio was notably elevated in women with chronic hypertension (AUC - 0.765), gestational hypertension (AUC - 0.771), and preeclampsia (AUC - 0.726) at 20-24 weeks. For the preeclampsia group specifically, uterine artery PI was the highest and proved to be the most effective marker at 20-24 weeks (AUC - 0.935; sensitivity - 100.0%, specificity - 87.6%).	(Hasija et al., 2021)
8.	Maternal hypertension, preeclampsia, and risk of neonatal respiratory disorders in a large prospective cohort study	China	investigated the association of maternal hypertension and preeclampsia with neonatal respiratory disorders in preterm and full-term newborns.	prospective cohort study	185,687 singleton livebirths with gestational weeks between 28 and 42 weeks	Maternal hypertension and preeclampsia are risk factors for neonatal respiratory disorders in full-term and preterm newborns.	(Tian et al., 2020)
9.	The impact of preeclampsia definitions on the identification of adverse outcome risk in hypertensive pregnancy – analyses from the CHIPS trial (Control of Hypertension in Pregnancy Study)	UK	To examine the association between preeclampsia definition and pregnancy outcome.	Secondary analysis of Control of Hypertension in Pregnancy Study (CHIPS) trial data	987 women with non-severe, non-proteinuric pregnancy hypertension	A more encompassing definition of preeclampsia proves more effective in identifying women at risk of adverse pregnancy outcomes compared to a narrower definition. It is crucial to replicate these findings in a prospective study conducted within routine healthcare settings. This replication aims to ensure that the expected increase in monitoring and intervention among a larger group of women diagnosed with preeclampsia correlates with improved outcomes, justifiable costs, and alignment with the values and preferences of these women.	(Magee et al., 2021)

3 CONCLUSION

3.1 Gestational Diabetes

Currently, the occurrence of gestational diabetes ranges from 1% to 22% worldwide. This prevalence fluctuates across nations due to differences in genetic backgrounds, the diagnostic criteria used, and various environmental factors. (Nunes et al., 2020) Being overweight or obese during pregnancy raises the likelihood of gestational diabetes (GDM), hypertensive disorders, and delivery complications, impacting both maternal and fetal health adversely. GDM can result in macrosomia (higher birth weight), preterm birth, and neonatal hypoglycemia. Moreover, maternal obesity and GDM elevate the chances of developing type 2 diabetes in the future. Beyond immediate concerns, maternal obesity and GDM can exert lasting effects on offspring health, including a heightened risk of obesity, metabolic issues, and neurodevelopmental challenges during childhood and later stages of life (Kivelä et al., 2021).

Indeed, the presence of preeclampsia in women with gestational diabetes can serve as a predictive factor for several outcomes studied, including neonatal morbidity, low and very low birth weight infants, and preterm deliveries. Preeclampsia often exacerbates the complications associated with gestational diabetes, leading to heightened risks for these adverse outcomes in both the mother and the newborn. Consequently, monitoring and managing preeclampsia in women with gestational diabetes become crucial to anticipate and mitigate these potential complications. (Nunes et al., 2020). The research indicates a clear link between pre-pregnancy obesity and an increased likelihood of developing gestational hypertension, preeclampsia, and both types of gestational diabetes (GDM-1 and GDM-2). It emphasizes that excessive pre-pregnancy weight is a recognized risk factor for complications like hypertension and diabetes during pregnancy. This study specifically explored various maternal weight categories and their correlation with the onset of hypertension and diabetes during pregnancy, as well as how these complications impacted newborn outcomes. It found a strong association between higher pre- pregnancy BMI values and elevated risks of pregnancy-induced hypertension and gestational diabetes mellitus.

Interestingly, excessive weight gain during pregnancy beyond recommended levels was linked to a higher probability of pregnancy- induced hypertension (PIH). However, it appeared to be associated with a lower likelihood of developing gestational diabetes mellitus (GDM). Nonetheless, the relationship between excessive gestational weight gain and GDM seems to have differing results across the available studies, indicating some divergence or inconsistency in the findings within the research pool (Lewandowska et al., 2020).

