

# A Quality Improvement Project to Improve Glucose Levels in Diabetic Patients Through Portal Messaging

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### PROBLEM STATEMENT

Lack of self-monitoring of blood glucose (SMBG) is a result of poor self-care in a patient with diabetes. A needs assessment of patients with diabetes at an outpatient employee clinic of a local school district revealed:

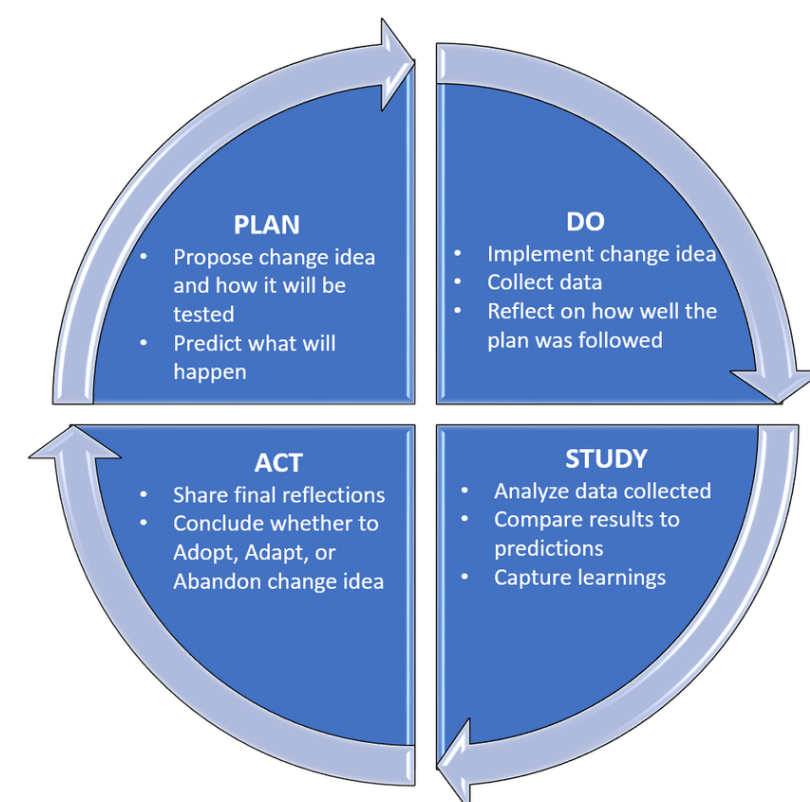
- **Over 60% were inconsistent with SMBG levels**
- **10.7% renewed their free testing supplies.**
- **80.8% did not meet the HgbA1C goal of less than 7%**
- **61.8% exhibited risk factors for cardiovascular disease**

### PROJECT PURPOSE

- The purpose of this quality improvement (QI) project is to enhance the effectiveness of a portal messaging reminder system to improve the frequency of SMBG levels in patients with diabetes at an outpatient employee clinic of a local school district.
- The project aligned with the overarching aim to **empower** patients to play a more active role in the management of their diabetes, and ultimately improve self-care, and quality of life for patients with diabetes.
- The clinical question proposed: **“In patients with diabetes over the age of 40, does implementation of portal messaging reminders improve glucose levels over a 3-month period for employees enrolled in a diabetes management program provided by a local school district?”**

### MODEL/NURSING THEORY

- The Plan, Do, Study, Act (PDSA) directed the QI project:
- Create a **plan** to improve the frequency of SMBG levels.
  - **Do/Implement** the plan.
  - **Study** the data outcome for improvement.
  - **Act** on applying the improvement to the current process.



Dorothea Orem's Self-Care Deficit Theory guided the QI project.

- Emphasizes the importance of patient independence over their self-care.
- Ultimately leading to maintenance of health, life, and well-being.
- Learn and practice self-management behavior as it relates to SMBG.

### METHODS

#### Subjects (Participants)

- Convenience sample of men and women over the age of 40, with Type I and II diabetes, who are enrolled in the free diabetic program, and have been inconsistent with SMBG.
- Inconsistency of SMBG levels refers to patients with diabetes who have been performing SMBG less than 2-3 times a week.
- Exclusion criteria were non-employees of the school district, non-diabetics, patients who are not enrolled in the free diabetic program, or patients less than 40 years of age.

