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Implementation of a pharmacist-driven continuous glucose monitoring program within an American Indian/Alaska Native community

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Abstract

Introduction: Ambulatory care pharmacists can help overcome systemic barriers in diabetes management for American Indians and Alaska Natives (AI/AN) by facilitating the adoption and management of continuous glucose monitoring (CGM) technology. Despite the proven clinical benefits of CGM, its use in AI/AN populations remains limited and underexplored. The aim of this study was to evaluate the impact of a pharmacist-driven CGM program on glycemic control in AI/AN patients with diabetes and to characterize the implementation of the intervention in clinical practice.

Methods: This is a retrospective, single-center, observational study using data from a pharmacist-driven CGM program at a rural, Indian Health Service, ambulatory health center in the midwestern United States serving AI/AN individuals. The study included a pilot phase with a matched-cohort design and a subsequent post-pilot implementation. Participants in the intervention group received comprehensive CGM education and management from clinical pharmacists, with follow-up visits for 6 months. The primary outcome was the change in hemoglobin A1c (HbA1c) levels, analyzed using multilevel linear regression models.

Results: In the pilot phase, 79% of the intervention group achieved a 1% reduction in HbA1c at 6 months, with an average reduction of 2%. The control group showed no significant change ($p = 0.032$ for CGM vs. control arms). Post-pilot implementation maintained these improvements, with a mean HbA1c reduction of 1.5% in a larger

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patient cohort ($p < 0.001$ for pre- vs. post-CGM implementation). Patient confidence in managing diabetes and satisfaction with care also increased.

Conclusion: Implementing a pharmacist-driven CGM program in AI/AN communities can address health care disparities and improve diabetes outcomes. This model holds promise for broader application in managing chronic diseases in underserved populations, highlighting the critical role of pharmacists in interdisciplinary health care teams. Further research should focus on long-term outcomes and economic impacts to support the widespread adoption of this approach.

KEYWORDS
Alaska Native, American Indian, continuous glucose monitoring, diabetes mellitus, pharmacist

1 | BACKGROUND

American Indians and Alaska Natives (AI/ANs) experience the highest prevalence of diabetes (type 1 and type 2 combined) among racial groups in the United States.[1] According to the latest data from the Indian Health Service (IHS), diabetes prevalence among AI/AN adults significantly increased from 14.4% in 2006 to 15.4% in 2013 and subsequently declined to 14.6% in 2017.[2] Notably, diabetes-related mortality remains the fourth leading cause of death for AI/ANs.[3] Studies, such as those conducted by Cho et al.,[4] reveal that AI/ANs are 2.6–3.5 times more likely to experience diabetes-related death compared with White Americans. Diabetes also presents unique challenges for AI/ANs due to its associated complications. Research by O'Connell and colleagues shows that AI/ANs with diabetes have a 50% higher morbidity burden compared with insured US adults with diabetes.[5] However, numerous barriers impede comprehensive diabetes management for AI/AN communities, encompassing socioeconomic and systemic challenges.[6] Furthermore, the supply of prescribers fails to keep pace with patient demand nationally.[7,8] In 2018, the US Government Accountability Office reported the overall vacancy rate for IHS providers including physicians, nurses, nurse practitioners, pharmacists, and others stood at 25%.[9] Addressing these barriers is essential for improving diabetes management and health outcomes.[6,10–13]

Continuous glucose monitoring (CGM) technology, available for over 20 years, has significantly improved clinical end points such as hemoglobin A1c (HbA1c) and time in the target glycemic range.[14–16] While CGM has demonstrated substantial utility for individuals with type 1 diabetes (T1D), an increasing number of trials have explored its potential benefits for individuals with type 2 diabetes (T2D).[15–17] The American Diabetes Association (ADA) now recommends that CGM devices be offered not only to people with T1D but to all patients with diabetes on insulin, including those with T2D.[18] Results from trials indicate that CGM can enhance glycemic control, reduce the frequency of hypoglycemic episodes, and improve overall quality of life for individuals with T2D.[16,17] As with most clinical trials, individuals identifying as AI/AN were not widely included.[16,17] The ADA also emphasizes the importance of proper training and ongoing support from health care professionals for optimal CGM outcomes.[18] This may cause an additional gap in practice for AI/AN communities, as 23.2% of AI/AN individuals reported having "no health plan," compared with 12.3% of Whites in similar geographical areas.[10] Pharmacists are well positioned to play a crucial role in advocating for and facilitating access to CGM technology for AI/AN people.

