



The Trifecta: Gestational Diabetes, Pregnancy Hypertension and Peripartum Cardiomyopathy- A Systematic Review

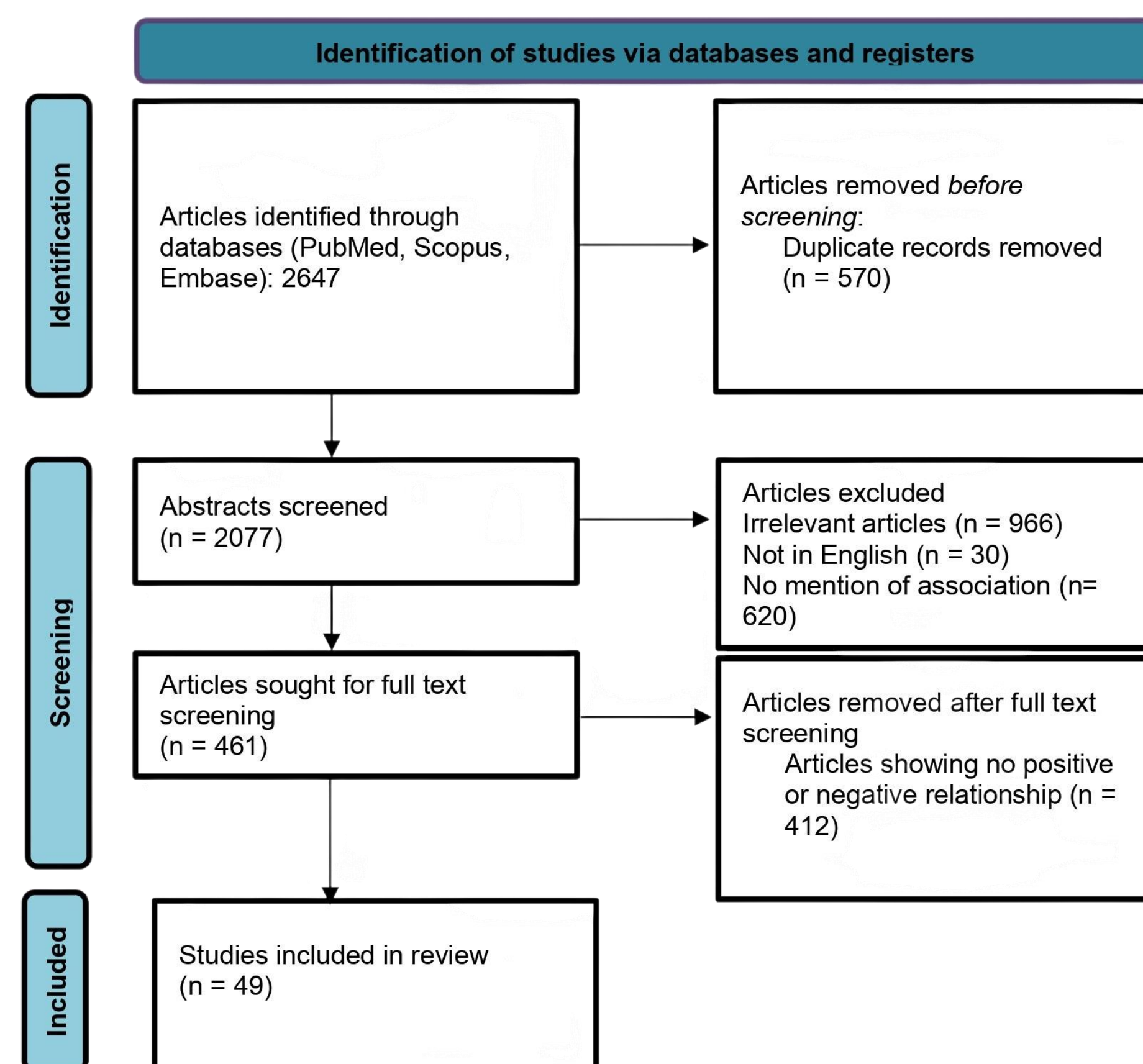
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Introduction

- Hypertensive Disorders of Pregnancy(**HDP**), Gestational Diabetes Mellitus(**GDM**), and Peripartum Cardiomyopathy(**PPCM**) produce a **fair burden of morbidity and are often seen together**.
- There exists an unexplored association which may have common pathophysiological links.
- Knowledge about the interplay between the three can help **direct research for new drug targets and design personalized therapy for patients**.
- The SR aims to **compile the evidence and appraise the literature to understand the “Trifecta” in pregnancy** and help the development of effective strategies for the prevention, diagnosis, and management of GDM, HDP, and PPCM.