#### Setting

- Outpatient ambulatory employee clinic that provides primary care services to employees of a local school district.

#### Instruments/Tools

The **Diabetes Self-Management Questionnaire (DSMQ) Tool**

- A 16-item questionnaire to assess diabetic self-care behavior.
- Rates behavior on 4-point Likert scale.
- Content validity index value of 0.96
- Reliability rating of “excellent” by subject matter experts.

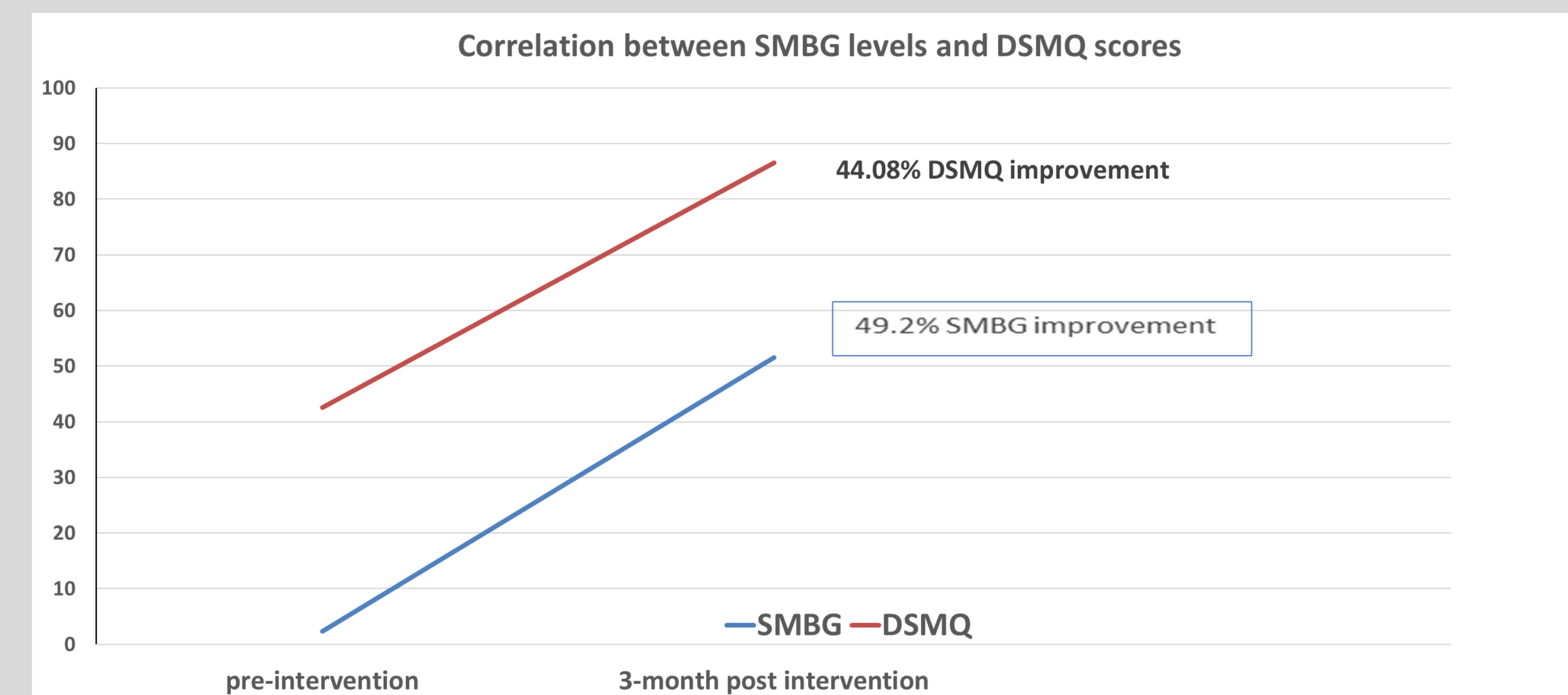
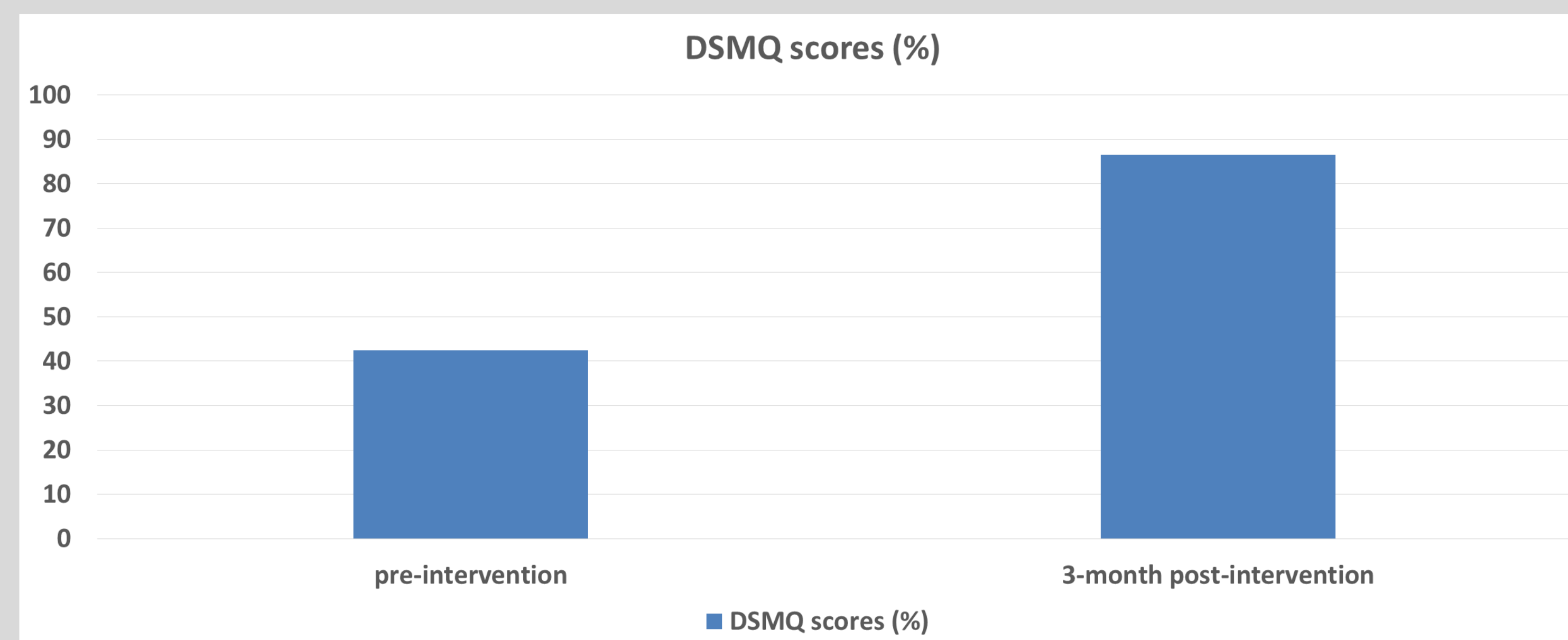
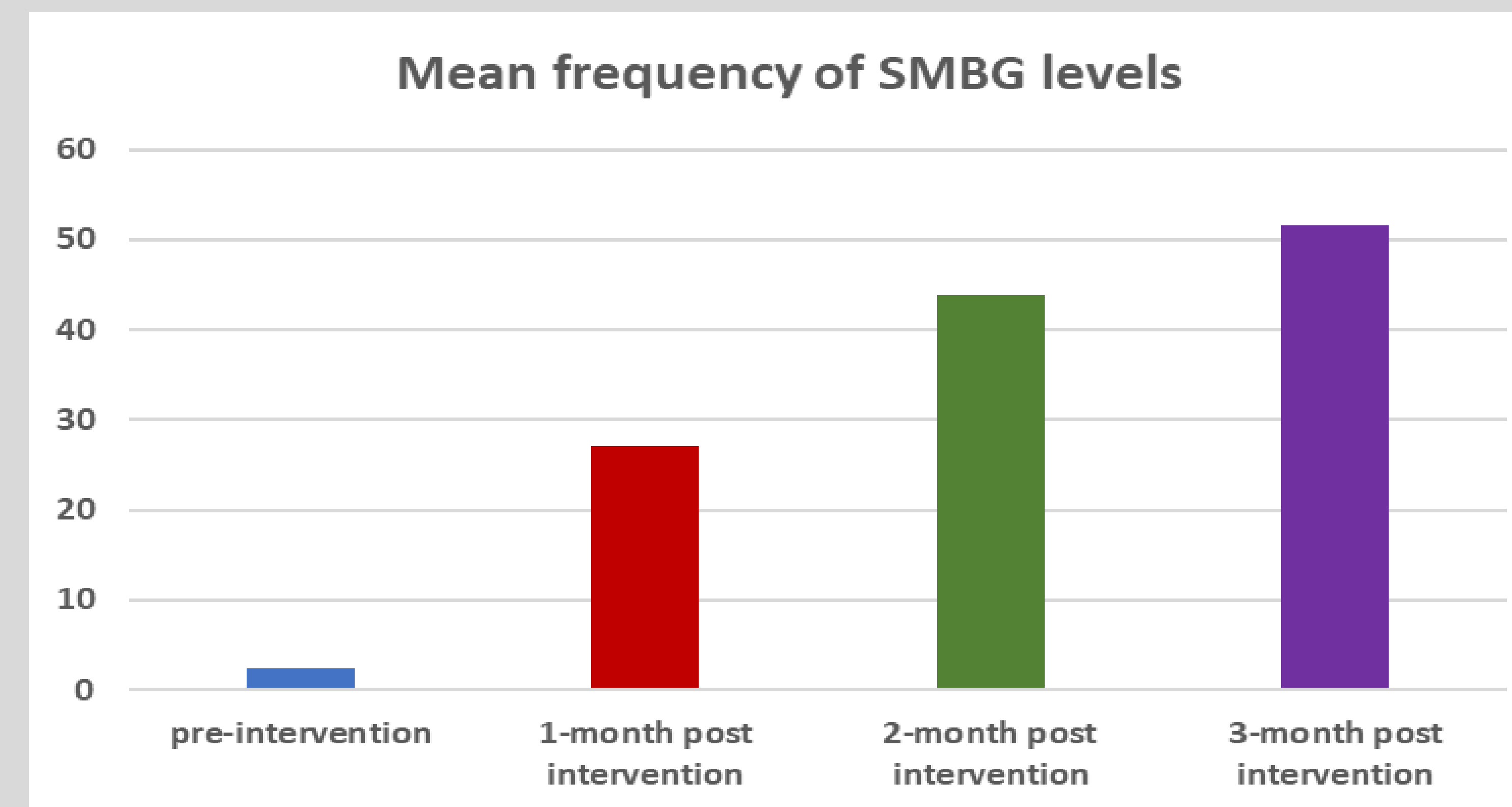
#### Retrospective Review of Electronic Data