Ambulatory care pharmacists, leveraging their specialized knowledge and strong patient connections, are particularly well-equipped to overcome numerous obstacles in CGM implementation.[19–21] These obstacles, which are particularly exacerbated for underserved populations, include selecting the appropriate CGM product, navigating complex insurance coverage, educating patients on device use, and providing continuous support and management.[22] However, it is important to note that the underserved populations referenced did not specifically include AI/ANs. There is a paucity of data examining and evaluating CGM use within AI/AN communities, including programs driven by pharmacists. In this study, the authors describe the effectiveness of a pharmacist-driven CGM program within an AI/AN patient population.

2 | METHODS

2.1 | Objectives

The primary objective of this study was to evaluate the impact on HgbA1c levels of a pharmacist-driven CGM program within an AI/AN patient population. The secondary objective was to characterize the implementation of the intervention in clinical practice (post-pilot implementation) via HgbA1c levels and resource utilization.

2.2 | Setting

This study was conducted in a rural, IHS, ambulatory health center in the midwestern United States dedicated to providing primary care services to an AI/AN community.[23] At the time of the study, the health center had three full-time equivalent (FTE) physicians, seven FTE nurse practitioners and physician assistants, and 14.5 FTE

pharmacists. Two FTE pharmacists were dedicated to staffing a Pharmacy Primary Care Clinic (PPCC) at the health center, where they deliver comprehensive clinical care and medication management to patients with diabetes, hypertension, and other chronic conditions. Through a collaborative practice agreement (CPA) with the clinic physicians, these pharmacists play a crucial role in addressing medication-related needs, enhancing patient outcomes, and promoting effective disease management. The PPCC pharmacists were dedicated to the management of patients with diabetes at the time of the pilot, and their CPA broadly covered medication changes including additions, deletions, and adjustments, ordering of testing, and referrals. Overall, the health center had a user population of 10 202 patients with a diabetes diagnosis of approximately 12%. Most patients were insured via Medicaid and Medicare, or noninsured, with the minority having commercial insurance. For patients without coverage, the clinic covered the care provided including the CGM devices and medications.

2.3 | Study design

This retrospective, single-center, observational study utilized data from a pharmacist-driven CGM program in the aforementioned ambulatory health center. The study included two parts. The first describes a retrospective pilot comparing a matched cohort of patients receiving CGM care versus those who did not. This portion of the study had two 6-month phases. The first phase was a traditional control-intervention study. Given the impact observed on the patients in the intervention arm, for the second phase, the patients from the control arm were offered CGM intervention and both sets of patients were followed for an additional 6 months. The second part of the study describes the post-pilot CGM program implementation. Ethical considerations, including confidentiality and informed consent, were adhered to throughout the study. The study design was consistent with the Enhancing the QUAlity and Transparency Of health Research Strengthening the Reporting of Observational Studies in Epidemiology checklist for observational studies and was deemed exempt by the site's Institutional Review Board, with approval for publication.

2.4 | Pilot—Intervention

The intervention implemented was a pharmacist-driven CGM program for eligible patients with T2D or T1D (Figure 1). Participants in the intervention group underwent an initial appointment with the clinical pharmacist for CGM sensor placement, education, and a thorough review of the CGM program's consent and expectations. The second appointment occurred at 2 weeks and involved the clinical pharmacist downloading and analyzing CGM data, discussing potential medication adjustments, and collaboratively developing personalized care plans between patient and pharmacist via an established CPA. Thereafter, patients experiencing no CGM-related side effects (i.e., intolerable skin irritation or rash, sensor adhesion problems, and concern for medical device visibility on the arm) and expressing interest in continuing with the program received two Freestyle Libre® 2 (Abbott, Chicago, IL) sensors (equivalent to a 28-day supply). Monthly follow-up appointments for 6 months were scheduled with a clinical pharmacist and coincided with sensor refills for ongoing data review, medication adjustments, and counseling on lifestyle modifications including diet and physical activity. Patients who experienced side effects or had difficulty adhering to their care plans were offered more frequent follow-up with the pharmacist occurring every 2 weeks until patient comfort was attained.

