

THE DIFFERENCES OF METHYLATION PATTERN, EXPRESSION OF VEGF AND VEGFR-2 GENES, AND LOW BIRTH WEIGHT HISTORY AMONG NORMAL PREGNANCY, EARLY ONSET AND LATE ONSET PREECLAMPSIA

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Introduction

Preeclampsia (PE) is a leading cause of maternal mortality in Indonesia, second only to hemorrhage, yet its primary etiology remains unclear. Placental development depends on tightly regulated vasculogenesis and angiogenesis. EOPE can impair fetal organ development, worsen neonatal outcomes, and raise the risk of metabolic syndrome later in life. These effects are thought to involve epigenetic alterations particularly DNA methylation that modulate VEGF and VEGFR-2 gene expression, leading to placental dysfunction and a higher risk of EOPE/LOPE in women with a history of Low Birth Weight (LBW).

Objective

To determine whether there are differences in the prevalence of a history of LBW among Early Onset Preeclampsia (EOPE), Late Onset Preeclampsia (LOPE), and normal pregnancy. Furthermore, the differences in DNA methylation pattern and expression of VEGF and VEGFR-2 genes among normal pregnancy, EOPE and LOPE

Methods

Retrospective Case Control (LBW History) and Cross Sectional Study (DNA Methylation, Gene Expression of VEGF, VEGFR 2

Results

This study there are differences in the prevalence of a history of LBW was significantly higher among EOPE with an approximately 37-38 fold increased risk, and an 8-9 fold increased risk LOPE, compare with normal pregnancy. VEGF gene expression was significantly lower in the EOPE and LOPE than in the normal pregnancy group. Furthermore, VEGFR 2 gene expression was significantly lower in the EOPE than in the normal pregnancy, while no significant differences was found between the LOPE and normal pregnancy groups.

Conclusion

- 1.The prevalence of LBW history was highest among woman with EOPE , followed by those with LOPE, and was lower in the normal pregnancy group
- 2.Women with LBW history was significantly associated with an approximately 37-38 fold increased risk, and an 8-9 fold increased risk LOPE
- 3.VEGF gene expression increases in both EOPE and LOPE, VEGFR-2 gene expression decreases in EOPE but increases in LOPE
- 4.DNA methylation patterns of VEGF gene showed no significant differences between normal pregnancy and EOPE and LOPE

