Home Monitoring of Fasting and Postprandial Triglycerides in Late Pregnancy: A Pilot Study

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Elevated maternal triglycerides are associated with adverse pregnancy outcomes (1). In pregnancy, triglycerides are measured infrequently and mostly fasting, leading to a lack of data on the variability and flux of triglycerides (1). This study explored capillary triglyceride concentrations in late pregnancy using a validated Roche Accutrend triglyceride meter (2).

This was a prospective observational cohort study that was approved by the local human research ethics committee. For 6 days, women monitored fasting and 2-h postprandial capillary glucose and triglyceride levels. Results are mean millimoles per liter with SD unless otherwise indicated. Women reported on the usability of the meter.

Twelve women enrolled at mean 258 (9) [mean (SD)] days' gestation. Eight women (66%) had gestational diabetes mellitus, of whom four were prescribed insulin and one metformin. Mean (SD) fasting glucose levels were lower than postprandial glucose levels [4.67 (0.44) vs. 6.06 (1.11) mmol/L, $P < 0.001$]. Mean fasting and mean postprandial glucose levels for each participant were correlated (Pearson's r 0.67, $P = 0.02$, $n = 12$) (Fig. 1*A*). Mean fasting and postprandial triglycerides were not significantly different [3.20 (1.13) vs. 3.45 (1.21), $P = 0.19$] and were correlated (Pearson's r 0.64, $P = 0.03$, $n = 11$) (Fig. 1*B*). Glucose and triglyceride concentrations showed no significant correlation either in the fasting or postprandial state (Fig. 1*C* and *D*). The across-day glucose (Fig. 1*E*) and triglyceride (Fig. 1*F*) levels show within- and between-person variability.

Time-matched individual glucose and triglycerides were not correlated (fasting Pearson's r 0.14, $P = 0.35$, $n = 41$; postprandial Pearson's r 0.12, $P = 0.18$, $n = 125$). There was no correlation between infant birth weight or maternal BMI and the triglyceride or glucose levels, either fasting or postprandial.

Two of the twelve participants produced few triglyceride measures and reported multiple out-of-range readings (possibly technique related). Two reported an error due to ambient temperature (>30°C). Ease of using the meter improved with practice. Seven women rated the meter "very easy" or "easy after a few goes." Some women required more support than others.

This pilot study of monitoring capillary triglyceride levels in late pregnancy found high variability in late pregnancy with no difference between fasting and 2-h postprandial levels. The postprandial time point was chosen because women attending our institution routinely monitor their glucose levels then. This may be early, with nonpregnant individuals demonstrating a peak at 3–4 h and 4 h being the suggested optimal timing for postprandial triglyceride measurement outside pregnancy (3).

There are few studies examining capillary triglycerides. The largest was in healthy nonpregnant women ($n = 104$) and men ($n = 109$) measuring triglycerides six times a day (4). Evening triglycerides were highest, and 95% of the women had triglycerides <3.7 mmol/L (4). In the nonpregnant population, predictors of capillary triglycerides include diabetes, insulin sensitivity, fat mass, and dietary composition (5).

Future studies should examine timing of peak postprandial capillary triglyceride level in pregnancy and the use of area under the curve to assess variability between women. Larger cohorts are needed to examine the influence of meal composition and evaluate the relationship of capillary triglycerides to clinical parameters and outcomes.