- Compared documented frequency of SMBG levels and DSMQ scores before and after the QI intervention.

#### Intervention and Data Collection

- 1) Conduct baseline DSMQ and appraise scores.
- 2) Send automatic bi-weekly reminders over a 3-month period to prompt SMBG monitoring.
- 3) Conduct DSMQ at end of 3-months, and appraise scores.
- 4) Perform retrospective review of DSMQ scores and frequency of SMBG levels.

### RESULTS



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- **Results demonstrated that portal messaging reminders proved to significantly improve the frequency of SMBG levels and DSMQ scores.**
- **Positive correlation between the frequency of SMBG levels and DSMQ scores over a 3-month period, with an overall improvement of > 40%.**
- Using a paired t-test to compare data, p values comparing pre- and post- frequency of SMBG levels and DSMQ scores over a 3-month period were **statistically significant** ( $p < 0.001$ ).

### DISCUSSION

#### Limitations

- Small sample size of participants
- Technological disadvantage for some patients using the glucometer
- Primarily Hispanic population with a language barrier for some patients

### IMPLICATIONS FOR ADVANCE PRACTICE NURSING

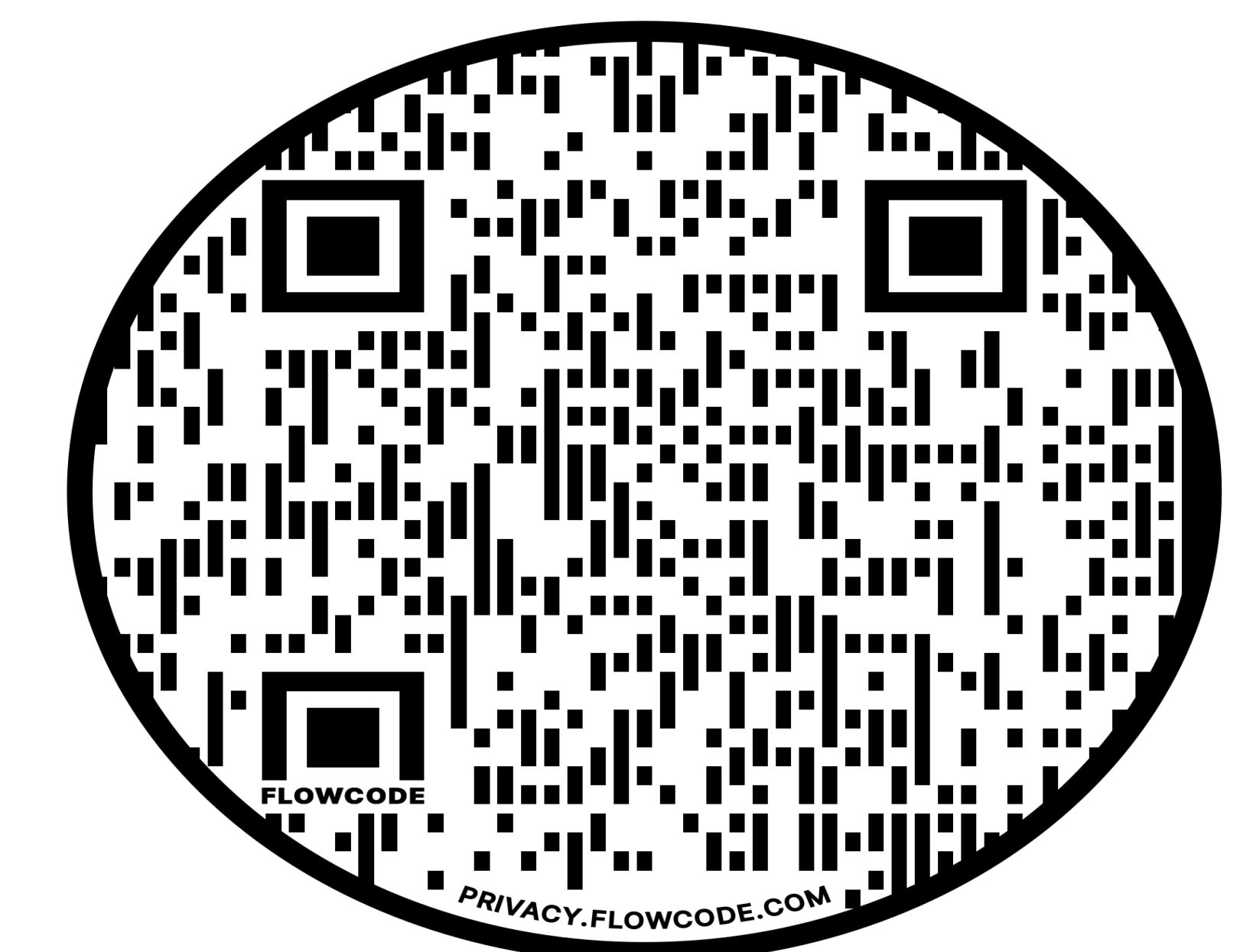
The inclusion of a portal messaging reminder function, using the DSMQ to improve the frequency of SMBG levels in patients with diabetes can be beneficial to employees of other school districts.

### SUSTAINABILITY

- Provider in-service education on monitoring the frequency of SMBG levels in the EMR to identify patients who are inconsistent with SMBG, and implementation of the reminder function.
- Resource binder with all educational content/material placed in nursing station.

### REFERENCES

Please scan QR code for complete reference list.



Empowering diabetics through a portal messaging reminder system, can improve self-care. Self-care leads to improvement in quality of life, and ultimately a healthier workforce.