The study focused on two categories of gestational diabetes mellitus (GDM): GDM-1, managed through dietary modification, and GDM-2, requiring additional insulin therapy. It involved a comparison with healthy controls to assess the impact of pre-pregnancy obesity on these conditions. The findings revealed a higher likelihood of both GDM-1 and GDM-2 in women with pre-pregnancy obesity. Additionally, the research examined how pregnancy-induced hypertension and gestational diabetes affected newborn outcomes. The study observed adverse effects, including a lower gestational age at delivery and incorrect birth weight, associated with these complications, underscores the significance of excessive pre-pregnancy weight in elevating the risk of pregnancy-related complications like diabetes and hypertension, consequently influencing fetal outcomes. The findings underscore the importance of managing weight before pregnancy to mitigate potential risks for both the mother and the baby. (Lewandowska et al., 2020)

The diagnostic criteria for gestational diabetes mellitus (GDM) vary based on regional guidelines and healthcare protocols. Typically, screening for GDM occurs between 24 and 28 weeks of gestation using an oral glucose tolerance test, but the specific criteria depend on the healthcare provider's guidelines. The study highlighted that both pregnancy-induced hypertension and gestational diabetes have notable impacts on maternal and fetal health. They are associated with adverse outcomes for newborns, such as a decreased gestational age at delivery and potential issues with birth weight. Moreover, these complications heighten the risk of maternal and neonatal complications, including increased morbidity and mortality rates. There is also a concerning link between these conditions and a higher incidence of metabolic diseases in offspring during their adult lives. Given these findings, managing gestational diabetes becomes crucial to mitigate the risks of adverse outcomes for both the mother and the baby. Monitoring and appropriate management can help reduce the potential complications associated with GDM, improving maternal and fetal health (Lewandowska et al., 2020).

This study emphasizes the striking similarity in metabolic changes in gestational diabetes mellitus (GDM) and obesity. Initially, associations between GDM, hypertensive disorders, and other conditions weakened after considering BMI and other pregnancy-related disorders, suggesting that obesity, along with these other disorders, might be considered a risk factor for GDM. The research revealed that women with pre-pregnancy obesity

exhibited unfavorable metabolic profiles throughout pregnancy. These individuals had higher levels of lipoproteins, specific fatty acids (such as higher levels of monounsaturated and saturated fats and lower levels of polyunsaturated fats), increased levels of specific amino acids like branched-chain amino acids (BCAA) and aromatic amino acids, and elevated levels of GlycA compared to normal-weight women. Notably, the metabolic patterns in women with pre-pregnancy obesity mirrored those associated with GDM, preeclampsia (PE), and hypertensive disorders, indicating similarities in the underlying metabolic alterations. Additionally, it was observed that obese women experienced more subdued changes in metabolic markers throughout pregnancy compared to normal-weight women, highlighting a distinct and less dynamic metabolic response in this population during gestation, underscores the comprehensive metabolic changes occurring during pregnancy in women with obesity and suggests a need for further understanding of these metabolic perturbations to improve management strategies and potentially mitigate associated risks for both mother and baby (Kivelä et al., 2021).

This study underscores the profound metabolic differences observed in women with obesity compared to normal-weight women during pregnancy. Specifically, obese people exhibited higher levels of various lipoproteins, fatty acids, and amino acids, indicating a less favorable metabolic profile. Notably, the metabolic alterations linked with gestational diabetes (GDM), preeclampsia (PE), and hypertensive disorders during pregnancy resembled the metabolic changes associated with obesity. Interestingly, while associations with GDM and hypertensive disorders weakened after considering BMI and other pregnancy-related conditions, the association with obesity remained significant, suggesting that obesity, GDM, and hypertensive disorders share similar metabolic origins. Understanding these shared metabolic perturbations may have significant implications for managing and treating these conditions during pregnancy. Early identification and management are crucial to prevent adverse outcomes.

Moreover, identifying new biomarkers for potential therapeutic targets and determining critical periods for preventive interventions could pave the way for personalized strategies for affected women. This study's findings stress the necessity of a comprehensive, multidisciplinary approach to managing these conditions during pregnancy. Collaboration among obstetricians, endocrinologists, nutritionists, and other specialists is essential for optimal care and improving outcomes for pregnant women facing these metabolic challenges (Kivelä et al., 2021).

Indeed, the diagnostic strategies for gestational diabetes mellitus (GDM) vary across different healthcare guidelines and regions. The American Diabetes Association (ADA) recommends universal screening for GDM using a 75-gram oral glucose tolerance test (OGTT) between 24 to 28 weeks of gestation. However, women with specific risk factors, such as obesity, previous history of GDM, or a family history of diabetes, might require earlier screening. The International Association of Diabetes and Pregnancy Study Groups (IADPSG) also suggests a one-step approach to diagnose GDM, utilizing the same criteria as the ADA, which involves a single OGTT to determine the diagnosis. On the other hand, some countries still adhere to a two-step approach. This method begins with an initial screening test, and if the results are positive, it is followed by a confirmatory diagnostic OGTT. The diagnostic criteria for GDM, established based on the OGTT results, can differ depending on the approach followed, leading to variations in diagnosis and subsequent management of GDM across different regions and healthcare systems (Kivelä et al., 2021).

