What is the relationship between pre-pregnancy BMI and fasting and post load OGTT values in Pregnancy? (47773)

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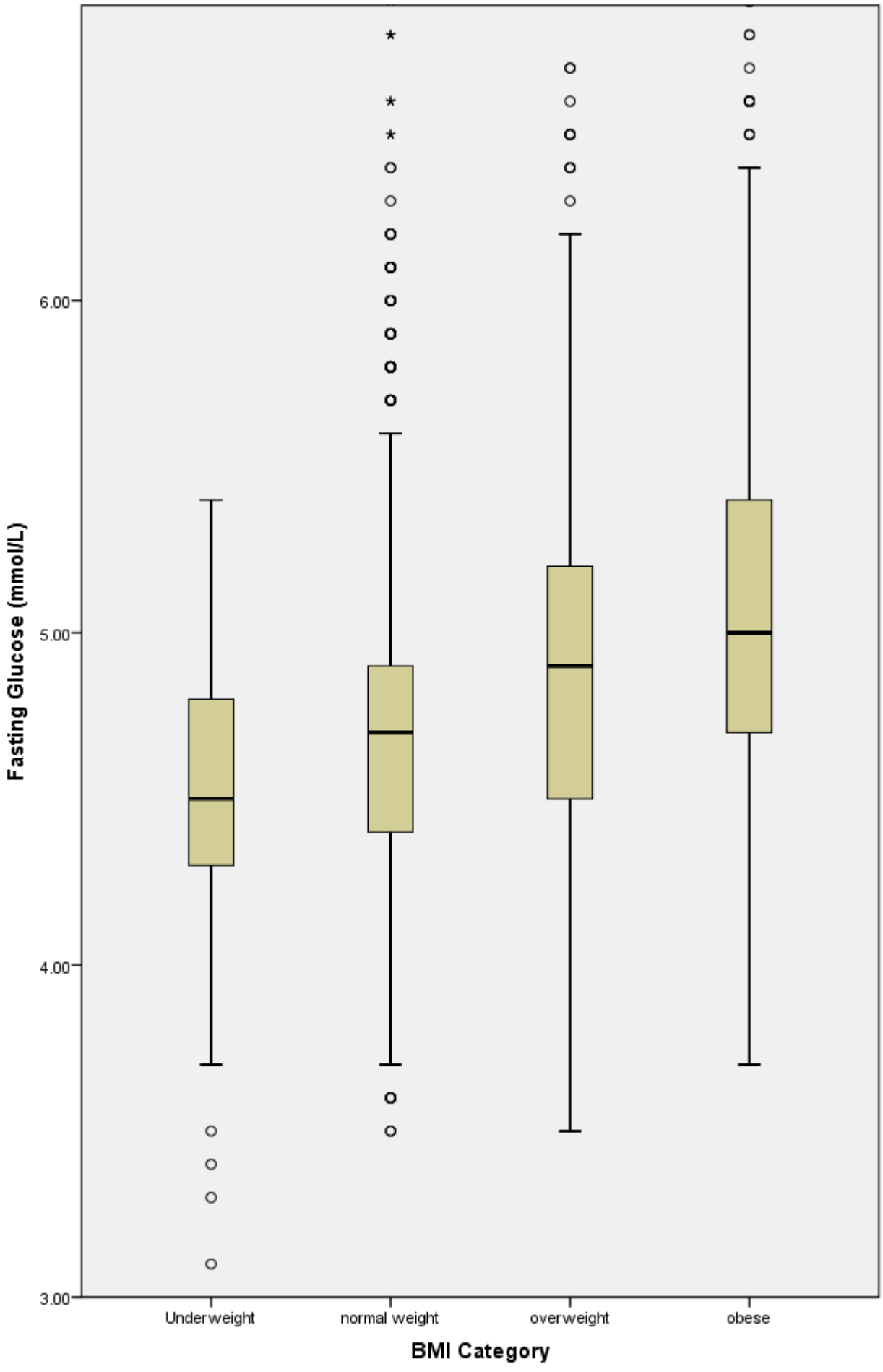
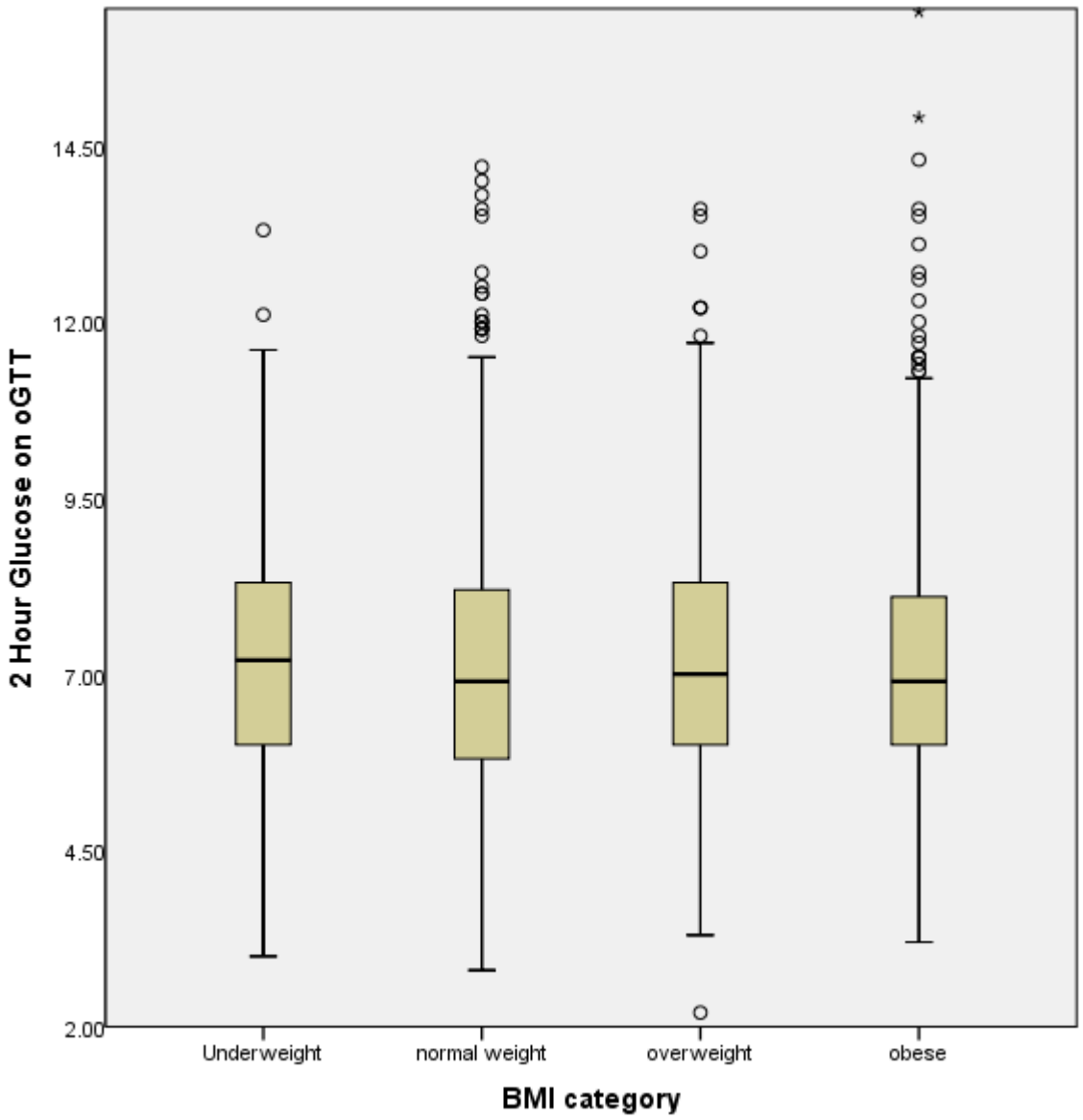
Background: The new ADIPS GDM diagnostic criteria includes a lower diagnostic fasting value cut-off for GDM on the 75g oral Glucose Tolerance Test (oGTT)(≥5.1mmol/L) and a higher 2-hour value (≥8.5mmol/L). Pre-pregnancy obesity is a known risk factor for the development of GDM. There is a paucity of evidence exploring the relationship between pre-pregnancy BMI and fasting and 2 hour post load oGTT values.

