Maternal adipokines as predictors of mental health symptomatology during the second trimester of pregnancy

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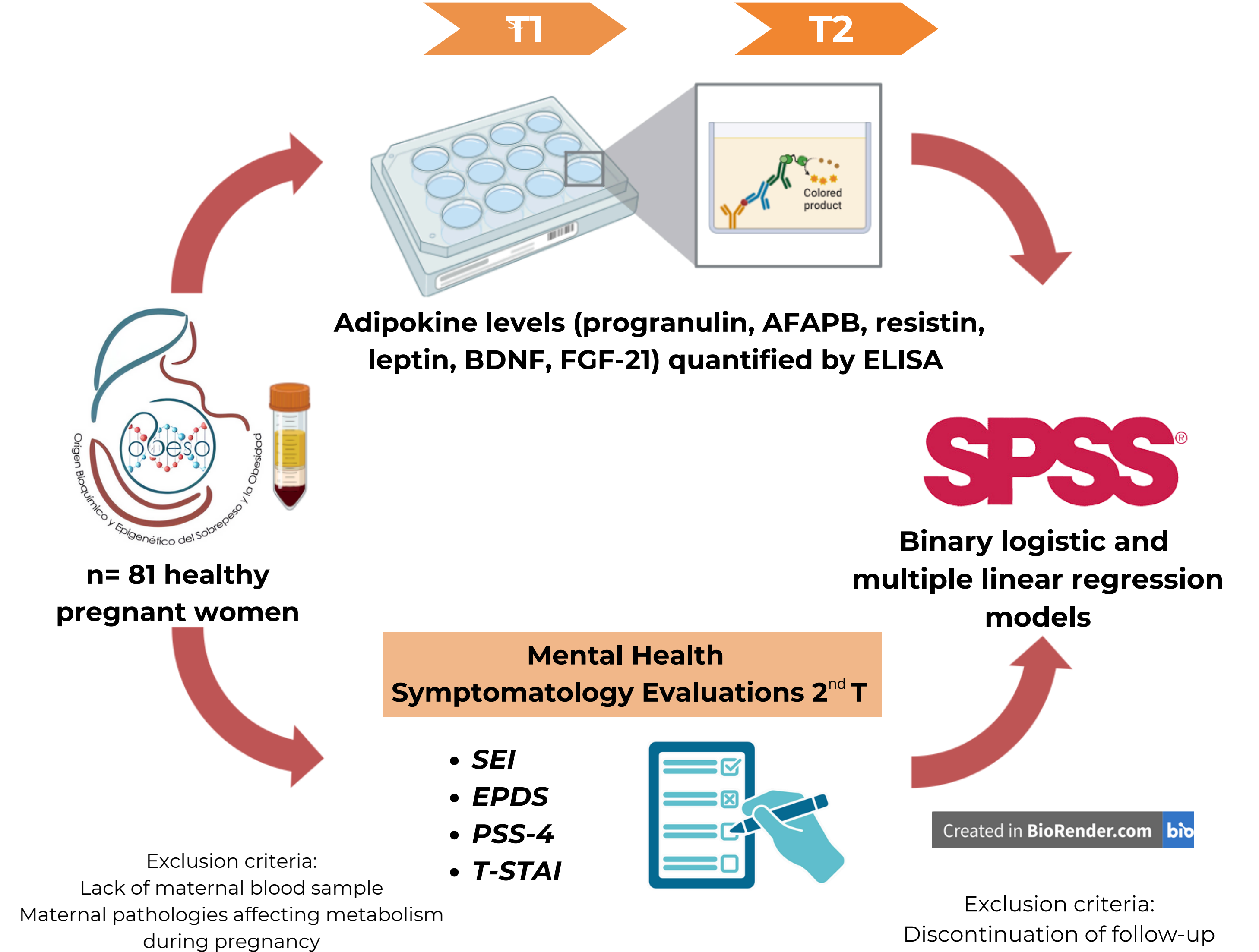
BACKGROUND

Adipokines are cytokines secreted by adipose tissue, and are implicated in psychiatric disorders. During pregnancy, approximately 10% of women experience a mental health disorder. However, the correlation between adipokines during pregnancy and maternal mental health remains unclear.

OBJECTIVES

To correlate maternal adipokine concentrations during the first and second trimester of pregnancy (T1 and T2) with maternal mental health symptoms (self-esteem, anxiety, stress and depression) during T2.