Early detection of gestational diabetes mellitus (GDM) is crucial as it significantly impacts maternal and fetal health. Identifying GDM allows for timely intervention and management, which has been shown to improve outcomes for both the mother and the baby. Studies have demonstrated that treating GDM through lifestyle modifications like diet and exercise, along with potential medication, can effectively lower the risk of adverse pregnancy outcomes. These interventions can help reduce the chances of macrosomia (more considerable birth weight), preterm birth, and neonatal hypoglycemia. Moreover, early detection and management of GDM play a vital role in decreasing the risk of developing type 2 diabetes later in life for both the mother and the child. By addressing GDM during pregnancy, there is a potential to mitigate the long-term risks of diabetes for both individuals. Given these benefits, universal screening for GDM between 24 and 28 weeks of gestation is recommended. However, earlier screening might be necessary for women who have risk factors predisposing them to GDM, such as obesity, a history of GDM, or a family history of diabetes. This proactive approach to screening and managing GDM can significantly contribute to better health outcomes for both the mother and the child (Kivelä et al., 2021)

Asprosin, a relatively newly discovered hormone primarily produced in white adipose tissue, has gained attention for its involvement in regulating glucose homeostasis and energy metabolism. Research indicates notable connections between asprosin levels and various pregnancy-related complications. Studies have demonstrated significant increases in asprosin concentrations in the blood of mothers and newborns associated with

gestational diabetes, intrauterine growth retardation, macrosomic fetuses, preeclampsia, and severe preeclampsia compared to control groups. However, a slight decrease in asprosin concentrations was explicitly observed in the context of intrauterine growth retardation. Additionally, there was a positive correlation between newborn birth weight and asprosin levels in groups with gestational diabetes and macrosomic fetuses.

Interestingly, female neonates exhibited notably higher levels of asprosin compared to males. Elevated asprosin levels have previously been linked to insulin resistance, obesity, and type 2 diabetes in non-pregnant individuals. During pregnancy, heightened asprosin levels have been associated with complications such as gestational diabetes, preeclampsia, severe preeclampsia, intrauterine growth retardation, and macrosomia. Despite these associations, the exact mechanisms by which asprosin contributes to these complications remain under investigation. However, it is hypothesized to play a role in insulin resistance and glucose metabolism, potentially influencing the development of these pregnancy-related conditions. Further research is needed to fully comprehend the precise impact and mechanisms of asprosin in these pregnancy complications (Baykus et al., 2019).

The study highlighted significant disparities in the rates of gestational diabetes mellitus (GDM) and hypertensive disorders of pregnancy (HDP) between women born inside and outside the US, as well as across various racial and ethnic groups within the US. For women born outside the US, the age-standardized rate of GDM was notably higher compared to those born in the US. The rate stood at 70.3 per 1,000 live births for non-native-born women and 53.2 per 1,000 live births for U.S.-born women. Conversely, the overall rate of hypertensive disorders of pregnancy was lower in women born outside the US (52.5 per 1,000 live births) than in those born within the US (90.1 per 1,000 live births). The disparities were also evident across different racial and ethnic groups within the US. Asian American women bore the highest burden of GDM, while non-Hispanic Black women experienced the highest burden of HDP.

Additionally, in most racial and ethnic groups studied, GDM rates were higher among women born outside the US, while HDP rates were lower compared to women born in the US. These findings underscore the complex interplay of birth origins, race, and ethnicity in influencing the rates of GDM and HDP. Understanding these disparities is crucial for developing targeted interventions and healthcare strategies to address the specific needs of diverse populations during pregnancy (Shah et al., 2022).

3.2 Preeclampsia and Maternal Hypertension

Maternal hypertension was defined as an absolute blood pressure ≥ 140/90 mmHg after 20 weeks of gestation or as a blood pressure increment of ≥30/15 mmHg after 20 weeks of gestation as compared with the first trimester. Preeclampsia (including eclampsia) was defined as a blood pressure of ≥ 140/90 mmHg or a blood pressure increment of 30/15 mmHg after 20 weeks of gestation, with concurrent proteinuria (a single random urine specimen containing at least 2 + protein by dipstick test) (Tian et al., 2020). Expanding the criteria used to define preeclampsia appears to significantly enhance the identification of adverse outcomes for both mothers and babies during pregnancy. This broadened definition incorporates additional factors such as mildly abnormal platelet counts, creatinine levels, liver enzyme results, and the objective assessment of uteroplacental dysfunction based on markers related to fetal growth restriction and angiogenic markers. Comparing this broadened definition to the traditional one, it showed improved sensitivity in detecting adverse outcomes associated with preeclampsia. This increase in sensitivity was particularly noticeable in specific definitions where statistical significance was observed. In essence, a broader definition of preeclampsia appears to be more effective in identifying women at risk of adverse pregnancy outcomes. However, while these findings are promising, validating them in a prospective study conducted within routine healthcare settings is crucial. This verification process aims to ensure that the expected increase in surveillance and intervention for a larger group of women diagnosed with this broader form of preeclampsia correlates with improved outcomes. Additionally, assessing the economic feasibility and alignment with women's preferences and values is essential in implementing these changes effectively within healthcare systems (Lai et al., 2021; Magee et al., 2021).