2.5 | Pilot—Patient enrollment and data collection

Adult patients (18 years and older) were eligible for the pilot if they had an HbA1c level exceeding 9%, were receiving three or more daily

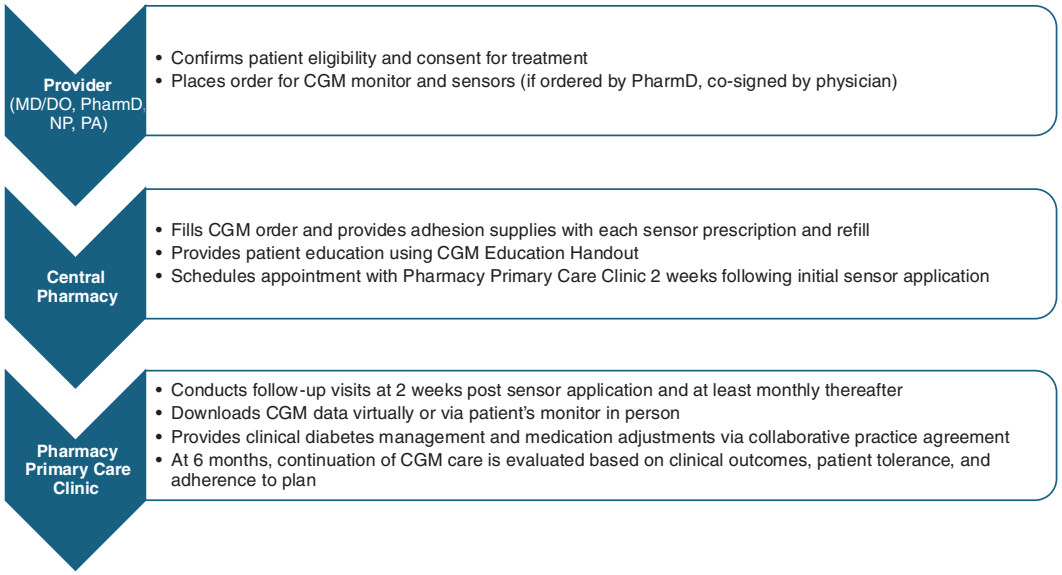


FIGURE 1 Pharmacist-driven CGM intervention. CGM, continuous glucose monitoring.

insulin injections, and had an existing order for self-monitoring blood glucose levels at least three times daily. Additionally, patients meeting at least two of the criteria, alongside visual, hearing, or dexterity impairments or frequent hypoglycemic events (blood glucose levels <70 mg/dL) confirmed by blood glucose meter readings or documentation, were eligible. Exclusion criteria included patients undergoing dialysis, those under 18 years of age, pregnant individuals, and patients who were critically ill. A program within the electronic health record (EHR) was utilized to generate a list of patients meeting inclusion criteria. Patients who were on this list and had appointments with a primary care provider between January 1, 2022, and March 31, 2022, were approached to participate in the pilot. The intervention group consisted of patients from this list who agreed to participate. Randomly selected patients from the list who were not receiving the intervention were selected as controls.

The following data were collected and securely stored in an Excel (Microsoft, Redmond, WA) spreadsheet at each appointment for those patients in the intervention arm: demographic information including diabetes-related medication, initial and subsequent HbA1c levels at 3- and 6-month intervals, and documented instances of hypoglycemic events. Patients reported on their satisfaction (scale 1–10) and confidence in their ability to manage their diabetes (scale 1–10) at baseline and at the 6-month completion of the pilot intervention using a brief survey tool (Appendix A).

Control arm data were collected retrospectively and included demographic information including diabetes-related medication, HbA1c values at baseline, 3-month, and 6-month post-pilot initiation, and reports of hypoglycemic events recorded in the EHR.

2.6 | Post-pilot implementation

Results and patient feedback of the pilot program were presented to the Pharmacy and Therapeutics Committee of the health center. Given these results, the program was rolled out in routine clinical practice beginning in March 2023. Continuous glucose monitoring was offered to all eligible patients based on the same criteria as the pilot program (Figure 1). In addition to four pharmacists trained before the pilot project, an additional eight pharmacists underwent specialized training in CGM management following the completion of the pilot. The CGM pharmacist-driven program has a current capacity to provide care for up to 150 active patients at a time. This initial capacity was determined based on the current clinic population of patients with diabetes who may be eligible and budgetary feasibility within the health center. Continuous glucose monitorings were provided to patients at no cost, regardless of insurance coverage. The number of patients was not limited by clinician availability or visit capacity, as pharmacists were currently seeing patients with diabetes, and the increase in visits was not anticipated to significantly impact workload.

Data collected for the post-pilot CGM implementation included select patient demographics, baseline and post-CGM HbA1c levels, and an assessment of change in workload for the PPCC at the health center. The PPCC pharmacists' roles during the post-pilot implementation was to provide care to patients with diabetes utilizing CGM via a CPA and CGM-specific education and sensor placement, while the role of the central (ambulatory) pharmacists was to provide CGM-specific education and sensor placement.

