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Staff Education Project Enhancing provider knowledge and Integration of Freestyle Libre Continuous Glucose Monitoring in a Family/Occupational Health Clinic

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Walden University

College of Nursing

This is to certify that the doctoral study by

Kesha Inez Detriese LeBron

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University

2025

Executive Summary: Staff Education Project
Enhancing provider knowledge and Integration of Freestyle Libre Continuous Glucose
Monitoring in a Family/Occupational Health Clinic
by
Kesha LeBron

Executive Summary Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Nursing Practice

Walden University

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Summary

This Doctor of Nursing Practice (DNP) project focused on enhancing provider knowledge and supporting the integration of FreeStyle Libre continuous glucose monitoring (CGM) technology in a family medicine and occupational health clinic. A gap in provider understanding of CGM technology and its role in diabetes management was identified. The intervention targeted a diverse group, including medical assistants, management, clerical staff, occupational health specialists, and medical providers. A pre- and post-education knowledge assessment was conducted, and results showed an increase in provider understanding. The pre-intervention average score was 76.52 ($SD = 2.64$), which increased to 98 ($SD = 3.34$) post-intervention. While the paired-samples t test did not achieve statistical significance $t(13) = 0.92, p = .37$, the increase in competency and confidence highlighted the value of CGM education. These findings emphasize the need for ongoing training to enhance competency and promote evidence-based diabetes management. Expanding CGM education has the potential to improve patient outcomes, address healthcare disparities, and increase access to advanced diabetes care. By promoting equitable access to CGM technology, this project contributes to positive social change, ensuring that all patients, regardless of socioeconomic status, receive high-quality, data-driven diabetes management. Key recommendations include expanding education programs, incorporating hands-on learning experiences, assessing long-term knowledge retention, and extending CGM education to additional healthcare settings. These steps are crucial for optimizing CGM adoption and fostering a healthcare environment where providers confidently utilize technology to enhance diabetes care.

Background

For effective diabetes management, healthcare providers need to stay up to date with new tools and technologies, including continuous glucose monitoring (CGM). However, many providers are not fully trained in CGM use, leading to inconsistent adoption and missed opportunities for better patient care. In this project, my goal was to close the knowledge gap surrounding CGM use. It evaluated whether a structured educational program could enhance understanding and improve the integration of FreeStyle Libre CGM in a family medicine and occupational health clinic. By equipping providers with the necessary knowledge and skills, the project was conducted to improve diabetes management practices and patient outcomes.

Practice Problem

The primary issue addressed in this project was the lack of provider knowledge about FreeStyle Libre CGM technology. Without a clear understanding of how to use and interpret CGM data, providers may hesitate to recommend it to patients, limiting its potential benefits. Financial limitations also posed a challenge, preventing the clinic from fully integrating CGM technology into its electronic medical record (EMR) system. This added another hurdle to the already slow adoption process.

These challenges highlight why investing in provider education and system improvements is essential. Without this foundation, diabetes management risks remain fragmented, leaving patients without the full benefits of advanced monitoring tools. Without this foundation, diabetes management remains fragmented, leading to suboptimal patient outcomes.

Practice-Focused Question and Project Purpose

The guiding question for this project was: Will educating healthcare providers and staff at a family medicine and occupational health clinic about FreeStyle Libre CGM technology improve their knowledge and understanding?

The purpose of the project was to evaluate whether a structured educational intervention could bridge the knowledge gap and support the adoption of CGM technology in clinical practice. This aligns with broader healthcare initiatives to integrate technology-driven solutions for diabetes care. While the primary goal was to improve provider knowledge, the project also sought to reduce workload burdens, enhance monitoring practices, and foster a more inclusive approach to diabetes care—one that prioritizes diversity and equity.

Staff Education Project Development

Analytical Strategies

A pre- and post-education knowledge assessment (see Appendix A) was used to measure changes in provider understanding. The pretest (Time 1) established baseline knowledge before the intervention, while the posttest (Time 2) assessed knowledge gains after education. The analysis compared T1 and T2 scores to evaluate the effectiveness of the education. To evaluate the program's impact (see Appendix B for PowerPoint presentation), descriptive statistics were used to compare pre- and post-education scores, while inferential tests assessed whether the observed changes were statistically significant.

