

# **REMOTE PATIENT MONITORING FOR TYPE 2 DIABETES IN PREGNANCY: DEVICE USABILITY AND MATERNAL-NEONATAL OUTCOMES**

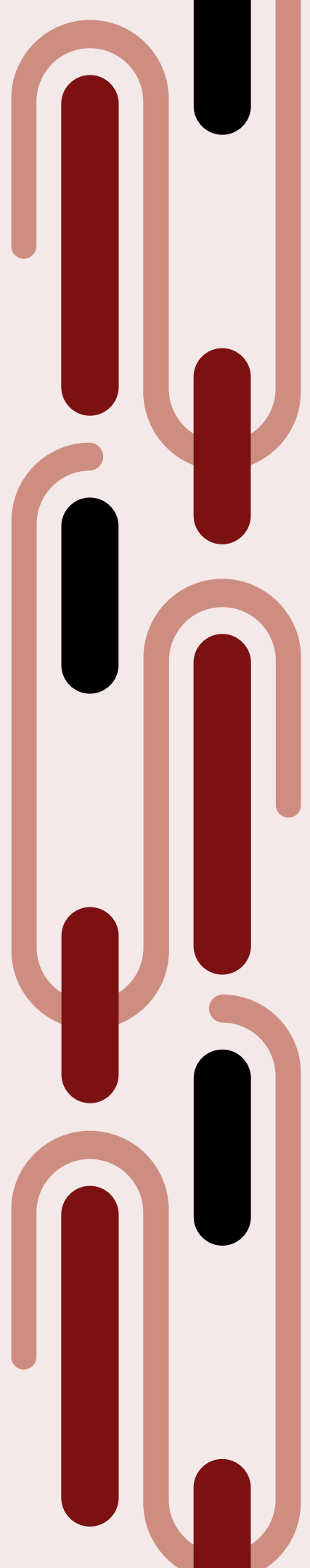
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# DISCLOSURE

This study was made possible by the Health Resources and Services Administration (HRSA) of the US Department of Health and Human Services (HHS) as part of the National Telehealth Centers of Excellence Award (U66RH31459). The contents are those of the author(s) and do not necessarily represent the official views of nor an endorsement by the HRSA, HHS or the US Government.

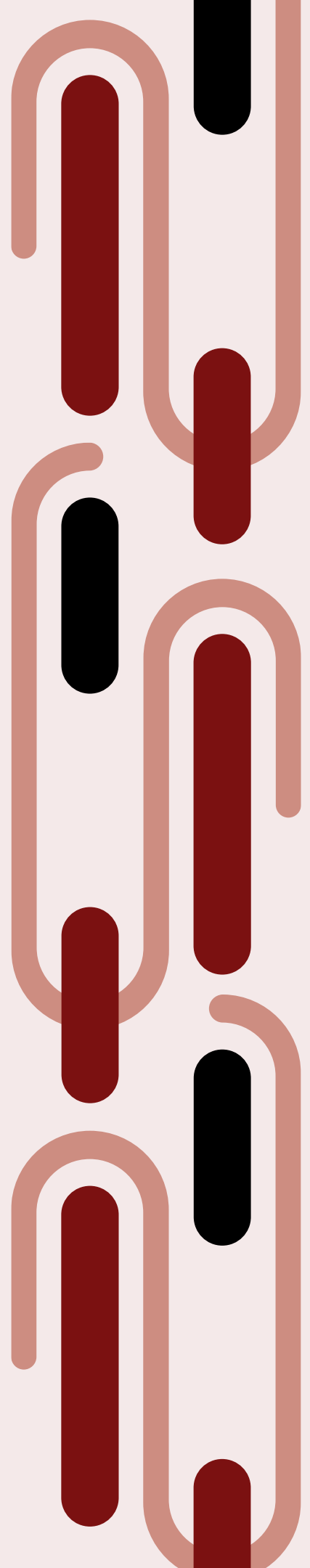
# BACKGROUND

- Type 2 Diabetes (T2DM) during pregnancy is associated with adverse maternal and neonatal health outcomes including increased risk of stillbirth, perinatal mortality, large-for-gestational-age infants, and congenital anomalies when compared to pregnancies affected by gestational diabetes or pregnancies without diabetes.
- Diabetes affects 1 in 6 live births, with Type 2 Diabetes comprising a substantial and rising proportion of pregestational diabetes cases.
- T2DM during pregnancy is managed through frequent clinic visits and self-reported paper logs.
- Inaccuracies in patient reporting in combination with structural barriers such as lack of transportation or excessive travel distance may limit physician ability to make timely adjustments to treatment plans, potentially worsening health outcomes for both mother and baby.