METHODS

T1 → T2

Adipokine levels (progranulin, AFAPB, resistin, leptin, BDNF, FGF-21) quantified by ELISA

n= 81 healthy pregnant women

Mental Health Symptomatology Evaluations 2nd T
- SEI
- EPDS
- PSS-4
- T-STAI

Binary logistic and multiple linear regression models

SPSS

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Exclusion criteria:
Lack of maternal blood sample
Maternal pathologies affecting metabolism during pregnancy

Exclusion criteria:
Discontinuation of follow-up

RESULTS

Table 1. Clinical characteristics of women in the study

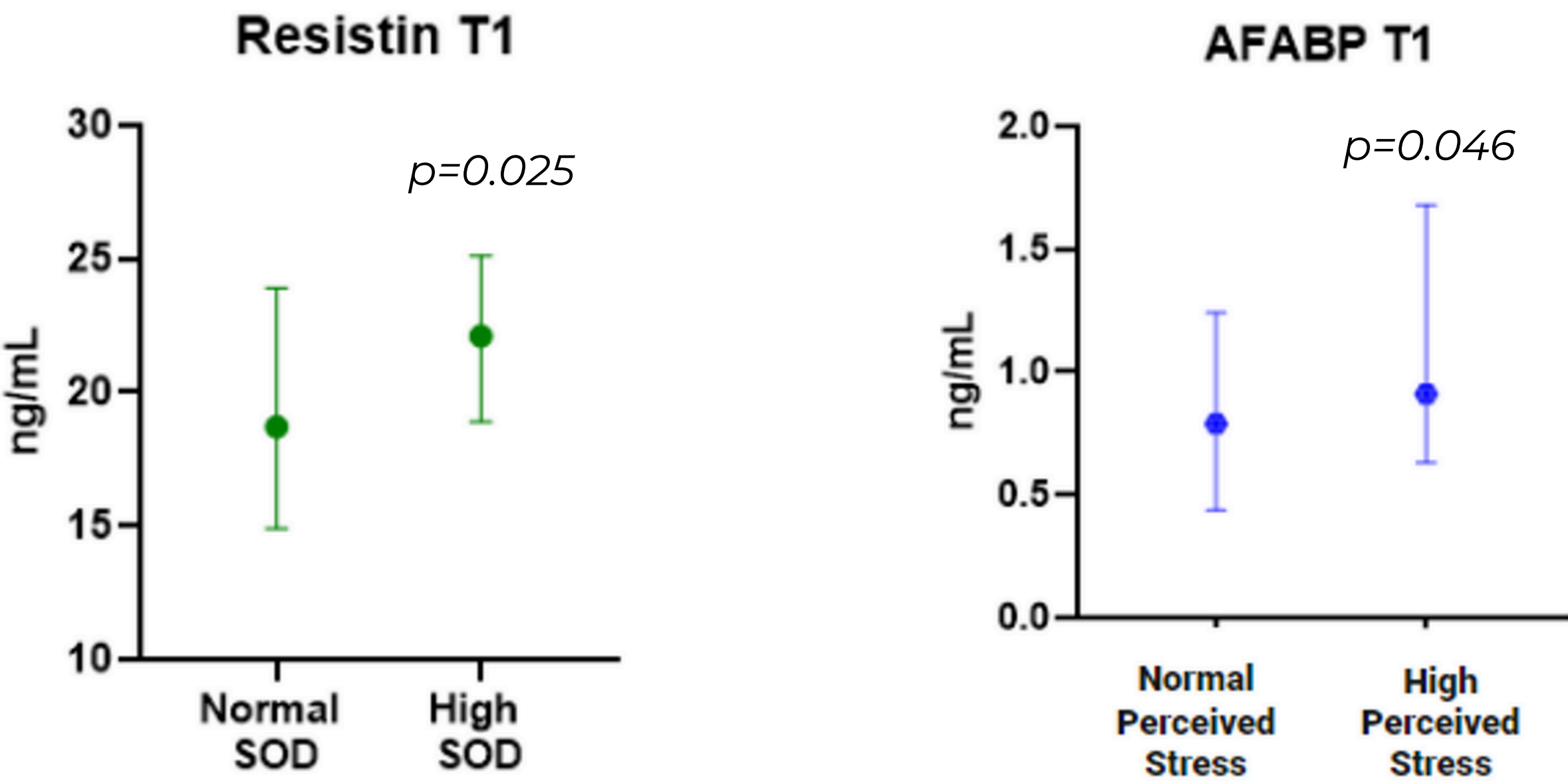|	Mean (SD), n=81
Age (years)	30.4 ± 5.3
Pregestational BMI (kg/m2)	27.6 ± 5.8
Classification of Pregestational BMI-%	
Normal	39.5
Overweight	33.3
Obesity	27.2
Self-esteem-%	
Normal self-esteem	77.8
Low self-esteem	22.2
Stress-%	
No perceived stress	55.6
Perceived stress	44.4
Anxiety-%	
No state anxiety	77.8
State Anxiety	22.2
Depression-%	
No depression	81.5
Depression	18.5