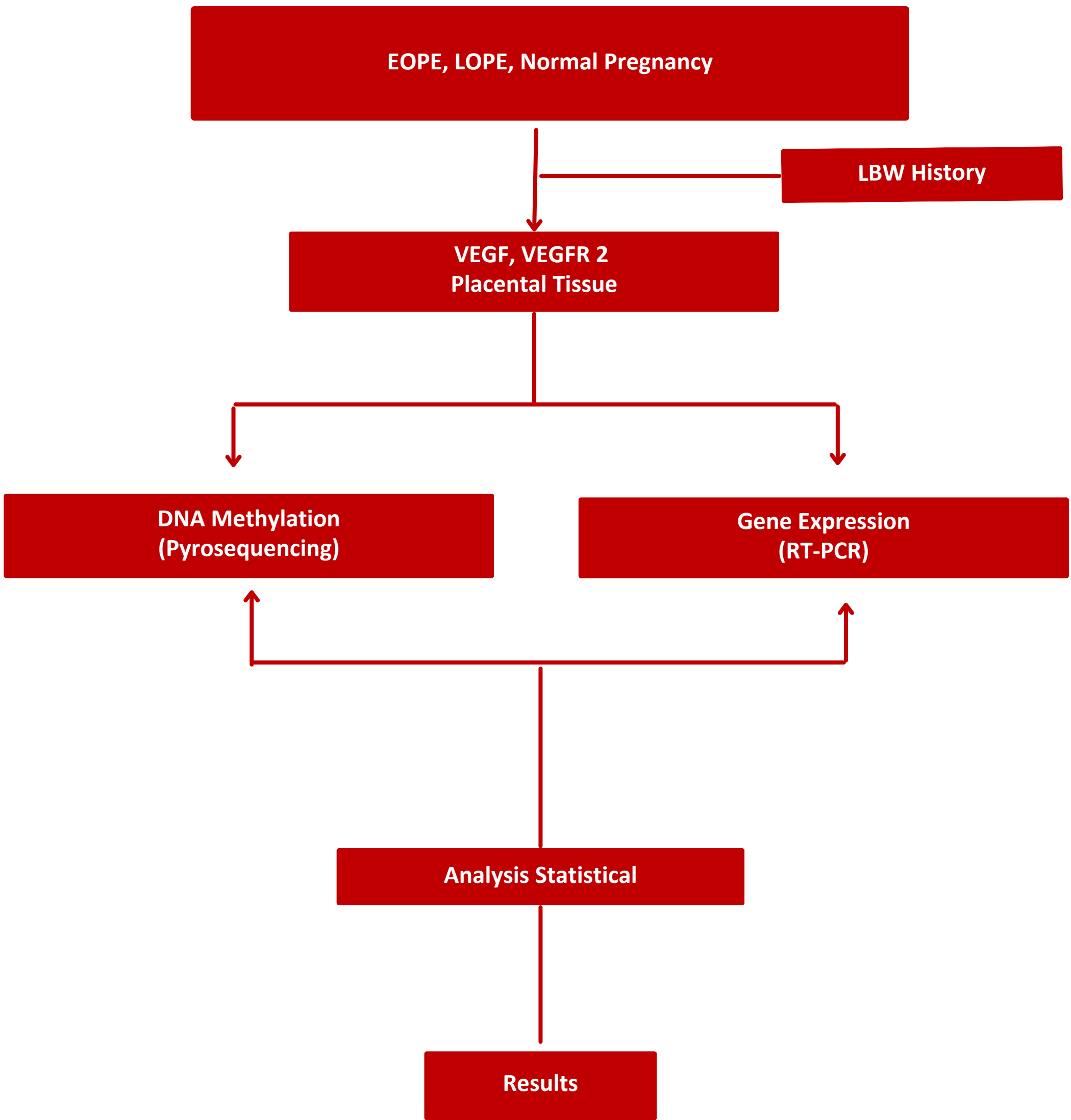


Figure 1 Research Workflow

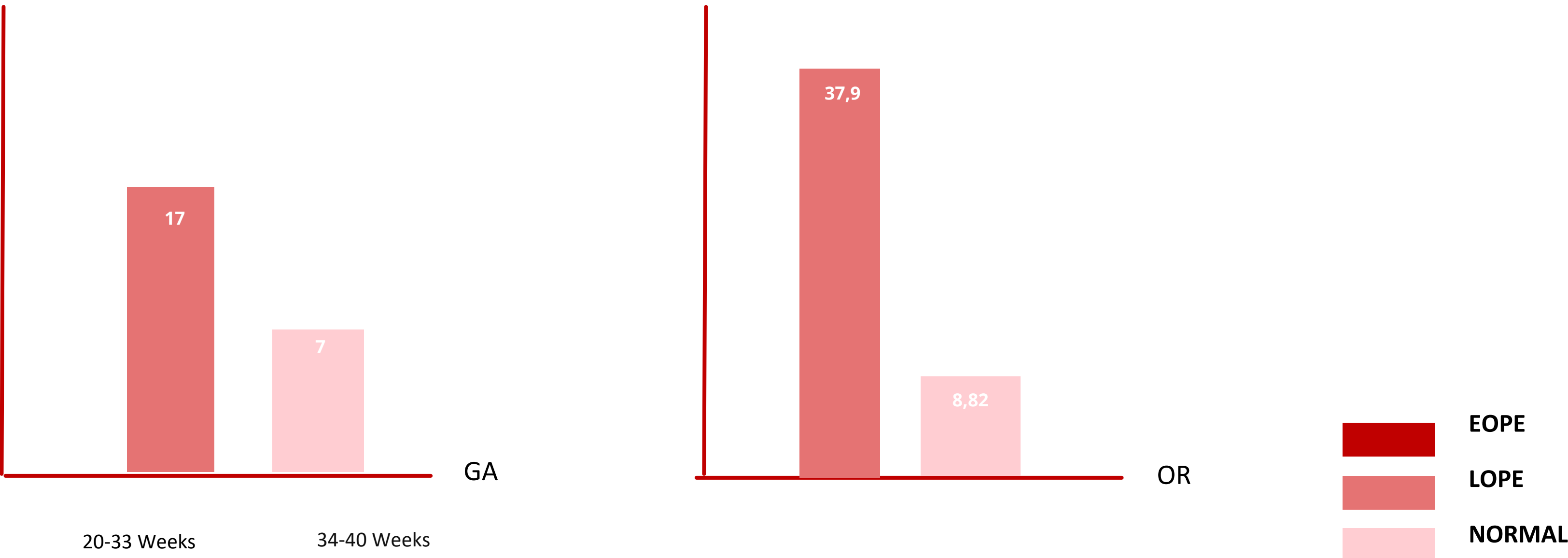


Figure 2 Prevalence LBW history with EOPE and LOPE