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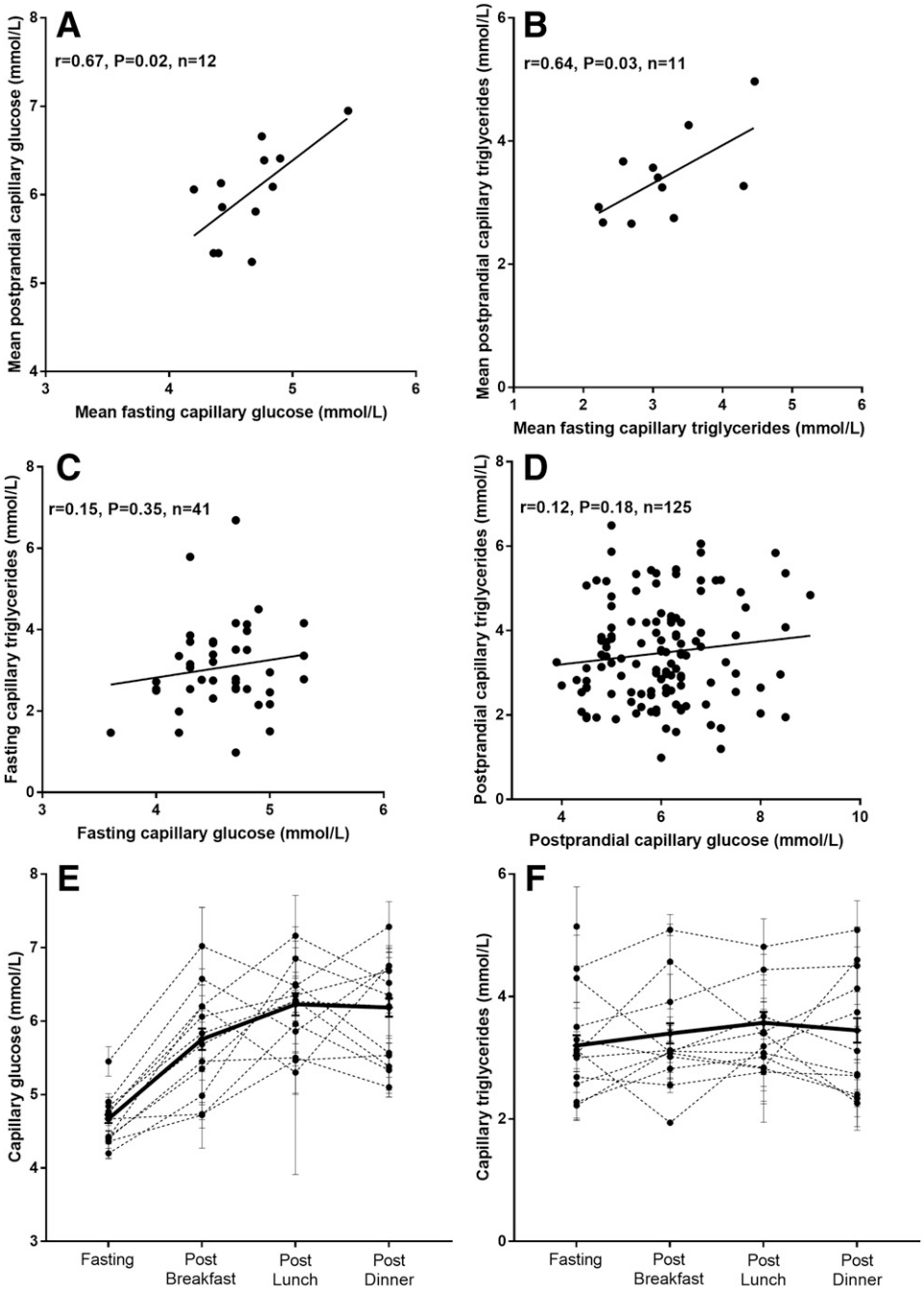

Figure 1—*A*: Correlation between mean fasting and postprandial capillary glucose levels. *B*: Correlation between mean fasting and postprandial capillary triglyceride levels. *C*: Correlation between matched fasting capillary glucose and capillary triglyceride levels. *D*: Correlation between matched postprandial glucose and triglyceride measures. *E*: Cross-day variation in capillary glucose measures for individuals (dashed lines) and the group mean (solid black line). *F*: Cross-day variation in capillary triglyceride measures for individuals (dashed lines) and the group mean (solid black line).

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