# BACKGROUND

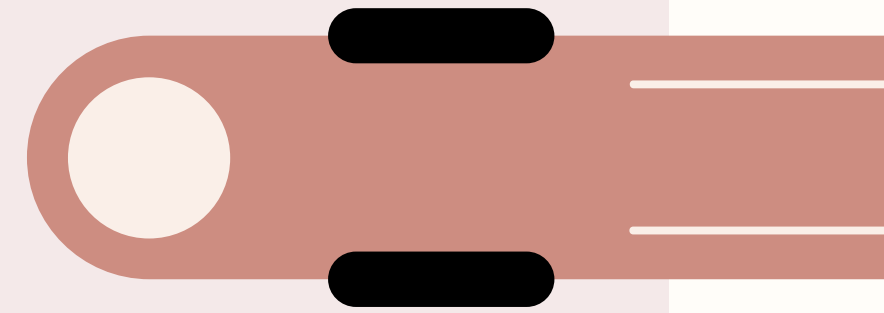
- Individuals insured through Medicaid often face greater barriers to care.
- Prior to 2026, Medicaid in Arkansas did not cover Continuous Glucose Monitors (CGMs) for high-risk pregnancies complicated by Type 2 or Gestational Diabetes that were not insulin dependent and Medicaid patients were two to five times less likely to have a CGM compared to individuals using commercial health insurance.
- CGM is a wearable device that tracks blood sugar levels in real-time using a tiny sensor inserted under the skin.
- Remote Patient Monitoring (RPM) technologies, such as the iGlucose cellular-enabled glucometer, are a promising alternative offering automated data transfer to a physician-accessible portal.



# OBJECTIVE

**To explore the retrospective impact of using remote patient monitoring on maternal and neonatal outcomes and to examine patient acceptability of the iGlucose RPM glucometer in a Medicaid Cohort**

# MIXED-METHODS STUDY



## Quantitative Methods

Participants who used the iGlucose device completed a pre and post survey. To assess health outcomes, a Connected Device Use (CDU) group and a Standard Paper Log (SPL) group were created. The CDU group included iGlucose and CGM users.



## Qualitative Methods

A trained research associate utilized a semi-structured interview guide to interview participants. The interview included questions such as “What were the advantages of using the iGlucose mobile health monitoring device?,” and “What were the disadvantages of using the iGlucose mobile health monitoring device?”

# METHODS

**01**

## **iGlucose RPM Device Users**

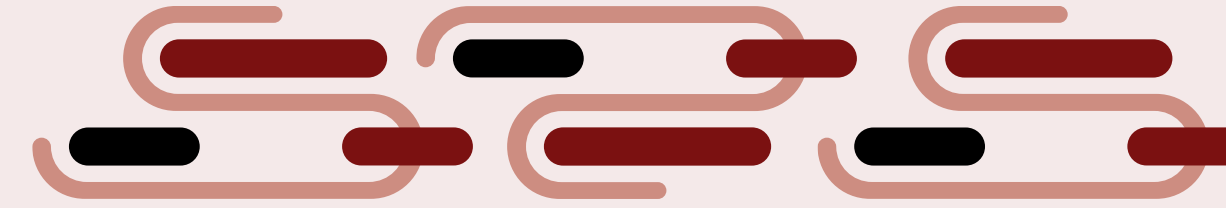
- 33 pregnant women  $\geq 18$  whose primary insurance was Medicaid were asked to use the iGlucose device for the duration of their pregnancy; 15 participants were lost to follow-up.
- Participants received \$50 in gift cards and a newborn supply kit for participating.

