



THE COMPLIANCE TO GLUCOSE MEASUREMENTS IN NEWLY DIAGNOSED GESTATIONAL DIABETES MELLITUS PATIENTS



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Objectives

We determined whether the use of a smartphone app (IOH- internet of health) with short message service to remind patients of measuring scheduled blood glucose to manage women with gestational diabetes mellitus (GDM) was as effective in assisting compliance to glucose measurements as standard care through clinic attendance.

Design: A prospective, nonblinded randomized controlled trial.

Methods

Women with less than 34 weeks of gestation and newly diagnosed GDM determined by 75g oral glucose tolerance test with no value $\geq 200\text{mg/dl}$, were individually randomized to an intervention group which uses smartphone app blood glucose management solution or a routine clinic care group. Women were guided to measure fasting and two-hour postprandial self-monitoring of blood glucose at the 3rd and 7th day after the day of GDM diagnosed. Patients were re-examined at the 14th day to measure fasting and two-hour postprandial at hospital. Each patient in the intervention group received four scheduled SMS during the 14 days. The primary outcome was patient compliance defined as the actual blood glucose measurements/instructed measurements $\times 100$. The secondary outcome was a glycemic control defined as sum of target blood glucose measurements/ measurements. The last outcome was patient satisfaction of IOH assessed by System Usability Scale.