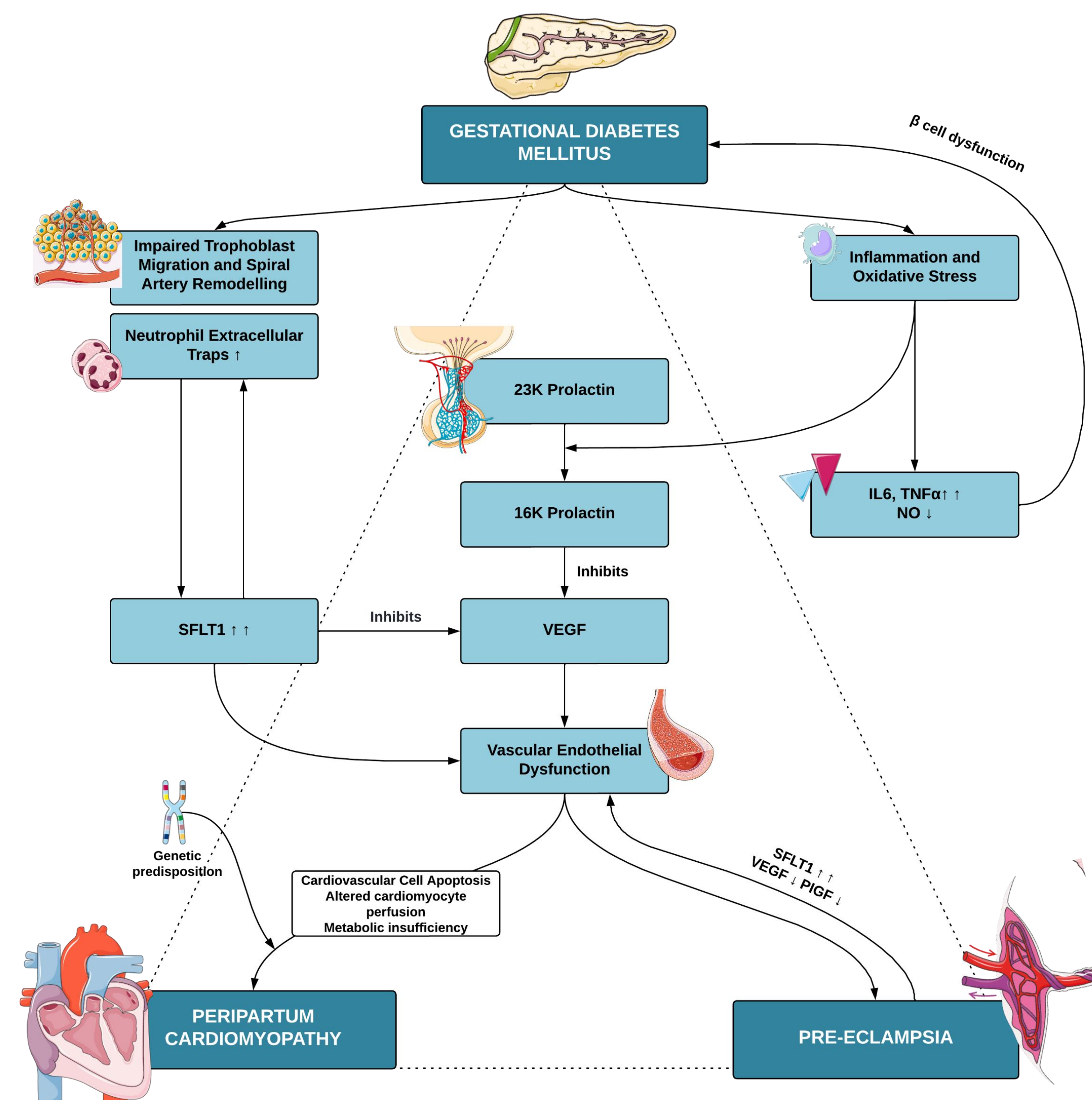
Fig 1: PRISMA Chart



Design & Methods

- A systematic review was conducted using several keywords by searching databases of PubMed, Embase, and Scopus covering the literature from inception to 2022. Duplicate and irrelevant articles were removed.
- The studies that **described a link between GDM, HDP, and PPCM** were included. (Fig. 1)
- The studies were independently analysed and evaluated for reliability and validity.

Fig 2: Pathophysiology of interrelationship between Gestational Diabetes, Pre-Eclampsia and Peripartum Cardiomyopathy



Results

- Our findings suggested an association between GDM, HDP, and PPCM (Fig. 2).
- HDP were 1.5 times more common in GDM patients**
- PPCM was more prevalent in either of these conditions, with it being almost **four times more likely in HDP patients**.
- The data thus supported the hypothesis of these disorders acting as an important modifiable risk factor **for PPCM**.
- The interplay between these conditions is thought to **involve shared risk factors**, such as obesity, altered metabolism, disturbed endothelial function etc..
- An examination of the pathophysiological mechanisms also suggested several ‘common links’.
- These included insulin resistance, an **imbalance in pro and anti-inflammatory cytokines**, an increase in **antiangiogenic(sFlt-1)** and a decrease in **pro-angiogenic(VEGF) factors**, and the production of **cathepsin-cleaved 16 Kda prolactin fragments and reactive oxygen species**.
- All of these lead to the development of **vascular endothelial dysfunction - a common mechanism in the pathophysiology of all these diseases**.
- The ‘Trifecta’ exists as an important link and severely affects outcomes – warranting attention and an extra sense of suspicion from the physicians.
- The association warrants more attention – the interlinks can be **exploited to identify modifiable risk factors** – which can improve outcomes and direct therapy.

Conclusion

- A better knowledge of the links between these conditions along with their pathophysiological mechanisms may aid in the **development of effective antenatal care strategies, better risk stratification, and targeted therapeutic interventions reducing maternal morbidity and mortality**.

Future Directions

- Limited studies explore the impact of this ‘trifecta’ on outcomes.
- More observational and interventional studies** in this domain can help identify the depth of the problem and **help seek solutions directing aggressive multi-disciplinary management strategies**.

Bibliography

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