2.7 | Statistical analysis

Descriptive statistics were used to represent baseline characteristics, patient demographics, patient satisfaction, and confidence in self-management. The HbA1c values were analyzed using two-level linear regression models, and the multiple time point HbA1c values were nested within the patient. All analyses were performed using Stata 17 software (StataCorp. 2021. College Station, TX: StataCorp LLC.) and SAS Enterprise Guide 7.15 HF9 software (Copyright 2017. SAS Institute Inc., Cary, NC.), and a priori level of significance was 0.05.

Given the different types of baseline values, categorical values were analyzed with chi-square tests, age was analyzed using a *t*-test, and baseline HgbA1c was analyzed using a multilinear regression model. Some of the tables used in the chi-square tests had small cell counts. In these cases, a Fisher's exact test and an approximation using Monte Carlo estimation were used.

The multilevel linear regression models were used to analyze the individual patient trends regarding their HbA1c values. The models analyzed the changes in HbA1c within patients and utilized the individual patient starting points. That is, for each patient, we used their own value at the beginning of the study and analyzed the changes from this first value. No assumptions were made about the type of trend followed by the data. The results for each individual trend are combined into a population trend. An additional advantage of the statistical approach is that if a patient misses a measurement, the patient is not dropped from the analysis. All available measurements are included in the analysis.

3 | RESULTS

3.1 | CGM pilot

During the pilot enrollment period, 19 patients who met the inclusion criteria agreed to participate in the project. Baseline characteristics of the intervention and the control group ($n = 20$) are detailed in Table 1. All patients identified as AI/AN. There were more females in the intervention group than in the control (63% vs. 40%, $p = 0.148$), but the difference is not statistically significant. The intervention group included T2D ($n = 18$, 94.7%) and T1D ($n = 1$, 5.3%), and the control group included T2D ($n = 19$, 95%) and T1D ($n = 1$, 5%), which were similar between the groups.

Fourteen patients (74%) in the intervention arm successfully completed the project. Of the five who did not complete it, three opted not to continue with follow-up (one due to sensor issues and two due to compliance issues), and two were lost to follow-up. Enrollment HbA1c values within 3 months from pilot enrollment were extracted

TABLE 1 Patient demographics and clinical characteristics.

Demographics and characteristics	Pilot control ($n = 20$)	Pilot CGM intervention ($n = 19$)	p-Value	Post-pilot clinical care ($n = 84$)
Age, mean (SD), years	53 (14.1)	49 (13.1)	0.308	54
Sex, *n* (%)				
Female	8 (40)	12 (63.2)	0.148	36 (43)
Male	12 (60)	7 (36.8)		48 (57)
Race, *n* (%)				
AI/AN	20 (100)	19 (100)	1.000	84 (100)
Ethnicity, *n* (%)				
Not Hispanic	20 (100)	19 (100)	1.000	84 (100)
Rurality, *n* (%)				
Metropolitan	3 (15)	1 (5.3)	0.538	
Micropolitan	0 (0)	1 (5.3)		
Rural areas	13 (65)	13 (68.4)		
Small town	3 (15)	4 (21.1)		
Unknown	1 (5)	0 (0)		
Distance to clinic				
Under 20 miles, *n* (%)	4 (20)	6 (31.6)	0.762	
20–29 miles, *n* (%)	8 (40)	5 (26.3)		
30–44 miles, *n* (%)	4 (20)	4 (21.1)		
>45 miles, *n* (%)	3 (15)	4 (21.1)		
Unknown, *n* (%)	1 (5)	0 (0)		
Primary insurance type, *n* (%)				
Medicare	5 (25)	5 (26.3)	0.148	
Medicaid	5 (25)	3 (15.8)		
Commercial/other	6 (30)	2 (10.5)		
None	3 (15)	9 (47.4)		
Unknown	1 (5)	0 (0)		
Clinical characteristics				
Baseline HbA1c, mean (SD) (within ≤3 months of enrollment)	10.9 (1.5)	10.9 (1.7)	0.984	9.1
Baseline diabetes medications, *n* (%)				
Long-acting insulin	20 (100)	19 (100)		
Short-acting insulin	17 (85)	17 (89.5)		
Biguanides	7 (35)	7 (36.8)		
DPP-4 inhibitors (gliptins)	3 (15)	3 (15.8)		
GLP-1 agonists	1 (5)	4 (21.1)		
SGLT2 inhibitors	1 (5)	1 (5.3)		
Sulfonylureas	4 (20)	2 (10.5)		
Patients who had clinical pharmacy visits before pilot, *n* (%)	7 (35)	10 (52.6)		
Clinical pharmacy visits during the 6-month trial, mean visits per patient (range)	1.3 (0–6)	12 (5–18)		
Time since diabetes diagnosis, mean (SD), years	15.3	14		
Surveys **Pilot CGM intervention arm**	**Baseline**	**End of pilot**		
Patient confidence				
Low (0–3)	1 (9)	0 (0)	0.014	
Medium (4–6)	5 (45.5)	0 (0)		
High (7–10)	5 (45.5)	11 (100)		