Picture 1: IOH logo on mobile

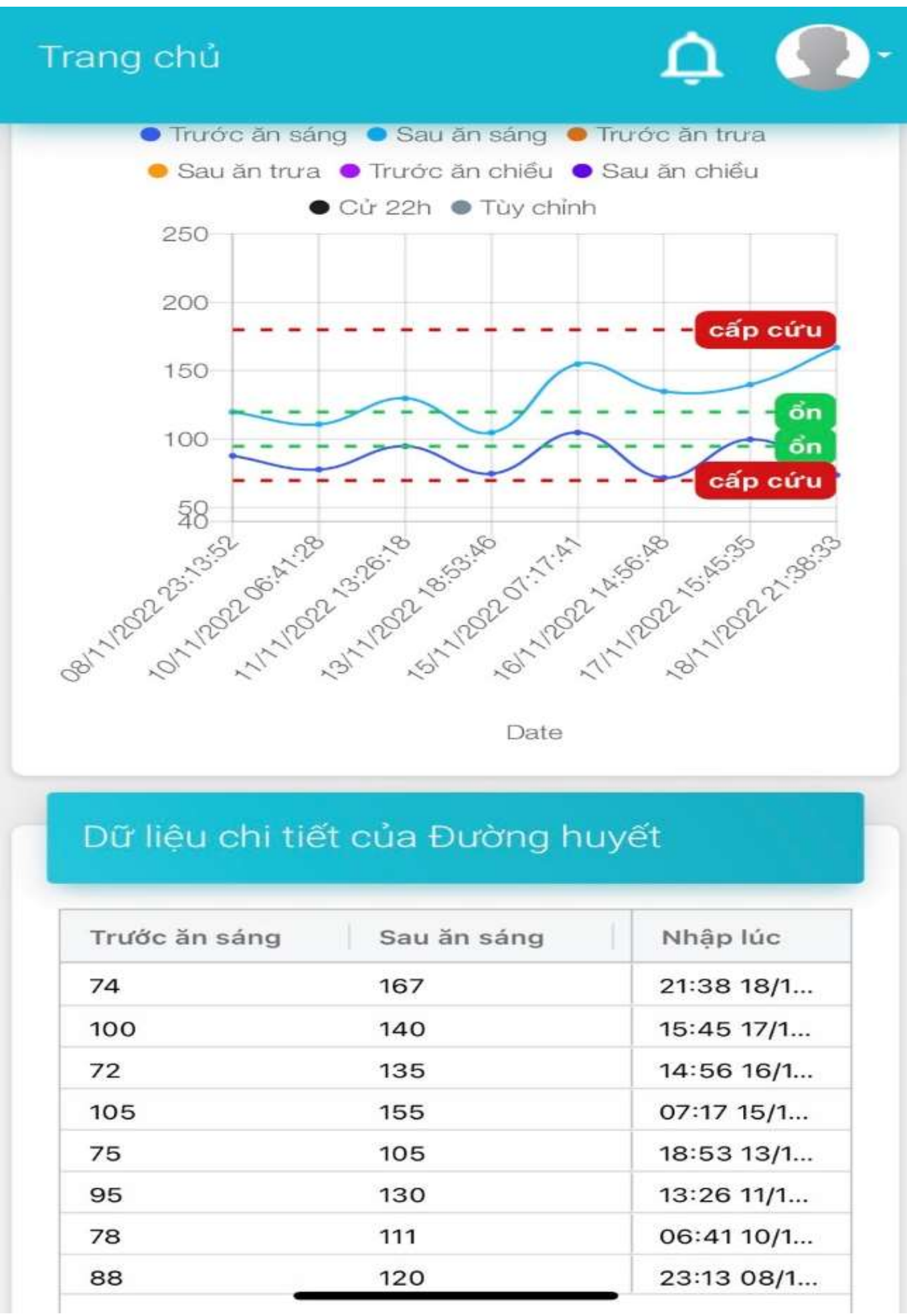


Figure 1: Blood glucose pattern on mobile

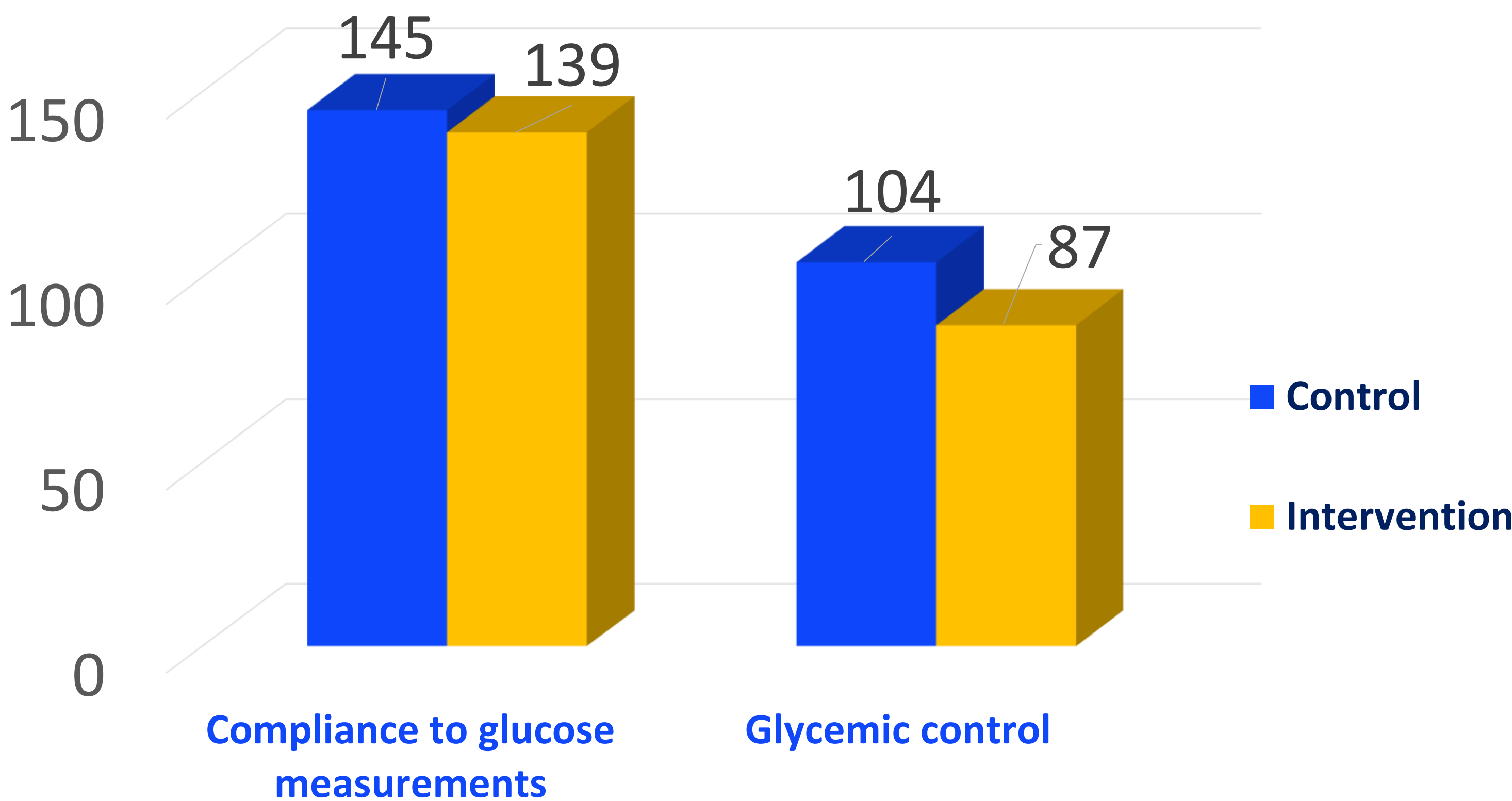


Figure 2: Compliance to glucose measurements and glycemic control outcomes

Results

A total of 324 GDM patients were assigned to either an intervention group ($n = 163$) or a control group receiving usual care in the hospital ($n = 161$). The pregnant in two groups did not differ in terms of age, parity, education, BMI, family history, oral glucose tolerance test values at randomization. There was no difference between the two groups in patient compliance (RR 0.63, 95% CI 0.33 - 1.25 , $p = 0.19$). No significant differences were found between the experimental and traditional groups regarding glycemic control (RR 0.66, 95% CI 0.40 - 1.09, $p = 0.10$). Patients in the smartphone group reported a high level of satisfaction from their care and felt that the use of this intervention was acceptable. There were no unexpected adverse outcomes.

Conclusions

Although compliance to glucose measurements and glycemic control outcomes were similar, women preferred this model of care. Further studies are required to explore whether IOH solutions can promote desired compliance to glucose measurements and glycemic control and influence maternal and neonatal outcomes. Fasting and postprandial self-monitoring of blood glucose may provide a scalable, practical method to address the growing burden of GDM in a developing