Study Population and Data De-Identification

The study involved a diverse group of participants, including two nurse practitioners, one physician, three administrative leaders, three occupational health specialists, three medical assistants, and two front desk staff. After completing the program, participants showed a moderate improvement in their understanding of CGM technology. To ensure privacy and confidentiality, all individual responses were anonymized, and only aggregate data were reported. Data were reported as aggregate scores, ensuring privacy while preserving the integrity of the findings. Data analysis showed a moderate increase in CGM knowledge among participants.

Findings and Implications

The results showed a clear improvement in provider knowledge of CGM technology following the educational intervention. Before education, participants had an average knowledge score of 76.52 ($SD = 2.64$). After the education, their scores increased to 98 ($SD = 3.34$). Although the results did not achieve statistical significance ($t(13) = 0.92$, $p = 0.37$), the practical benefits were clear. Providers reported feeling more confident in their ability to use CGM technology and better equipped to incorporate it into their daily practice. These improvements are crucial for enhancing diabetes management and streamlining CGM adoption within clinical practice. Strengthening provider education could lead to evidence-based process improvements, such as integrating CGM into the EMR system and reducing healthcare costs associated with diabetes complications. Additionally, as providers become more comfortable with CGM,

they are more likely to recommend it to patients, helping improve adherence and glycemic control.

Better provider education also reduces disparities in diabetes care by ensuring that all patients, regardless of socioeconomic status, have access to advanced glucose monitoring technology. This initiative promotes health equity, fosters positive social change, and supports a more inclusive healthcare system.

Limitations

A key challenge in this study was the small sample size. With only a handful of participants, it was harder to draw broad conclusions or determine if the observed improvements in provider knowledge were statistically significant. Although the results demonstrated clear knowledge gains, the small sample size increased the likelihood of Type II errors, potentially obscuring meaningful effects due to insufficient data points. However, the consistent knowledge gains among participants suggest that the educational program was impactful, even if broader applicability requires further study.

Another major limitation was financial constraints. The clinic did not have the budget to fully integrate CGM technology into its EMR system, which complicated implementation. Without this integration, providers relied on manual documentation and alternative tracking methods, adding an additional layer of complexity to the workflow. Adequate financial resources would have facilitated a more seamless transition, ensuring that CGM adoption was fully optimized within the clinic's operational infrastructure. Finally, sustainability remained a concern. Acquiring new knowledge is essential, but maintaining and applying that knowledge over time presents an ongoing challenge.

Without structured follow-up education and continued institutional support, provider competency in CGM technology may decline, limiting long-term adoption. To embed CGM use into routine clinical practice, the clinic must prioritize continued education, refresher courses, and periodic assessments to reinforce knowledge retention and sustain provider confidence in CGM utilization.

Expanding Educational Initiatives

To sustain the long-term benefits of this initiative, the clinic should implement several key strategies. Offering regular refresher courses and e-learning modules can help providers retain what they have learned and stay confident in using CGM technology over time.

Additionally, securing organizational support and funding is essential to maintaining ongoing education efforts. Without institutional backing, it may be challenging to allocate the necessary resources for continuous learning and system integration. Firsthand education is essential. By practicing with CGM technology in a controlled environment, providers can build their confidence and become more effective in teaching patients how to use it. While structured educational sessions provide foundational knowledge, applying these concepts in clinical practice is crucial for long-term adoption.

Finally, expanding CGM education to additional clinical settings will offer valuable insights into broader adoption challenges and best practices. Implementing this education across multiple sites can help identify barriers, refine instructional approaches, and support wider access to advanced diabetes management solutions.

Future Recommendations

Building on these findings, future initiatives should focus on expanding the scope of CGM education and evaluating its long-term impact to strengthen evidence-based practice. Future studies should aim to include larger sample sizes. This would provide a stronger data set, improve statistical power, and lead to more reliable conclusions about the impact of provider education on CGM use.