TABLE 1 (Continued)

Surveys Pilot CGM intervention arm	Baseline	End of pilot	
Patient satisfaction			
Low (0–3)	0 (0)	0 (0)	0.214
Medium (4–6)	3 (27.3)	0 (0)	
High (7–10)	8 (72.7)	11 (100)	

Abbreviations: AI/AN, American Indian and Alaska Native; CGM, continuous glucose monitoring; DPP-4, dipeptidyl peptidase-4; GLP-1, glucagon-like peptide-1; HbA1c, hemoglobin A1c; SD, standard deviation; SGLT2 = sodium-glucose cotransporter 2.

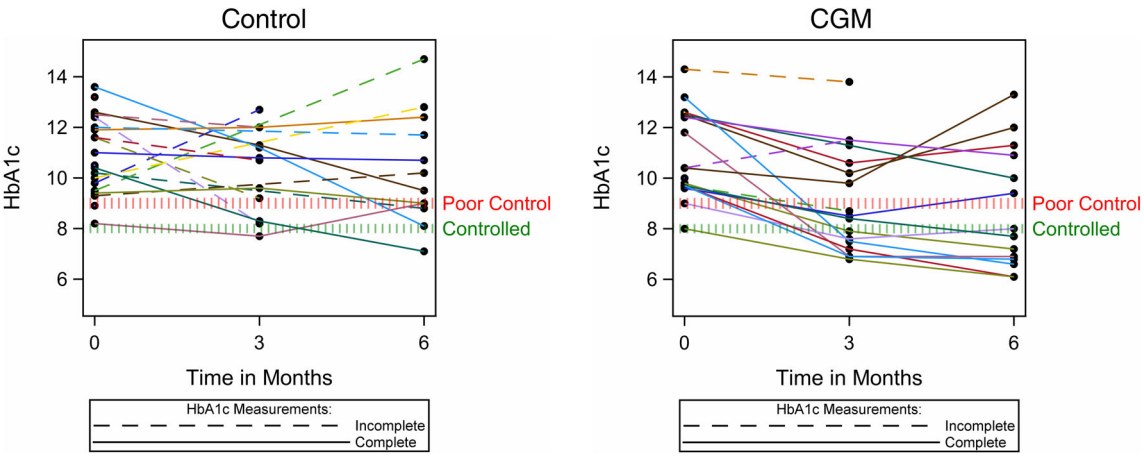


FIGURE 2 Individual patient HbA1c trajectories during CGM pilot. CGM, continuous glucose monitoring; HbA1c, hemoglobin A1c.

from the EHR. The project aimed for a 1% reduction in HbA1c over 6 months, which was achieved by 11 (79%) of the 14 patients who completed the project. One of the remaining three patients achieved a 1.4% reduction shortly after the project ended. The remaining two patients, who did not meet the goal, attended fewer sensor fills and missed multiple follow-up appointments. Patients in the CGM intervention arm had an average of 12 visits (5–18 visits/patient) with the pharmacist team over the 6-month pilot, while patients in the CGM control arm had an average of 1.3 visits (0–6 visits/patient).

The statistical modeling approach allows us to compare the changes within the patient and between intervention groups at each of the multiple time points where the HbA1c was measured. The HbA1c measurements were not statistically different between the two intervention groups at the beginning of the study. The intervention arm had a mean of 0.1% higher ($p = 0.984$) than the control arm, confirming that the two intervention groups had similar measurements at baseline.

At the 3-month measurement, the intervention arm had a statistically significant mean HbA1c reduction of 1.8% ($p < 0.001$, 95% confidence interval [CI]: −2.7 to −0.9). The control had a reduction of 0.6% ($p = 0.278$), but it was not statistically significant. The difference between the two groups of 1.2% at 3 months was not statistically significant ($p = 0.070$) (Figures 2 and 3).