Figure 3 Association of LBW history with EOPE and LOPE

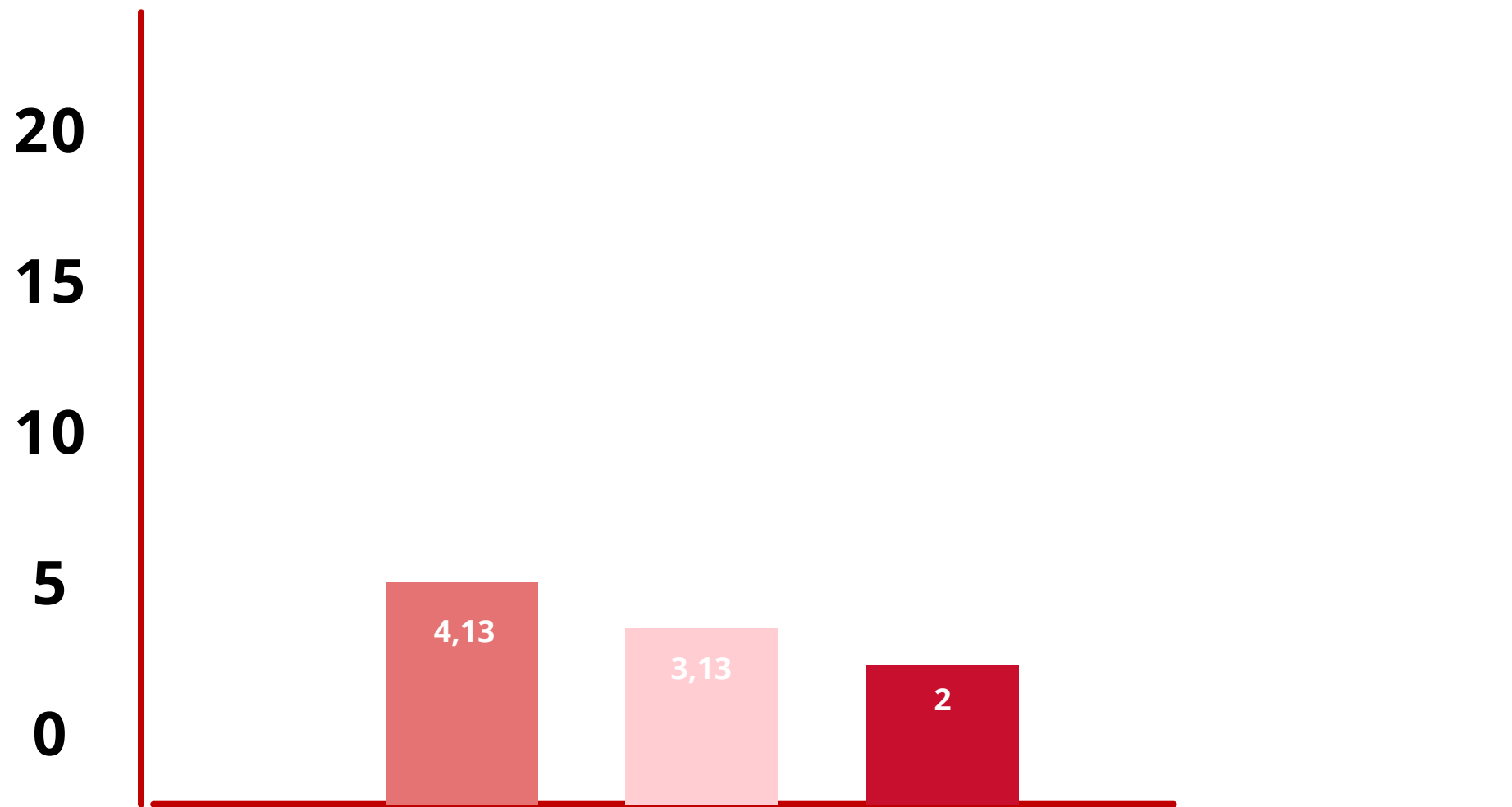


Figure 4 Differences of Methylation Pattern VEGF Gene between EOPE, LOPE and Normal Pregnancy Depends on LBW History