Additionally, assessing long-term knowledge retention is essential to ensure that the improvements observed immediately after education are sustained over time. Periodic evaluations and follow-up assessments can help determine whether providers continue to apply CGM knowledge in clinical practice and identify areas where additional reinforcement may be needed. To further enhance provider competency, incorporating firsthand learning opportunities should be prioritized. While theoretical instruction is valuable, direct engagement with CGM technology in a controlled education environment allows providers to gain confidence in its use, improving their ability to educate patients and integrate CGM into routine diabetes management. Extending CGM education to additional clinical settings would offer valuable insights into the challenges and opportunities of adopting this technology across diverse environments. Differences in institutional resources, patient populations, and provider experience levels may influence how CGM technology is integrated into practice. By implementing education programs across various healthcare environments, best practices can be refined, and barriers to adoption can be systematically addressed.

Ultimately, establishing a standardized CGM education framework will support consistent, high-quality diabetes management across multiple healthcare settings. A structured approach to CGM education will ensure that all providers, regardless of their clinical environment, have the necessary knowledge and skills to effectively utilize this technology. In doing so, this initiative can contribute to improved patient outcomes, reduced healthcare disparities, and more equitable access to advanced diabetes management solutions.

Social Change and Implications for Nursing Practice

By addressing disparities in diabetes care, this project contributes to advancing health equity and driving positive social change through targeted provider education. Improving provider knowledge helps ensure that all patients—no matter their income or background—can access advanced, technology-driven diabetes care.

One of the primary ways this initiative reduces healthcare disparities is by equipping providers with the knowledge and confidence to educate diverse patient populations about CGM technology. When providers are well-informed, they can more effectively recommend and implement CGM use, ensuring that patients who might otherwise face barriers—such as limited healthcare access or financial constraints—receive the same level of evidence-based care as those with greater resources.

Furthermore, this project supports the widespread adoption of evidence-based clinical practices that improve diabetes outcomes. By integrating CGM technology into routine care, providers can make more informed treatment decisions, leading to better glycemic control, reduced complications, and improved quality of life for patients with

diabetes. To sustain these advancements, healthcare institutions must continue prioritizing education on CGM technology. Ongoing education, policy support, and system-wide adoption strategies will allow for seamless integration of CGM into clinical workflows. In doing so, this initiative can contribute to more equitable, efficient, and high-quality diabetes management, ensuring that all patients—regardless of income, geographic location, or healthcare accessibility—benefit from advancements in diabetes technology.

Conclusions

This DNP project showed that a well-structured educational intervention can meaningfully enhance providers' understanding of FreeStyle Libre CGM technology. While the study had limitations, the results support the need for ongoing education and broader adoption of CGM technology. By continuing to invest in provider education, healthcare institutions can improve patient outcomes, support health equity, and create a more inclusive approach to diabetes management.

Continued education and firsthand learning are critical to making CGM a routine part of diabetes care. By reinforcing provider confidence, these efforts can lead to better recommendations and improved health outcomes for patients.

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Appendix A: Pre- and Posttest

Multiple Choice Questions

1. What is the primary function of the Freestyle Libre system?
 - A) Measure Blood pressure
 - B) Monitor heart rate
 - C) Continuously monitor glucose levels
 - D) Track physical activity
2. How often does the FreeStyle Libre sensor need to be replaced?
 - A) Every 3 days
 - B) Every 7 days
 - C) Every 10 days
 - D) Every 14 days
3. Where is the FreeStyle Libre sensor typically applied on the body?
 - A) Abdomen
 - B) Upper Arm
 - C) Thigh
 - D) Lower Back
4. What is the primary advantage of using the Freestyle libre system over traditional fingerstick glucose testing?
 - A) It is less expensive
 - B) It provides continuous glucose readings without the need for fingersticks
 - C) It is more accurate
 - D) It can be used for blood pressure monitoring
5. How does the Freestyle Libre system display glucose readings?
 - A) On a smartphone app
 - B) On a dedicated reader device