Patients in the intervention arm at their 6-month measurement demonstrated a mean HbA1c reduction of 2% ($p < 0.001$, 95% CI: −3.0 to −1.0) (0-month: 10.9%, 95% CI: 10.1–11.8; 6-month: 8.9%, 95% CI: 8.0–9.9). Conversely, there was no significant change in HbA1c observed in the control group during the same period; an HbA1c reduction of 0.5% ($p = 0.345$, 95% CI: −1.5 to 0.5) (0-month: 10.9%, 95% CI: 10.1–11.7; 6-month: 10.4%, 95% CI: 9.4–11.4). At

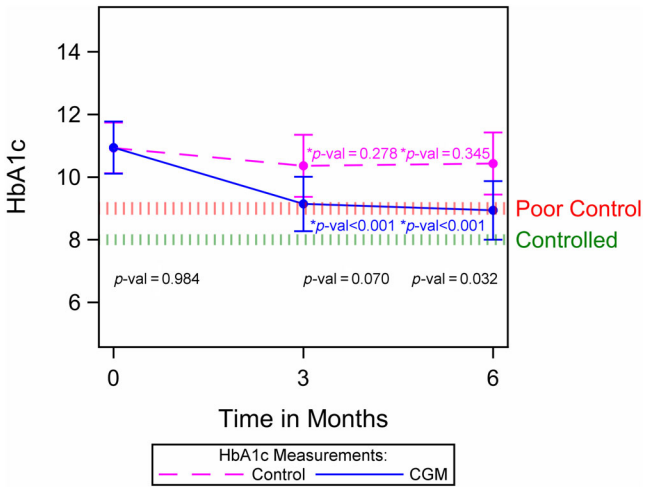


FIGURE 3 Model estimating mean HbA1c values of experimental arms with corresponding 95% confidence intervals. CGM, continuous glucose monitoring; HbA1c, hemoglobin A1c.

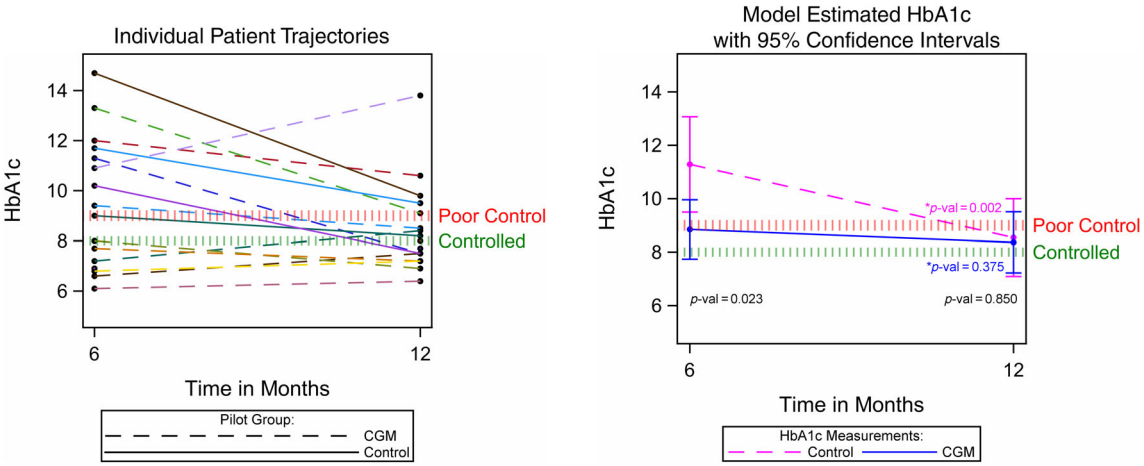


FIGURE 4 Patient HbA1c trajectories 6 months after initial CGM pilot phase. CGM, continuous glucose monitoring; HbA1c, hemoglobin A1c.

6 months, the difference of 1.5% between the two groups was statistically significant ($p = 0.032$) (Figures 2 and 3).

At 6 months since the beginning of the CGM pilot, some patients from the CGM arm continued with the intervention, and some patients from the control arm started the CGM intervention. The measurements of these patients were used to analyze their HbA1c changes between the 6-month timepoint and the 12-month timepoint (Figure 4). Of the 14 patients in the CGM intervention group, 12 continued using the device. One of the two patients who discontinued CGM no longer met the criteria for therapy, as they achieved their HbA1c goals and were no longer prescribed antidiabetic medications. From the control arm, seven patients began CGM, four had CGM recommended but declined, and one patient was deceased.

