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# The Involvement of Long Non-coding RNAs, MicroRNAs and Circular RNA in the Prediction of Cardiovascular Disease in Hypertensive Disorder of Pregnancy- A Scoping Review

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[Ganesan, Prianeesha](#)<sup>a</sup> ; [Mohd. Zainudin M.](#)<sup>a</sup>; [A.Talib N.](#)<sup>b</sup>; [Zainal Abidin F.](#)<sup>b</sup>

<sup>a</sup> Department of Basic Medical Sciences, Kulliyah of Medicine, International Islamic University Malaysia, Malaysia

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## Abstract

Hypertensive disorders of pregnancy (HDP) is a common condition in pregnant women affecting 5% to 10% of pregnancies worldwide. Women who have had HDP are at a higher risk of developing cardiovascular diseases (CVD) earlier in life compared to those who remained normotensive during pregnancy. HDP is associated with a significant increased risk of early-onset of CVD particularly hypertension and stroke, and this can lead to maternal mortality. Non-coding RNAs (ncRNAs) have been linked to HDP, particularly the long non-coding RNA (lncRNA), microRNA (miRNA), and circular RNA (circRNA). This scoping review identifies the most significant ncRNAs involved in predicting CVD in HDP. The protocol by Arksey and O'Malley was used in this scoping review. The steps were carried out in a systematic manner, including the identification of research questions, identification and selection of relevant studies, data charting and collating, summarizing the data, and reporting the findings. Multiple databases were searched for data collection, including Semantic Scholar, Scopus, PubMed Central, and Science Direct. In all thirty-one relevant studies were explored in this review. This review demonstrates the types, models, methodologies, and descriptions of non-coding RNAs associated with HDP. This review highlights that non-coding RNAs play a key role in predicting heart disease linked to high blood pressure

in pregnancy by influencing blood vessels, inflammation, and stress, thus emphasizing their potential as early markers and the need for further study. © 2026, International Islamic University Malaysia. All rights reserved.

## Author keywords

cardiovascular disease CVD; Hypertensive disorders of Pregnancy HDP; long non-coding RNA lncRNA; microRNA miRNA

## Corresponding authors

|                      |            |
|----------------------|------------|
| Corresponding author | P. Ganesan |
|----------------------|------------|

|             |                                                                                                                                          |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Affiliation | Department of Basic Medical Sciences, Kulliyyah of Medicine, International Islamic University Malaysia, Pahang, Kuantan, 25200, Malaysia |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------|

|               |                        |
|---------------|------------------------|
| Email address | prianeesha92@gmail.com |
|---------------|------------------------|

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