THE RELATIONSHIP BETWEEN BMI, AND DEPRESSION, ANXIETY AND STRESS REPRESENTED BY THE PHYSIOLOGIC INDICATORS OF VAGAL RESPONSE AND BLOOD PRESSURE

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BACKGROUND

Knowledge is scarce about the impact of stress, anxiety and depression on physiologic indicators in obese women.

Although pregnancy is thought by many to be “protective” in terms of mental health and well-being, recent cohort studies have reported that psychosocial factors (depression, anxiety and stress) impact physiologic pregnancy changes, and often result in preterm birth, hypertension and other adverse outcomes. ¹, ²

Depression, anxiety and stress → changes in the autonomic vagal response → cardiovascular disorder = increased heart rate & < vagal response
FURTHER THINKING

?? Why do some women experiencing adversity remain resilient and have positive perinatal outcomes in spite of an over abundance of life circumstances → may it be the ability to flexibly respond to additional demands of pregnancy? 3, 4

individuals with attenuated response to life obstacles, such as may occur with obesity, would than exhibit a lack of physiologic adaptability in response to psychosocial factors, and may lack the self regulatory capacity to adjust rapidly to stressful stimuli. 3, 4
RESEARCH AIM

To investigate the association of stress, anxiety and depression with the physiologic indicators of blood pressure and vagal response in obese pregnant women and to determine if there is a difference between obese and non-obese women.
DESIGN, SETTING & PARTICIPANTS

Design: Questionnaire completion and assessment of blood pressure and vagal response at one point in gestation.

Setting: An antenatal clinic associated with a large University in Houston, Texas

Participants: 20 pregnant obese and 20 pregnant non-obese women between 20 and 30 of gestation
METHODS

IRB approval & Consent was obtained

Vagal response was measured by times series analyses of the heart period (HP), and respiratory sinus arrhythmia (RSA by using a vagal tone monitor (Delta Biometrics, Bethesda, MD), and MXedit software (Porges, 1992).

Heart period (HP) is the time in milliseconds with inverse relationship to heart rate. Heart rate was measured by the number of R waves per epoch of 30 seconds recorded on the electrocardiogram recorder by placing three non-invasive leads on the chest and abdomen. The RSA→the variance associated with the spontaneous respiratory frequencies, and the units are natural logs of the milliseconds squared.

Systolic blood pressure was measured using a digital oscillometric monitor with an appropriately-sized upper arm cuff (model: Omron 711c, HRM, USA Inc.).
CONTINUED METHODS

**Stress:** was measured with the Perceived Stress Scale – 14, & the Prenatal Psychosocial Profile: Stress Scale – 11 items.\(^8\)

**Anxiety:** was measured by the the 10 item - Pregnancy-Related Anxiety Scale. \(^9\)

**Depression:** was measured by the 20 item - The Center for Epidemiologic Studies- Depression scale (CES-D). \(^10\)
## RESULTS

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obese</th>
<th>Non-Obese</th>
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<tbody>
<tr>
<td>CES-D (depression = score greater than 16)</td>
<td>11.6</td>
<td>17.5*</td>
</tr>
<tr>
<td>Pregnancy related anxiety</td>
<td>14.6</td>
<td>18.3*</td>
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<tr>
<td>Blood pressure</td>
<td>115/72 mm hG*</td>
<td>107/67 mm hG</td>
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CONCLUSIONS

Further research is necessary to help determine the impact of depression and anxiety on vagal response and blood pressure over time and birth outcomes.

Tailored effective prevention and treatment strategies can be developed to enable women to achieve healthy perinatal outcomes.
REFERENCES


3. Helmreich, R.J., Hundley, V., & Varvel, P. The effects of obesity on heart rate (heart period) and physiologic parameters during pregnancy. Biological Research for Nursing 2008; vol. 10(1), 63-78.