**02**

## **Connected Device Use and Paper Log Groups**

- Pregnant women  $\geq 18$  with Medicaid as their primary insurance who used a CGM device throughout pregnancy were retrospectively assessed via Electronic Medical Record (EMR) and combined with iGlucose participants (n=18) to create a Connected Device Group (n=21).
- Pregnant women  $\geq 18$  with Medicaid as their primary insurance who used a standard glucometer with paper log throughout pregnancy were included in the Standard Paper Log group.
- All women included in the CDU and SPL groups delivered at UAMS between Feb 2024 and July 2025.

# SURVEY MEASURES



## Treatment Self-Efficacy

Confidence in Diabetes Self-Care Scale

Twenty Likert-scale questions

Assesses confidence in managing own care

## Appraisal of Diabetes

Seven questions that assess participants' perspectives of living with diabetes including how upsetting they find having diabetes

## General Self-Efficacy

Four Likert-scale questions to assess general self-efficacy with higher composite scores correlating with higher self-efficacy

## Perceived Stress Scale

Cohen's Short Form Perceived Stress Scale (PSS-4), a self-report instrument consisting of four Likert scale questions

## Technology Anxiety

The Abbreviated Technology Anxiety Scale consists of 11 questions to assess technology anxiety

## System Usability

The System Usability Scale, a 10-item validated measure, was used to assess participants' perceptions of the iGlucose RPM device

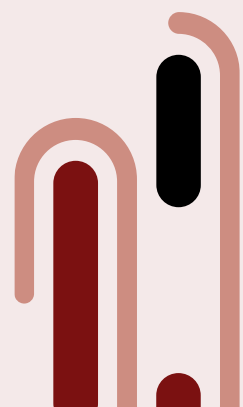
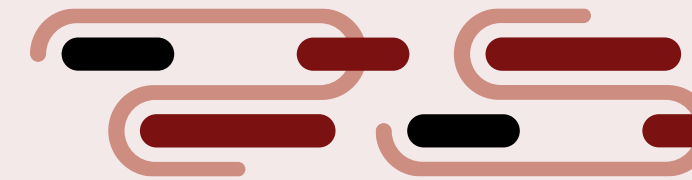
# HEALTH OUTCOMES