For this analysis, the 6-month time point became their baseline. At baseline, the two groups (pilot CGM and pilot control) had statistically significantly different values. The pilot CGM group had an HbA1c value of 2.4% lower ($p = 0.023$, 95% CI: −4.5 to −0.3). This was expected because the intervention had been effective in reducing HbA1c values.

At 12 months, the pilot CGM group did not have a significant change compared with their baseline value ($p = 0.375$). The pilot control group had a significant reduction of 2.7% in their HbA1c ($p = 0.002$, 95% CI: −4.6 to −1.0) (6-month: 11.3%, 95% CI: 9.5–13.1; 12-month: 8.5%, 95% CI: 7.1–10.0). The difference at 12 months between the patient groups was 0.2% ($p = 0.850$); the difference was not statistically significant (Figure 4). This means that the patients from the pilot CGM group maintained their lower HbA1c values and that the pilot control patients received a similar reduction in HbA1c values after enrolling in the CGM intervention.

Documentation of hypoglycemia increased significantly ($p < 0.0001$) pre- and post-CGM utilization. Nine of the 14 intervention patients had reports of hypoglycemia before CGM use, with an average of 4 (range = 0–24 events/patient) hypoglycemic events reported in the 6 months prior to pilot initiation. In the post-CGM period, 11 of the 14 patients had reports of hypoglycemia, with an average of 13 (range = 0–50 events/patient) hypoglycemic events reported. There was no discontinuation due to hypoglycemia and/or side effects from CGM in the intervention arm. No difference was seen between pre- and post-hypoglycemic events in the control arm.

Eleven out of the 14 (78.6%) patients in the intervention arm completed the satisfaction and confidence survey at pilot initiation and at the 6-month pilot completion (Table 1). Most ($n = 8$, 72.7%) reported an increase in confidence to manage their blood glucose, with no patients reporting a decrease. Among the three patients who did not report a change, one had consistently scored the maximum of 10 on both surveys.

3.2 | Post-pilot CGM implementation

Eighty-four patients have been enrolled in the pharmacist-driven CGM program since its rollout to clinical care (March 2023 to May 2024). A streamlined process map (Appendix B) was developed to facilitate CGM procurement for patients who did not initially meet the criteria. Most of these patients ($n = 74$, 88.1%) received regular follow-up care from clinical pharmacists. Over a 6-month period following a clinic-wide CGM program, clinical pharmacist visits for diabetes care increased by 39%, from 385 to 627 visits. At the time of data collection, 65 out of the 84 (77.4%) patients had undergone repeat HbA1c assessments, revealing a mean HbA1c reduction of 1.5% ($p < 0.001$, 95% CI: −1.9 to −1.0) (0-month: 10.1%, 95% CI: 9.6–10.5; 6-month: 8.6%, 95% CI: 8.2–9.0) (Figure 5).

4 | DISCUSSION

To our knowledge, this study represents the first description of a pharmacist-driven CGM program implemented specifically within an AI/AN community. This research addresses a critical gap in health care delivery, given the alarming disparities in diabetes prevalence and outcomes within this population. The described pharmacist-driven CGM program addresses this issue by leveraging CGM technology and real-time information to inform clinical decision-making, as well as utilizing pharmacists to support the implementation of the technology.