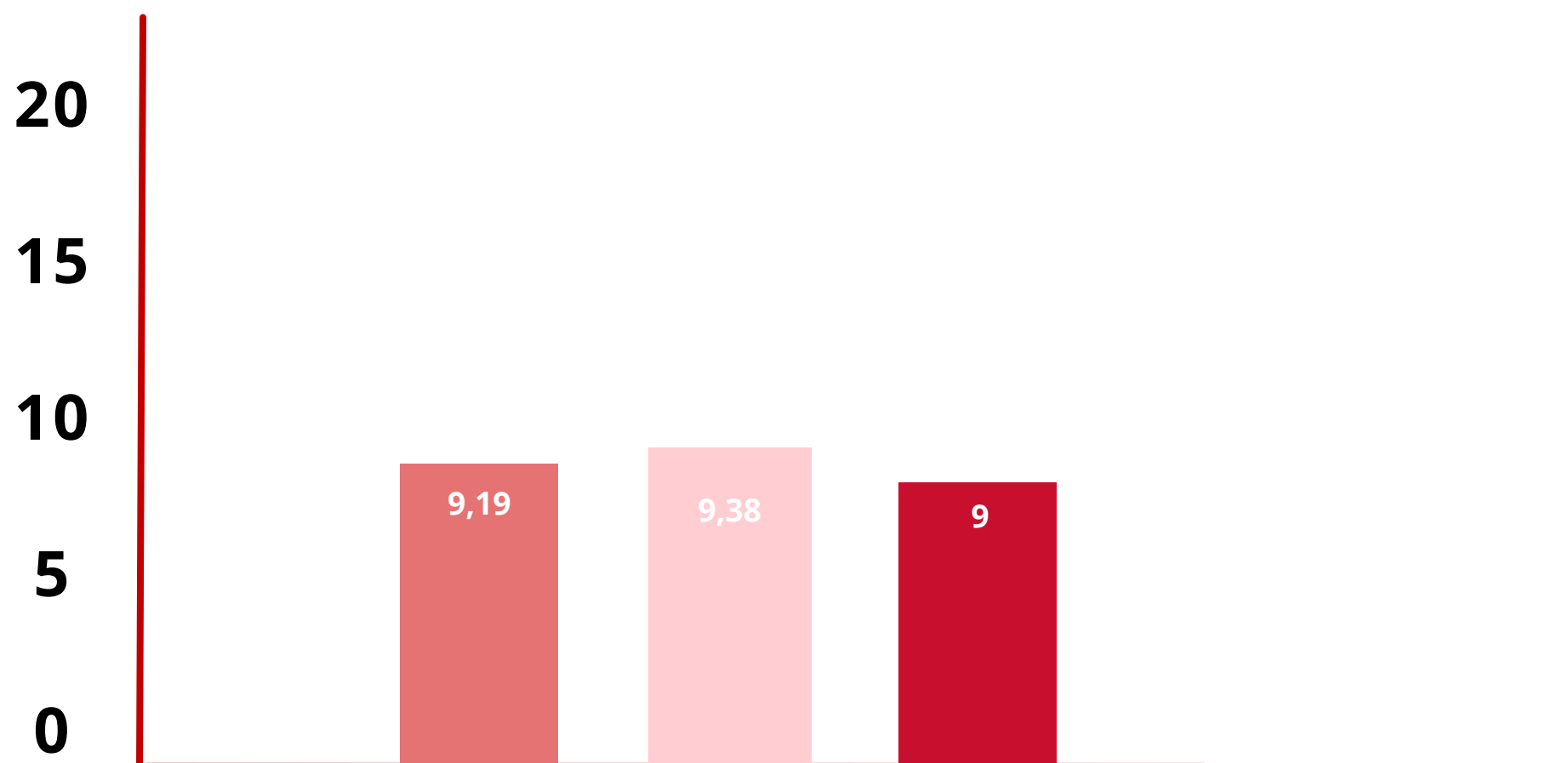


Figure 5 Differences of Methylation Pattern VEGFR-2 Gene between EOPE, LOPE and Normal Pregnancy