## Maternal Health Outcomes

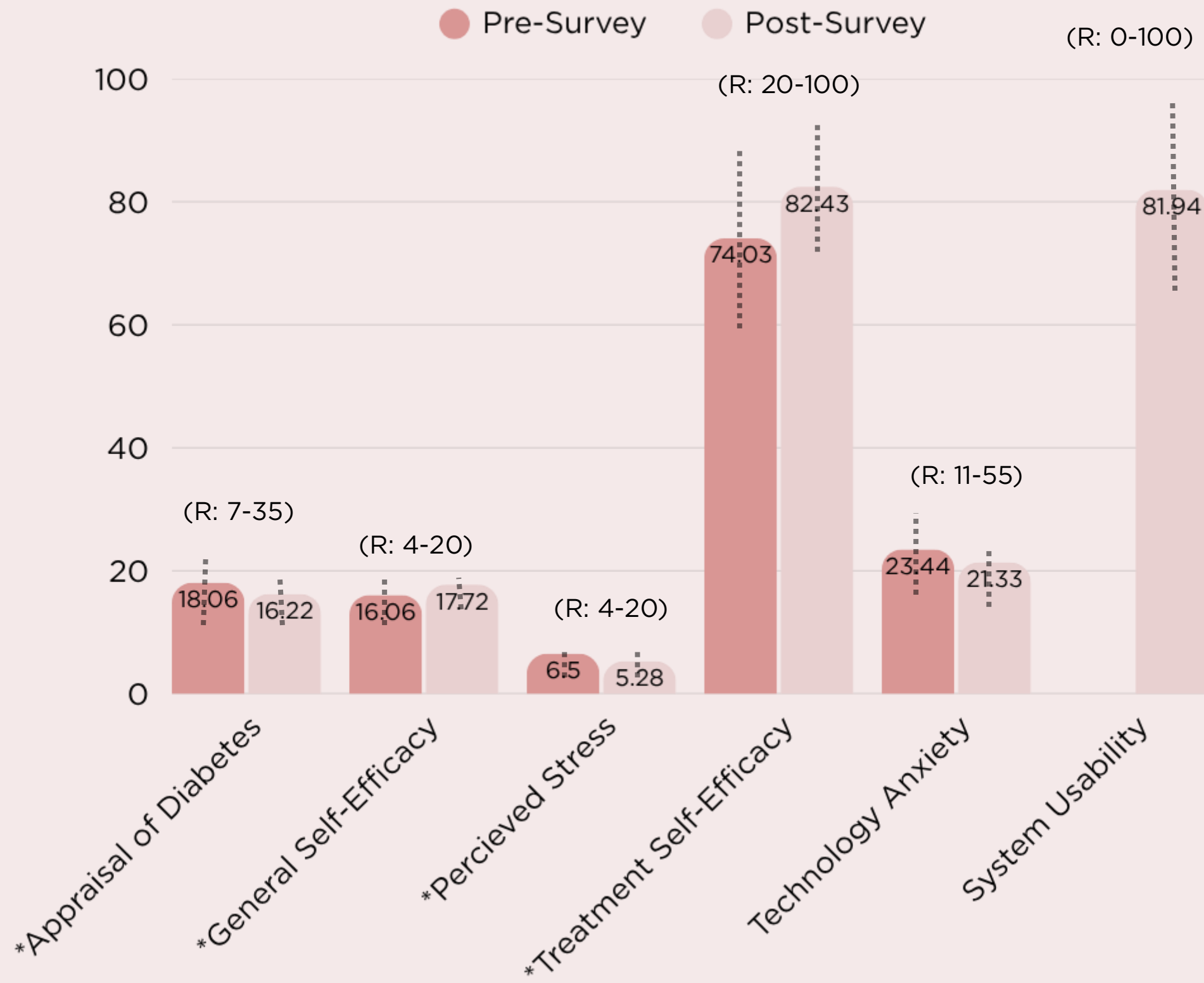
Gestational Age at Delivery  
Antenatal corticosteroids  
Gestational Hypertension  
Preeclampsia  
Induction of labor  
Method of delivery  
Third- or Fourth-Degree laceration  
Chorioamnionitis  
Postpartum Hemorrhage  
Postpartum Hysterectomy  
Venous thromboembolism  
Maternal admission to ICU

## Neonatal Health Outcomes

Infant Birthweight  
Neonatal hospitalization  
Shoulder dystocia  
Large for Gestational Age  
First neonatal glucose  
Hypoglycemia  
Hyperbilirubinemia  
Umbilical cord pH  
Respiratory morbidity  
Meconium aspiration  
Intraretinal hemorrhage  
Necrotizing enterocolitis  
Hypoxic ischemia encephalopathy  
Sepsis  
Pneumonia  
Seizures



# QUANTITATIVE RESULTS



No significant difference was seen between clinical outcomes in the connected device group versus standard paper log use group

# QUALITATIVE RESULTS

## Increased Self-Efficacy

“I was able to take care of myself better and I felt more confident that I was caring for myself properly.”

## Perceived Better Care

“If we needed to make a change in the middle, before an appointment they could make the change...”

## Decreased Stress

“It was less frustration than other devices”

## Automatic Uploads

“You don’t have to write it down. You make it to the doctor they already know your logs.”



