Treating Early Type 2 Diabetes by Reducing Postprandial Glucose Excursions: A Paradigm Shift in Lifestyle Modification

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Background

- **Type 2 diabetes (T2D)** is a costly, worldwide epidemic.
- Typical management involves complicated medication regimens, which can create **challenges** with respect to **adherence, cost, and side-effects**.
- Up to 50% of adults with T2D do not meet glycemic targets, despite the continued development of new pharmacologic interventions.
- Lifestyle interventions that focus on **diet and exercise** can help with diabetes management by **reducing** post-nutrient blood glucose and **improving** metabolic control, risk for cardiovascular disease, depression, empowerment, and diabetes distress.

Objective

To evaluate a lifestyle intervention, Glycemic Excursion Minimization (GEM), in patients newly diagnosed with T2D.

Glycemic Excursion Minimization (GEM)

Promotes eating low glycemic load foods to reduce post-nutrient blood glucose (BG) excursions and increasing physical activity to hasten blood glucose recovery.

Educating	Empowering	Choosing
patients regarding how their choices impact both their current and future BG fluctuation	individuals to make choices in the timings, amounts, and types of foods that diminish BG elevations	types, amounts, and timings of physical activities that hasten the recovery of BG excursions

Modification of both diet and exercise can reduce blood glucose and insulin resistance.

GEM is a lifestyle program that has the potential to improve clinical and psychosocial outcomes while reducing healthcare costs.

Preliminary Demographics

	n=37
Age, mean (SD)	59.1 (12)
A1c, mean (SD)	6.5 (0.7)
Gender, n (%)	
Male	13 (35)
Female	24 (65)
Ethnicity	
Hispanic	4 (11)
Non-Hispanic	32 (86)
Unknown	1 (3)
Race	
White	34 (92)
Black or African American	1 (3)
More than on Race	2 (5)

Recruitment

- Adults 30-80 years with type 2 diabetes (A1c 6.5-11%)
- Newly diagnosed with T2D (<=24 months)
- Recruitment methods include: referrals from medical practices, social media campaigns, gym flyers, patient research fairs, medical campus flyers, and lab registries

Randomized Control Trial

Routine Care (RC) n=100 participants	**RC + Glycemic Excursion Minimization** (RC + GEM) n=100 participants
Pre-Assessment: Clinical, Behavioral, Psychological	
• **Diabetes medication** (daily dosage) • **Visit with personal physician** (as needed)	• **GEM Guide: 4 chapters** (6 weeks, self-administered) • **CGM (Dexcom 7)** • **Personalized text messaging** • **GEM Supplement (online/text)**
4.5-month Post-Assessment: Clinical, Behavioral, Psychological, Fiscal	
13.5-month Post-Assessment: Clinical, Behavioral, Psychological, Fiscal	

Main outcomes: change in A1c and change in diabetes medication
Secondary outcomes: Diabetes Knowledge Scale, carbohydrates routinely consumed, physical activity, cardiovascular risk, health-economics, improvement in diabetes empowerment, and BMI

Lessons Learned and Conclusions

- GLP-1 medications created a challenge for recruitment by rapidly and significantly lowering A1c levels.
- To increase a diverse representation, eligibility requirements were adjusted by raising the A1c threshold from 9% to 11% and extending the diagnosis window from 12 months to 24 months.
- Continued efforts are needed to engage diverse participants.
- Future directions include reaching a broader patient population by opening recruitment nationwide and offering virtual visits.

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