

Qualitative Findings from Participation in the Glycemic Excursion Minimization (GEM) Prediabetes Study

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Background

- ~1.5 million people transition from prediabetes to Type 2 Diabetes (T2D) annually.
- Reducing blood glucose (BG) excursions through lifestyle interventions has shown to be an effective alternative to weight loss and vigorous physical activity in non-pharmacological management of T2D.
- **Glycemic Excursion Minimization (GEM)**, along with continuous glucose monitoring (CGM), is a promising means to preventing or delaying progression of prediabetes to T2D.

Glycemic Excursion Minimization Program

- GEM lifestyle intervention guide:
 - ❖ Foundational diabetes knowledge
 - ❖ Education on how food and activity choices affect BG fluctuations
 - ❖ Minimize BG elevations and hasten BG recovery with personalized lifestyle changes
 - ❖ Motivation and tools to continue changes beyond program
- CGM (FreeStyle Libre 2)
- Text message encouragement
- Daily Diaries
- Website for recipes

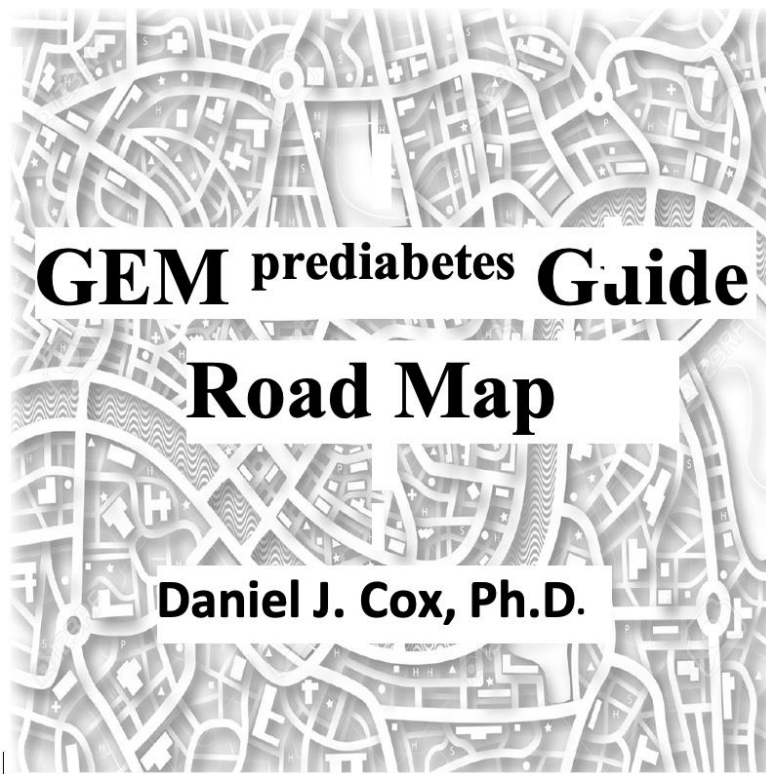


Figure 1. GEM Guide



Figure 2. FreeStyle Libre 2 CGM

Objective

To understand participants' perceptions and experiences of GEM during a primary-care based clinical trial.

Methods

- Participants from a larger 4+ month clinical study were invited to participate in a brief semi-structured interview.
 - ❖ Adults 25-70 years with prediabetes
 - ❖ A1C 6.0-6.4
 - ❖ Not taking diabetes medication or previous diabetes diagnosis

Table 1. Themes and Representative Quotes

Insight, Tangible Health Outcomes, Challenges

- Increased Insight**
 - "I felt like I learned a lot about the food choices I make and how they impact glucose."
 - "The biggest takeaway I had was the impact that movement has on everything."
- Noted decrease in A1C and weight**
 - "I lost significant weight."
 - "This is the intervention that I felt changed my lifestyle and reduced my A1C significantly."
- Lifestyle Change Challenges**
 - "I'm trying to get better at more activity. After dinner, I really don't want to go down and sit on the stationary bike for 30 minutes."

GEM Guide

- Foundational knowledge of prediabetes**
 - "Unit 1 gave me a foundational knowledge to be able to build on for the rest of the program."
 - "It was sort of baseline information that I feel like I should have learned earlier in life."
- Understanding of diet, exercise and blood glucose relationship**
 - "Unit 2 did a good job explaining the connection between increased physical activity and reduction in [blood glucose] spikes."
 - "It just made me more aware of foods I wouldn't think about causing diabetes."
- Motivational Tool**
 - "It just really laid a good foundation for why it should be a lifestyle and why to keep going."
- Request for Digital Version**
 - "The [only improvement] I can think of is having an online parallel."

Study Features

- Enjoyed CGM and real time feedback**
 - "Just knowing what your blood sugar is throughout the different times of the day is invaluable."
 - "Using a CGM gives you such a different view of what is actually happening when you eat and exercise."
- Enjoyment of Text Message Reminders**
 - "[The text messages] were like good little reminders for the day."
- Some criticisms for practicality of the diaries and website**
 - "I used my own little book just because it was a little bit bigger and I could write more down."
 - "I found some of the [website resources] to be helpful, and some kind of generic."

Participant Enjoyment and Support

- Enjoyed Participation**
 - "I'm grateful for the program. I learned a lot. I had great results."
- Felt supported**
 - "I thought it was easy to contact people if I had a question. My appointments were really informative."
- Would recommend to others**
 - "It was really beneficial. And I've been telling everyone about it too."
 - "I've recommended it to a couple of my friends. And I really think if you could catch people before they're full blown Type 2 [diabetes], it would be beneficial for most people."

Interview Guide

- Questions were related to participant **perceptions** and **experiences** of using the GEM guide and participating in the study:
 - ❖ Positive and negative experiences
 - ❖ Reflections on GEM guide
 - ❖ Utility of diaries, text messages and website
 - ❖ Suggestions

Table 2. Participant Demographics (n=16)

Characteristics	(n=16)	
Age – year		
Mean ± SD	63.1 ± 7.5	
Range	48-71	
Sex – n (%)		
Male	2 (12)	
Female	14 (88)	
Race/Ethnicity – n (%)		
White, non-Hispanic	14 (88)	
Hispanic	1 (6)	
Black	1 (6)	
Glycated Hemoglobin	Baseline	Post Intervention
Mean ± SD	6.14 ± 0.12	5.9 ± 0.22 *
Range	5.9-6.5**	5.4-6.2
Body Mass Index – %		
Mean ± SD	31.3 ± 7.5	28.6 ± 7.1 *
Range	19.4-47.5	19.4-44.7

Discussion

- Participants:
 - ❖ Found it **educational, motivating** and **easy to follow**
 - ❖ Noted **decrease** in A1C and weight
 - ❖ **Enjoyed** real-time feedback of CGM
 - ❖ **Would recommend** program to others
- Suggestions: Offer digital GEM guide and diary alternatives, simplify website information, minimize errors with CGM sensors
- Small pilot study with lack of participant racial/ethnic diversity; data may not be broadly generalizable.
- Future goal is to culturally adapt the GEM program for other populations.
- Could support widespread application of CGM + lifestyle guide use for people with prediabetes