The study's findings underscore the significant impact of hypertensive disorders of pregnancy, including preeclampsia and maternal hypertension, on both maternal and fetal health. Adverse outcomes, such as hypertensive disorders, were observed in over half of the cases, with preeclampsia affecting a notable proportion. Fetal outcomes also showed concerns, with a significant number of cases exhibiting small for gestational age and fetal growth restriction. To proactively address these risks, the study implemented repeated blood pressure and urinary protein levels assessments during specific gestational windows (at 20-24 weeks and 28-32 weeks). This monitoring aimed to identify women at

increased risk of developing hypertensive disorders of pregnancy. Regular evaluations occurred during scheduled antenatal visits until delivery, allowing for ongoing surveillance and early identification of potential complications. Early detection of hypertensive disorders during pregnancy is crucial. Timely identification enables prompt intervention and management, significantly reducing the risk of adverse outcomes for both the mother and the baby. Hence, consistent antenatal care that includes vigilant monitoring of blood pressure and urinary protein levels is vital for the timely detection and management of hypertensive disorders of pregnancy. This approach supports proactive measures to minimize potential complications and optimize maternal and fetal well-being (Hasija et al., 2021).

The study proposes that abnormal placentation might serve as an early trigger in the onset of preeclampsia. It suggests a screening approach that utilizes markers of abnormal placentation, potentially allowing for a more precise prediction of preeclampsia. This method could aid in identifying high-risk patients, enabling targeted allocation of resources for their care. The placental function profile, comprising maternal serum biomarkers, uterine artery Doppler indices, and placental length and thickness, serves as a screening tool. The study highlighted elevated levels of maternal serum beta hCG during specific gestational periods (20-24 weeks and 28-32 weeks) in women who later developed preeclampsia. This finding suggests the potential for using serial assessments of placental profile markers, including maternal serum biomarkers and uterine artery Doppler indices, to predict preeclampsia among high-risk individuals. By incorporating these markers into routine antenatal assessments, healthcare providers may have an improved ability to anticipate the development of preeclampsia in high-risk women. Early identification using these markers could enable tailored interventions and closer monitoring, potentially contributing to better management and outcomes for both the mother and the baby (Hasija et al., 2021).

The study's findings shed light on a crucial link between maternal hypertension, particularly preeclampsia, and heightened risks of neonatal respiratory disorders in both full-term and preterm newborns. The severity of maternal hypertension correlated with an increased risk of these respiratory disorders, with preeclampsia showing a stronger association. This discovery holds significant implications for clinical practice and public health. Healthcare providers need to recognize the amplified risk of neonatal respiratory disorders in infants born to mothers with hypertension and preeclampsia. Monitoring and managing these conditions in pregnant women become even more critical to mitigate potential complications for the newborns.

Furthermore, this study underscores the necessity for further research in this domain. Understanding the underlying mechanisms behind the association between maternal hypertension and neonatal respiratory disorders is crucial. Such insights could pave the way for the development of more effective preventive measures and treatment strategies to safeguard the respiratory health of newborns born to mothers with hypertensive conditions during pregnancy (Tian et al., 2020).

Early detection of maternal hypertension and preeclampsia plays a pivotal role in ensuring optimal outcomes for both the mother and the baby. Regular prenatal care, including diligent monitoring of blood pressure and urinary protein levels, forms a cornerstone in identifying these conditions promptly. Early detection facilitates timely interventions and management strategies that can help prevent complications associated with hypertension and preeclampsia. It allows healthcare providers to initiate appropriate treatments, lifestyle modifications, or interventions to mitigate risks for both the mother and the baby during pregnancy and childbirth. It suggests a potential decreased risk of respiratory distress syndrome in moderately preterm neonates born to mothers with maternal hypertension and preeclampsia, highlighting a potential positive impact of early detection and management of these conditions, offering some protective effect against this specific neonatal complication. Overall, emphasizing the importance of early detection and proper management of maternal hypertension and preeclampsia not only helps avert potential complications but may also offer unexpected benefits for the baby's health, underlines the critical role of regular prenatal care and close monitoring in ensuring the best possible outcomes for both the mother and the baby.

4 CONCLUSION

Degenerative diseases in pregnancy are a complex and multifaceted issue that requires further research and awareness. This scoping review offers a comprehensive overview of the current state of knowledge in this area, serving as a valuable resource for healthcare professionals, researchers, and policymakers to address these challenges and improve the care of pregnant individuals with degenerative diseases.

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