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The Relationship Between Maternal Abdominal Fat Thickness and Gestational Diabetes Mellitus: A Prospective Cohort Study

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Objective

This study examined the relationship between maternal **subcutaneous fat thickness (SFT)** and **preperitoneal fat thickness (PFT)** and **gestational diabetes (GDM)**.

Study Design

- Prospective cohort
- Maternal **SFT** and **PFT** were measured during the **11-14-week scan**.
- **GDM** was diagnosed by 75-gram **OGTT** at **24-28 weeks**.
- Reliability testing of 3 sonographers, performed separately, showed **excellent intraobserver** (ICCs>0.9) and **good interobserver reliability** (ICC_{SFT}=0.75 and ICC_{PFT}=0.86).

Results

- 249 women, GDM prevalence of 22.5%
- **Median SFT: 10.6 mm** (IQR 8.3–12.9)
- **Median PFT: 7.0 mm** (IQR 5.1–9.2)
- **Maternal age** and **PFT associated with GDM** (OR 1.18 [1.08-1.31] and OR 1.18 [1.04-1.34]) while **SFT did not** (OR 0.94 [0.83-1.04])

Conclusion

For every 1-millimeter increase in maternal preperitoneal fat thickness, the odds ratio for gestational diabetes increased by 1.18.

Figures

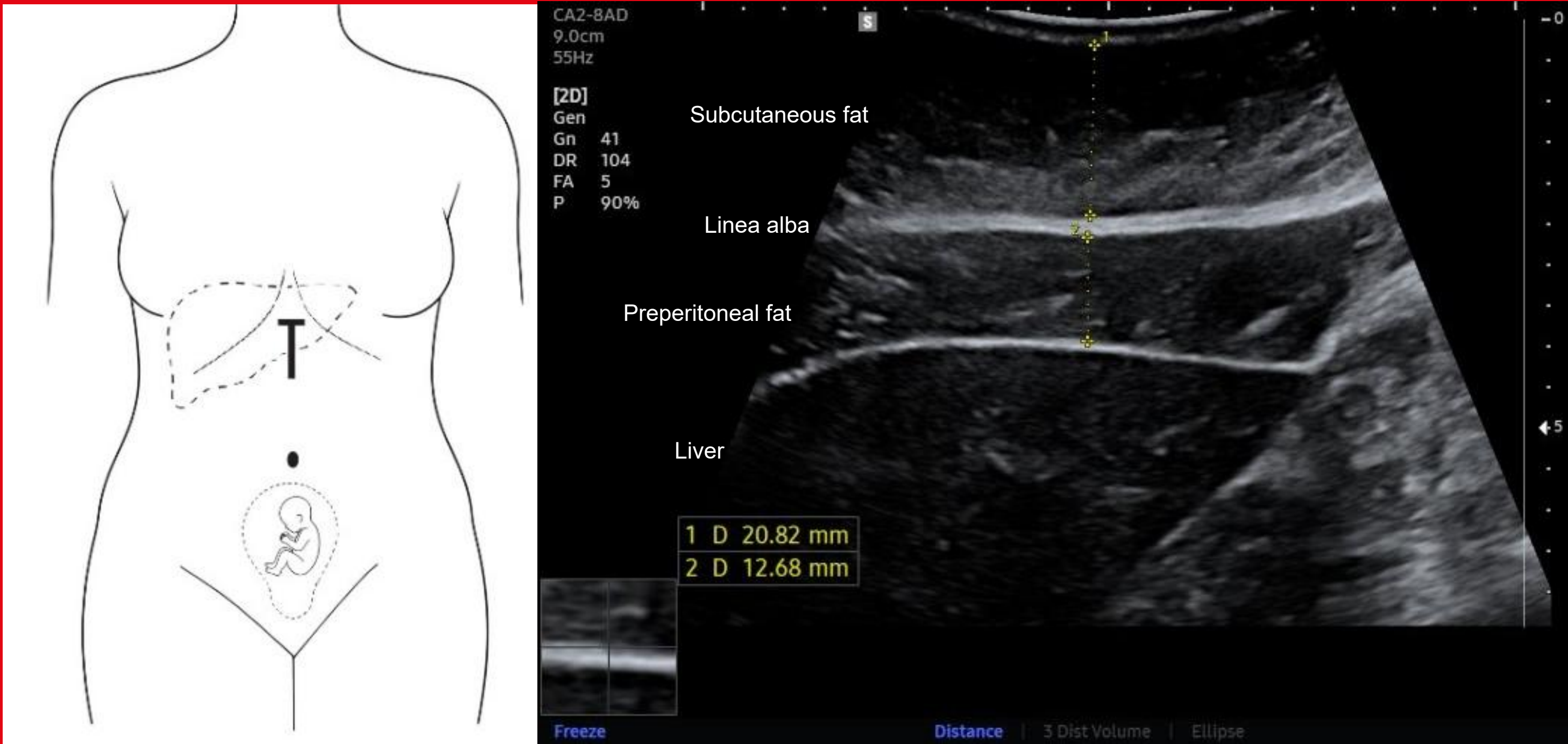


Figure 1: Left: Schematic diagram of maternal fat assessment. The probe is placed on the sagittal midline below the xyphoid process. Right: Actual ultrasound measurements with anatomic landmarks labelled.

