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Eho, Ami, "The Relationship Amongst Sleep, Gestational Weight Gain, and Insulin Resistance During Pregnancy" (2023). *Symposium of Student Scholars*. 85.
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The Relationship Amongst Sleep, Gestational Weight Gain, and Insulin Resistance During Pregnancy

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INTRODUCTION: The Center for Disease Control and Prevention reports that 48% of pregnancies are affected by excessive weight gain. Gestational weight gain (GWG) is associated with adverse perinatal outcomes including insulin resistance, a precursor to type 2 diabetes. Short sleep duration and poor sleep quality are correlated with weight gain in general population but the relationship between sleep and weight gain during pregnancy is unclear.
OBJECTIVE: To evaluate how sleep duration or sleep quality affect GWG and IR during pregnancy.
METHODS: Primigravida women were recruited from a WellStar OB/GYN clinic during the second trimester of pregnancy (N=25; age= 27±4 years; pre-pregnancy BMI= 27±6 kg/m^2). The previously-validated General Sleep Disturbance Scale questionnaire was used to determine quality of sleep (sleeping poorly, not feeling rested upon awakening, and not feeling satisfied with sleep) and quantity of sleep (too little sleep or too much sleep). Fasting blood glucose and plasma insulin were collected at approximately 25 weeks' gestation. Insulin resistance was assessed by the Homeostasis Model Assessment of Insulin Resistance (HOMA-IR= fasting insulin (mU/L) x fasting glucose (mg/dL)/405). GWG refers to weight gained from pre-pregnancy to end of pregnancy.
RESULTS: A linear correlation between GWG and quantity of sleep *(r = 0.550, p = 0.015)* was observed, along with a non-significant trend between GWG and HOMA-IR *(r = 0.408, p =0.053). No relationship was found between HOMA-IR and sleep quality or quantity.*
CONCLUSIONS: The results indicate that increased sleep duration is associated with GWG during pregnancy. Therefore, screening for sleep disturbances during pregnancy may be of clinical significance.