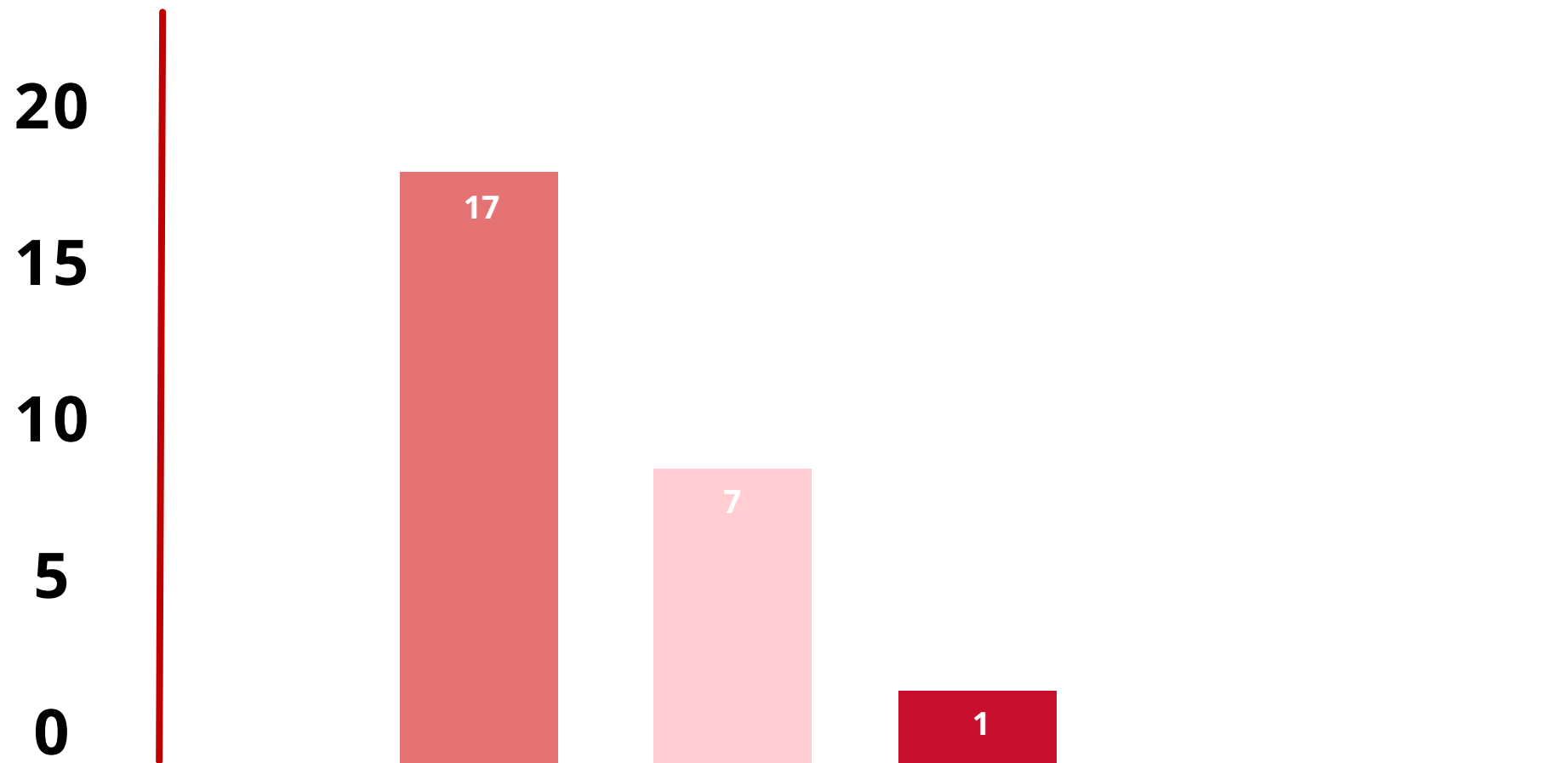


Figure 6 Differences Expression of VEGFR-2 Gene between EOPE, LOPE and Normal Pregnancy Depends on LBW History

