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The relationship between high hemoglobin in first trimester and pregnancy complications in the north of West Bank, Palestine: A cross-sectional study.

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Abstract

The burden of maternal morbidity and mortality for Palestinian women is relatively high. Early diagnosis of gestational hypertension and gestational diabetes mellites (GDM) can improve prenatal care for pregnant women during pregnancy and result in a satisfactory pregnancy outcome. Studies investigating the association between high maternal hemoglobin (Hb) levels and adverse pregnancy are scarce and controversial, with no absolute cut-off values for high Hb levels. Consequently, we aimed to investigate the association between maternal Hb levels in the first trimester (6-13 gestational weeks, GW) and adverse pregnancy outcomes; gestational hypertension and diabetes.

Methods

A cross-sectional study was conducted in 2021. Medical records (N=5263) were reviewed for singleton pregnancies who had their first maternity care clinic visit at primary healthcare centers of the Palestinian Ministry of Health in the north of the West Bank/Palestine in 2018 and 2019. Women were excluded if they had a history of a current or previous diabetes, abnormal fast blood sugar (FBS), hypertension, or taking drugs for these conditions, and smokers. The final number of eligible records was 2565. Hb levels were divided to low (<11.0mg/dl), normal (11-12.49 mg/dl), and high (\geq 12.5mg/dl).

Results

Compared to low Hb levels at registration, high Hb levels were significantly associated with high FBS (\geq 126mg/dl) (OR=2.99, 95%CI [1.675-5.368], p-value=<0.001) and high systolic blood pressure (\geq 140mmHg) (OR=3.048, 95%CI [1.252-7.421], p-value=0.014) at 24 gestational weeks. Gravidity was significantly associated with decreased risk of high FBS (OR=0.838, 95%CI [0.704-

0.991], p-value=0.039). No significant associations were found between normal Hb levels at registration and FBS and blood pressure at 24 gestational weeks.

Conclusion

Hemoglobin levels could be used as reliable markers to detect GDM and hypertension. The results of this study could have important clinical implications for early screening, which could improve preventive and curative health services to promote the health of pregnant women and children.

Keywords: Gestational Diabetes, Gestational Hypertension, High Hemoglobin Level, Fast Blood Sugar, Maternal Morbidity, Maternal Mortality