BMI: body mass index

RESULTS

Figure 1. T1 Resistin and AFABP levels are higher in mothers with high symptoms of depression (SOD) and perceived stress
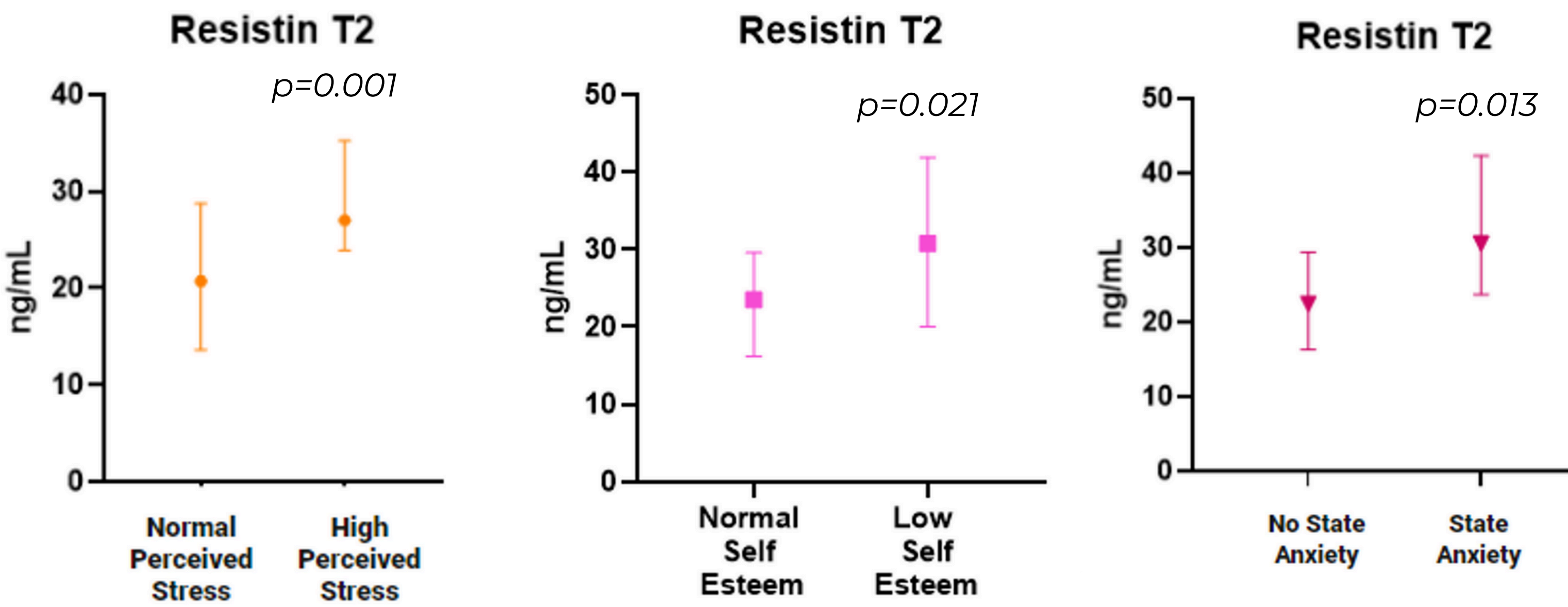

Figure 2: T2 Restistin levels are elevated in women with high perceived stress, stress anxiety and low self esteem

Table 2. Logistic Regression model for perceived stress

Variable	B	p	R^2
pBMI	-0.264	0.040	
1st trimester AFABP	1.325	0.053	
			0.537
1st trimester BDNF	-0.131	0.092	
2nd trimester Resistin	0.147	0.003	

pBMI: pregestational body mass index, AFABP: Adipocyte-specific Fatty Acid-binding Protein, BDNF: Brain-Derived Neurotrophic Factor

Table 3. Logistic Regression model for maternal low self- esteem

Variable	β	p	R^2
Maternal age	-0.162	0.042	
1st trimester Progranulin	-0.088	0.088	0.503
1st trimester BDNF	-0.149	0.023	
2nd trimester Resistin	0.058	0.096	

BDNF: Brain-Derived Neurotrophic Factor

Tables 3&4: Pregestational BMI, AFAB, BDNF and resistin predict perceived stress. Age, progranulin, BDNF and resistin preedict maternal low self-esteem

Table 4. Logistic Regression model for maternal depression

Variable	β	p	R^2
1st trimester AFABP	3.768	0.032	
1st trimester BDNF	-0.513	0.017	
1st trimester Leptin	-0.151	0.129	0.659
2nd trimester AFABP	-6.925	0.036	
2nd trimester BDNF	-0.340	0.020	
2nd trimester Resistin	0.206	0.035	
2nd trimester Leptin	-0.080	0.127	

AFABP: Adipocyte-specific Fatty Acid-binding Protein; BDNF: Brain-Derived Neurotrophic Factor

Table 4: Maternal AFAB, BDNF , leptin, and resistin predict maternal depression

CONCLUSION

Maternal resistin and AFAB levels negatively correlate with mental health during pregnancy. Anthropometric values and adipokine concentrations may serve as biomarkers for risk estimation of maternal mental health decline. Such a panel could be used for early detection of maternal mental health risk, increasing follow up and improving outcomes.

REFERENCES

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