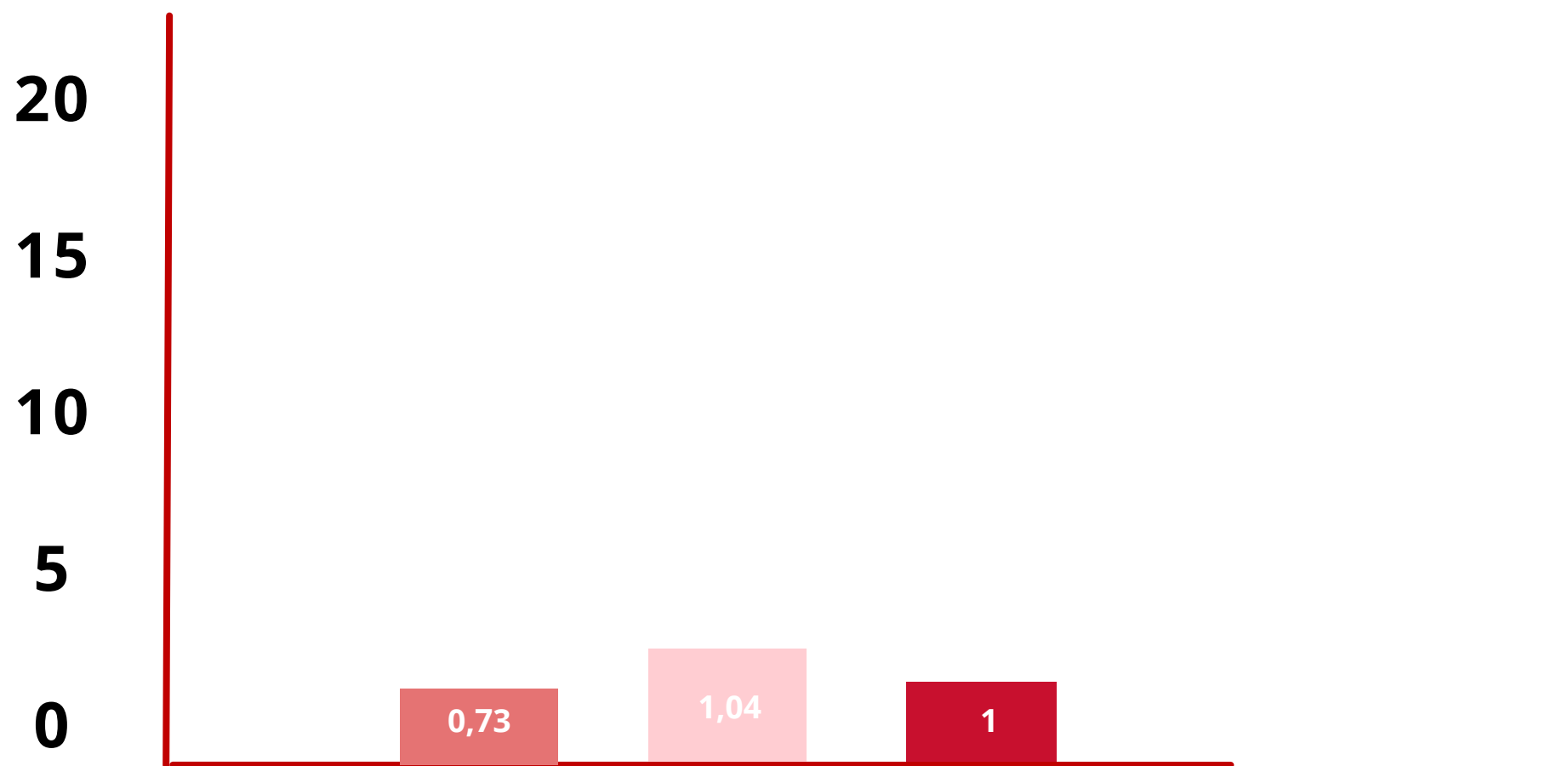


Figure 7 Differences of Expressions of VEGF Gene between EOPE, LOPE and Normal Pregnancy