- C) Both A and B
 - D) On a computer screen
6. What does the Freestyle Libre system require for calibration?
- A) Fingerstick blood glucose readings
 - B) No calibration required
 - C) Urine glucose readings
 - D) Saliva glucose readings
7. Can the Freestyle Libre sensor be worn while swimming or showering?
- A) Yes
 - B) No
 - C) Only while swimming
 - D) Only while showering
8. What kind of data can the Freestyle Libre system provide?
- A) Glucose trend data and patterns over time
 - B) Heart rate data
 - C) Blood pressure data
 - D) Cholesterol levels
9. Who is the Freestyle Libre system approved for use in?
- A) Only adults
 - B) Only children
 - C) Both adults and children
 - D) Only pregnant women
10. Can the Freestyle Libre system alert users to high or low glucose levels in real-time?
- A) Yes
 - B) No

- C) Only for high glucose levels
- D) Only for low glucose levels

ANSWER KEY

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Appendix B: PowerPoint Presentation



Learning Objectives

By the end of this presentation, participants will be able to:

1. Understand the FreeStyle Libre CGM system and its role in diabetes management.
2. Recognize the key benefits and challenges of integrating CGM technology into clinical practice.
3. Identify the steps and strategies required for successful implementation of CGM technology in a clinical setting.
4. Explore how provider education can support better patient outcomes and improve healthcare practices.

Introduction to the DNP Project

- **Objective:** Enhance provider knowledge and integrate FreeStyle Libre CGM technology within a family medicine and occupational health clinic.
- **Goal:** Close the knowledge gap in CGM use and improve diabetes management practices.
- **Target Participants:** Medical assistants, administrative leaders, occupational health specialists, front desk staff, and medical providers.

The Practice Problem

- **Issue:** Many healthcare providers are unfamiliar with the use and interpretation of CGM data, leading to slow adoption in clinical practice.
- **Challenges:**
 - Lack of education and training among healthcare providers.
 - Financial constraints and incomplete integration into electronic medical record (EMR) systems.
 - Resistance to new technologies due to workflow disruptions or unfamiliarity.
- **Goal:** Educate providers on CGM technology to improve patient care and diabetes management.

Practice-Focused Question and Project Purpose

- **Guiding Question:** Will educating healthcare providers and staff at a family medicine and occupational health clinic about FreeStyle Libre CGM technology improve their knowledge and understanding?
- **Project Purpose:** Evaluate whether a structured educational intervention can improve provider understanding and facilitate the integration of CGM technology into routine clinical practice.
- **Focus:** Enhancing patient care, streamlining workflows, and promoting equitable access to diabetes management tools.

Introduction to FreeStyle Libre CGM

• What is FreeStyle Libre CGM?

- A continuous glucose monitoring system that tracks glucose levels throughout the day and night.
- Consists of a small sensor applied to the skin that measures glucose in the interstitial fluid, transmitting data to a reader or mobile app.

• Why is it Important?

- Provides real-time glucose data and trends, helping providers and patients manage diabetes more effectively.
- Reduces the need for traditional fingerstick blood glucose tests, enhancing patient comfort and convenience.
- Offers data on glucose patterns and trends, leading to better decision-making in treatment.



FreeStyle Libre CGM Provider

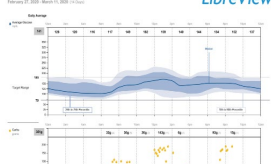
•Key Benefits:

- **Real-Time Data:** Immediate feedback on glucose levels, helping to manage both hypoglycemia and hyperglycemia.
 - Ambulatory Glucose Profile (AGP) Report
 - Makes Time in Range (TIR) the standard of care when making treatment and dosing decisions
 - Developed to align w/the international Consensus on TIR standards
- **Pattern Recognition:** Identifies patterns in glucose fluctuations, allowing for more tailored treatment adjustments.
- **Improved Glycemic Control:** Provides more data for adjusting insulin doses, improving overall diabetes management.
- **Reduced Hypoglycemic Events:** With continuous monitoring, patients can avoid dangerous low glucose events.
- **Patient Empowerment:** Encourages self-management and informed decision-making about lifestyle and medication.