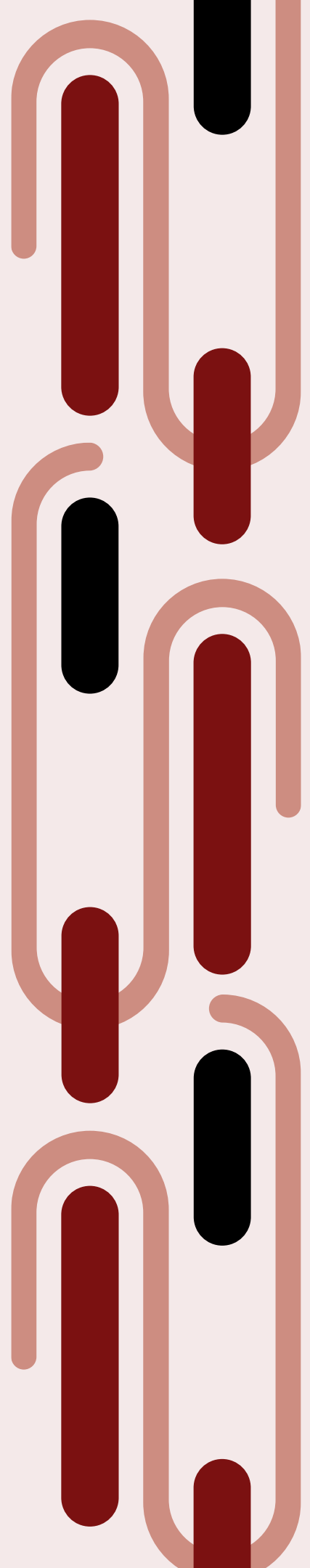
“The signal wouldn’t always be there to send the readings in”

## Convenient

“The actual device itself was easy to use”

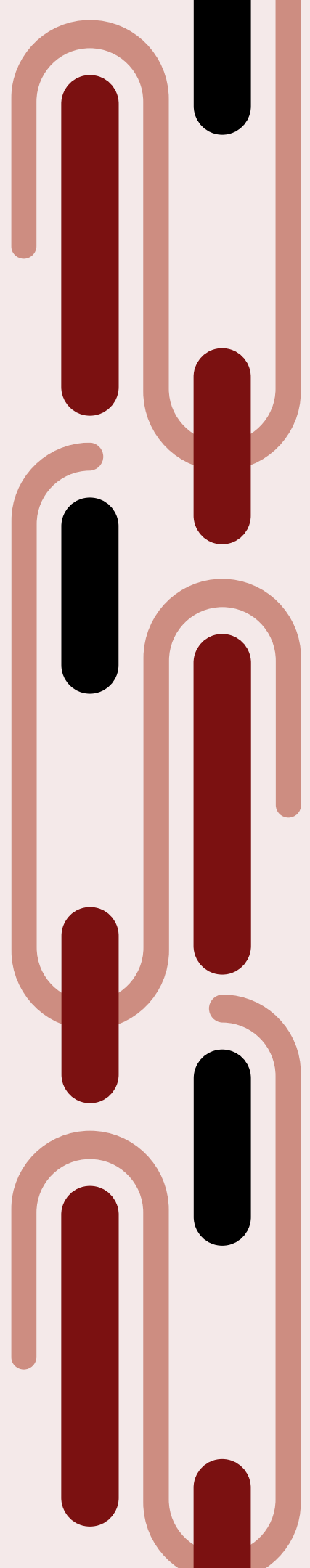
# CONCLUSIONS

- Overall, participants who used the iGlucose cellular enabled RPM glucometer had a positive experience and felt their care was better with using the device.
- Participants found that the device was accurate, easy to use, and appreciated the device automatically uploaded readings to their EMR.
- Appraisal of Diabetes significantly decreased among device users, indicating the iGlucose glucometer reduced the burden of managing their condition and that their diabetes interfered less with their daily life.
- Both general self-efficacy and treatment self-efficacy significantly increased after device use.
- These results highlight the value of using the iGlucose RPM device, as research has shown that self-efficacy is one of the most significant predictors of successful diabetes self-management.



# CONCLUSIONS

- There were no significant differences found in maternal or neonatal health outcomes between the two groups. This is likely due to the small sample size and short intervention timeframe.
- Patients were already under close clinical supervision prior to device use making it difficult to isolate the impact of RPM on health outcomes.
- RPM provides physicians access to real time data allowing for timely interventions, more informed and proactive treatment plan adjustments, and provides patients with a better understanding of how diet, exercise, and medication shapes their wellbeing.



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**THANK YOU**