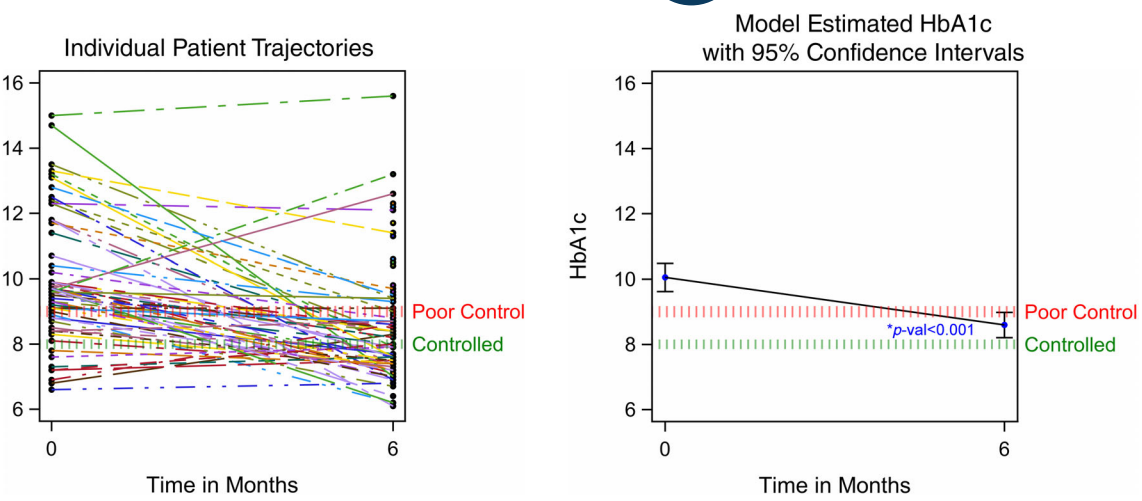


FIGURE 5 Patient HbA1c trajectories in CGM clinical implementation. CGM, continuous glucose monitoring; HbA1c, hemoglobin A1c.

The pharmacist-driven CGM program demonstrated significant benefits for our patient population, many of whom have lived with diabetes for more than a decade, reside in rural areas, and face substantial barriers to accessing health care. Notably, 79% of patients in the intervention group achieved the targeted 1% reduction in HbA1c at 6 months, with an average reduction of 2%. Beyond clinical outcomes, participants reported increased confidence in managing their blood glucose levels, a crucial factor associated with improved diabetes management and outcomes.[24,25] It is difficult to ascertain from this study if increased confidence was related to the technology (CGM), the pharmacist, or the number of visits for those within the program.

The clinical sustainability of our pilot program was affirmed by consistently positive results in post-pilot patient assessments, indicating lasting impact and ongoing benefits of the pharmacist-driven CGM approach. We obtained comparable results in the post-pilot CGM implementation. This provides evidence that the program, within our health center, can be scaled to include a larger number of patients and maintain a positive impact on the patients' HbA1c values.

This study has several limitations that should be acknowledged. The pilot study had a relatively small number of participants, which may limit the statistical power and the ability to generalize the findings to a broader population. The short duration of follow-up may impact internal validity. The study population included insulin-treated patients, limiting generalizability of the results to non-insulin-treated patients. The retrospective nature of the pilot introduces potential biases affecting the comparability of the intervention and control groups. There was also a lack of standardization in the use of antidiabetic agents and non-pharmacological interventions among participants, which could have influenced the outcomes and made it difficult to isolate the effect of the clinical intervention.

Furthermore, missing laboratory data could have potentially impacted our analyses and conclusions. However, the statistical procedures used to analyze the data used all available information and did not drop any patient because they missed a measurement. In general, missing data is not ideal and could potentially impact comparisons between the intervention and control groups. The absence of measurements reduces the robustness of findings and may skew results.

Finally, factors such as securing CGM insurance coverage, patient acceptance, and physician support play critical roles in the feasibility and generalizability of the program. We were able to scale the program to a larger population, given the robustness of our current clinical staffing model, space, and our ability to cover patient CGM costs.

Notwithstanding these limitations, the study suggests the positive impact the pharmacist-driven CGM program had on a patient population with a disproportionately high diabetes prevalence and mortality. This study underscores the importance of access to health care technologies (CGM) to support clinicians in making timely disease management adjustments. Insights of our study have informed the establishment of pharmacist-driven CGM programs in other tribal health clinics, leveraging existing pharmacy resources and benefiting patients at high risk for diabetes-related complications. Future research should focus on refining program scalability, enhancing interprofessional communication, and expanding access to pharmacist-driven diabetes interventions across diverse health care settings.

5 | CONCLUSION

This study demonstrates the significant benefits of a pharmacist-driven CGM program for an underserved AI/AN population with diabetes. Despite the limitations, such as small sample size and short follow-up duration, the findings highlight the potential of such programs to improve health outcomes.

Future research should aim to validate these findings in larger, more diverse populations and explore the long-term sustainability and cost-effectiveness of such interventions.

FUNDING INFORMATION

There was no external funding for this research.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that supports the findings of this study are available in the supplementary material of this article.

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APPENDIX A: SURVEY QUESTIONS

These were asked by the clinical pharmacist at the initial visit after pilot project enrollment and at the 6-month pilot project visit.

1. In the past 6 months, how many times have you had symptoms of low blood sugar or a blood sugar reading <70?
2. On a scale of 1 to 10, with 1 not being confident at all and 10 being very confident:
   - How confident are you in your ability to manage your blood sugars?
   - How satisfied are you with your overall diabetes care?

APPENDIX B: CONTINUOUS GLUCOSE MONITOR PROCUREMENT PROCESS MAP

Obtaining a continuous glucose monitor*. *Patient is responsible for any costs incurred.