AGP Report



Daily Patterns



FreeStyle Libre CGM Provider Practice Setup & Training

•Putting into practice: [FreeStyle Foundations | Healthcare Providers](#)

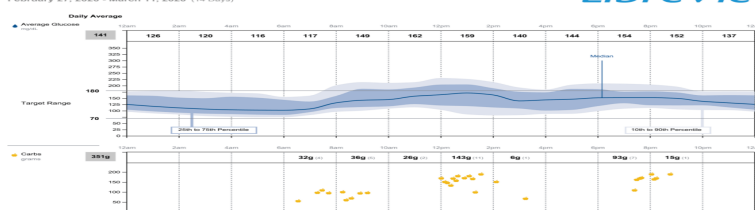
- Create a LibreView account online, download and install drivers for readers & Connect specific pt device: <https://youtu.be/Q-E5RRxgvBo>

AGP Report



Daily Patterns

February 27, 2020 - March 11, 2020 (14 Days)



Practice Setup & Training Continue



Invite other healthcare professionals to join as care team members:
<https://youtu.be/20IZjysHUGo>



Connect patients with/without a LibreView account and Connect patients via practice ID;
<https://youtu.be/ivDsPotekjE>



Tips for Keeping Your Sensor in Place

Sensor Usage



Easy Does It

Try not to catch your sensor on doorways, car doors, and seat belts. Avoid touching it once on.



Wear It Comfortably

Careful when dressing—give the sensor room to breathe with lightweight, loose-fitting clothes.



It's Water-Resistant!

Avoid submerging the sensor more than 3 feet or for more than 30 minutes at a time. Gently pat it dry.



Play It Safe

Try an over-bandage if playing contact sports. Use skin adhesive if sweating loosens the sensor.

1

Remove Sensor

The sensor is designed to stay on for up to 14 days. The app will notify you when it's time to remove it. Pull up the adhesive edge that keeps it attached and slowly peel from your skin in a single motion.

2

Replace Sensor

Apply the new sensor to a different spot on the back of your arm to avoid skin irritation. Switching arms with each new sensor can help.

3

Sensor Disposal

Dispose of your sensor following all applicable local regulations related to the disposal of electronic equipment, batteries,



Analytical Strategies

- **Methods Used: Pre- and Post-Education Assessments:** Providers' knowledge of CGM technology was assessed before and after the educational intervention.
- **Comparison of Scores:** Evaluated the effectiveness of the educational program by comparing pre-test and post-test scores.
- **Statistical Analysis:** Descriptive and inferential statistics were used to analyze the knowledge improvements.

Pre/Post Test

•Pre-Test (Time One):

- Baseline knowledge assessment before the intervention
- Average score: 76.52 (SD = 2.64)
- Established starting point for provider understanding

•Post-Test (Time Two):

- Assessment after education intervention
- Increased average score: 98 (SD = 3.34)
- Demonstrated improvement in provider knowledge

•Statistical Analysis:

- Descriptive statistics used to compare pre- and post-education scores
- Paired samples t-test: $t(13) = 0.92$, $p > 0.37$ (not statistically significant)
- Despite non-significance, the observed changes indicate a **practical** improvement in provider competency

•Key Findings:

- Clear **improvement** in understanding CGM technology post-education
- Providers showed **increased confidence** and **competency** in using CGM devices
- Highlights the importance of **ongoing provider education** to enhance practical skills in diabetes management

•Conclusion:

- Education interventions play a critical role in improving knowledge and adoption of **evidence-based practices** in diabetes care
- Regular training is essential to maintain competency in rapidly evolving medical technologies

Case Studies



FreeStyle
Libre 3

- [ADC-83560-fsl-3-case-study-debra.pdf](#)

REAL-WORLD CASE STUDY

Helping patients to better manage their diabetes and reduce burden

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