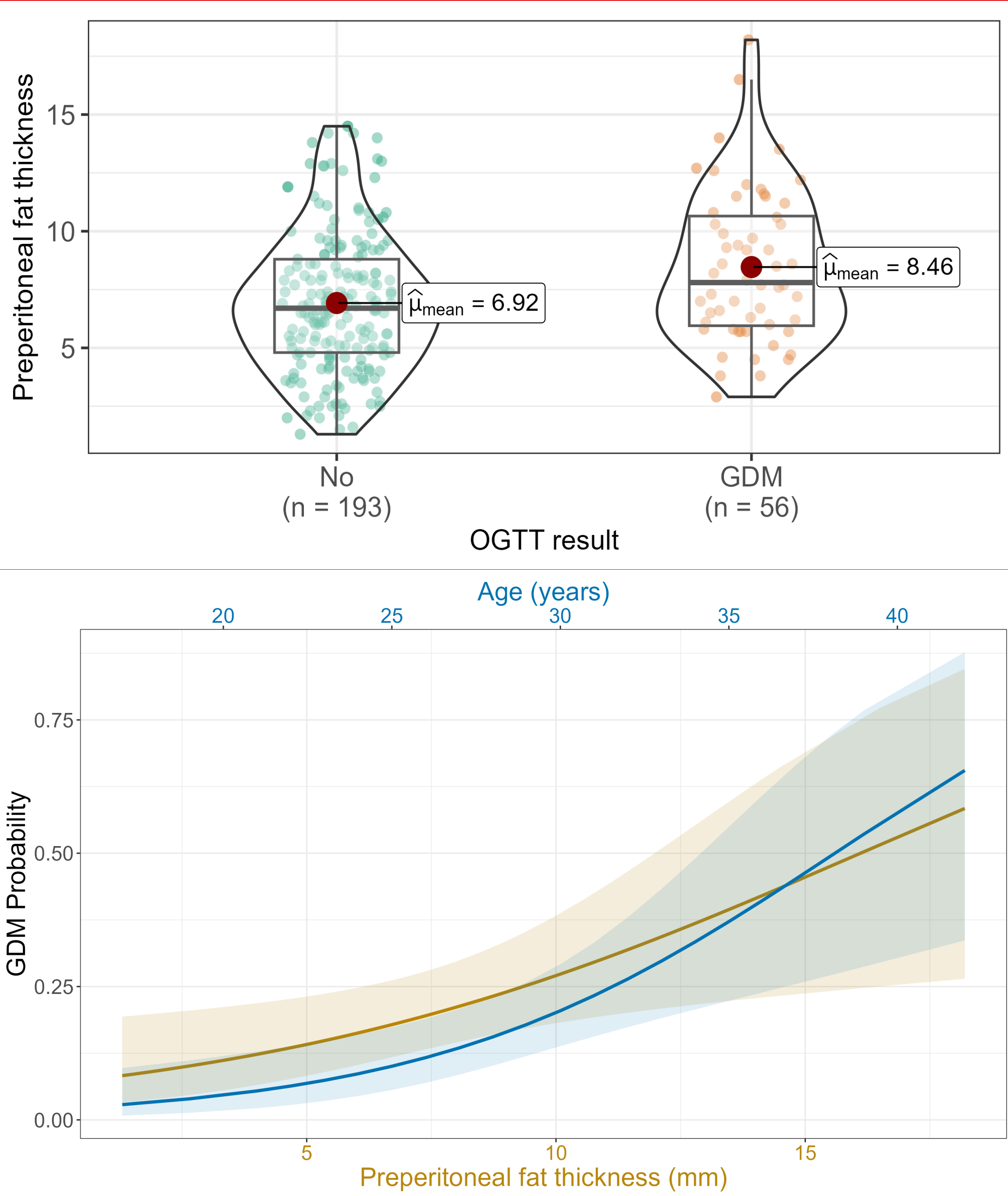


Figure 2: Student's t-test showed women in the GDM group had higher PFT than women in the non-GDM group.

Figure 3: Logistic regression showed the correlation between maternal age and PFT and risk of GDM.