Aim: To determine the association between pre-pregnancy BMI, fasting and 2-hour post load oGTT values in women diagnosed with GDM.

Methods: Results of the 75g oGTT results were obtained from the Sydney South West Pathology Service database for singleton pregnancies between 2011-2015. Bivariate analysis (Pearson's correlation) was used to evaluate correlations between pre-pregnancy BMI and fasting and 2–hour values as continuous variables. Box plots were created between fasting and 2-hour values and BMI categories (underweight; ≤18.5kg/m^2, healthy weight; 18.5-24.9kg/m^2, overweight; 25.0-29.9kg/m^2, obese; ≥30.0kg/m^2) and oGTT results. Statistical significance was defined as $p<0.05$.

Results: Of a total of 10967 pregnancies, 3739 pregnancies had oGTT data. Pre-pregnancy BMI as a continuous variable was found to be positively correlated with the oGTT fasting BG value (Pearson's $r=0.328$, $p<0.0001$), but not the oGTT 2 hour value (Pearson's $r=0.03$, $p=0.08$). The Boxplot diagrams below demonstrate the relationships between BMI categories, fasting, and 2 hour glucose values.


Fasting Glucose (mmol/L)
6.00
5.00
4.00
3.00
Underweight
normal weight
overweight
obese
BMI Category



Conclusions: The current findings suggest that pre-pregnancy BMI positively correlates with impaired fasting glycaemia but not the 2 hour post load oGTT value. Given both the lowering of the fasting glucose oGTT value cut off with new criteria and the increasing prevalence of elevated BMI in women of child bearing age, diagnosis of GDM based on fasting oGTT values is likely to increase. Further research into management of impaired fasting glycaemia in women with GDM and pre-pregnancy overweight or obesity is therefore warranted.