



A Dual-Site Randomized Study Evaluating Patient Counseling Performance After a Hands-on Continuous Glucose Monitoring Experience

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KEY POINTS

- Pharmacists play an integral role in guiding patients through the set-up and use of continuous glucose monitoring (CGM) technology. However, there is currently a gap in educating student pharmacists about CGM technology.
- A randomized controlled study demonstrated that student pharmacists who wore a CGM device had a greater improvement in their scores for counseling on a CGM device prescription and their confidence related to CGM, compared to student pharmacists who did not wear a CGM device.
- To better prepare student pharmacists for practice, the results of this study support the incorporation of laboratory sessions that provide hands-on experience regarding the use of CGM technology.

METHODS

Primary Objective

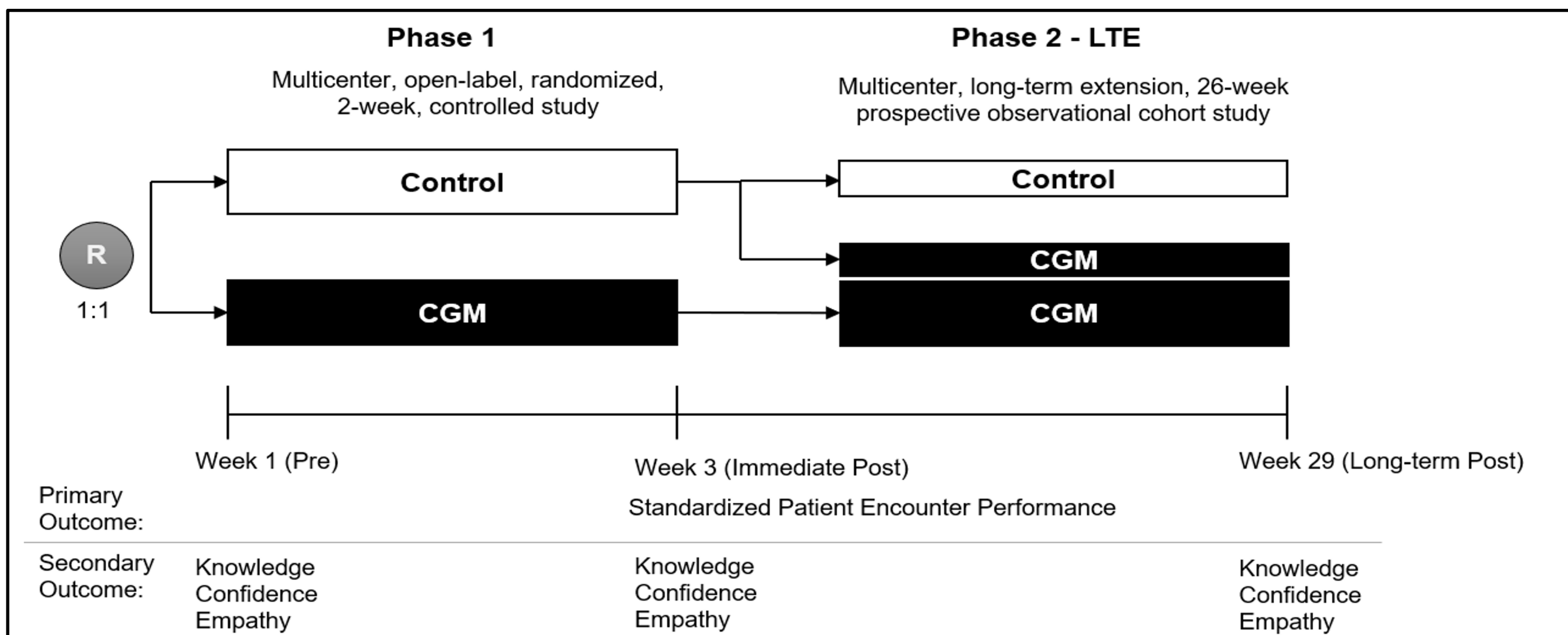
- To examine the impact of providing student pharmacists with the opportunity to wear a CGM device on their performance in counseling a standardized patient (SP) with a prescription for a new CGM device

Secondary Objective

- To examine the impact of providing student pharmacists with the opportunity to wear a CGM device on knowledge, confidence, and empathy levels related to CGM

- **Study design:** Prospective, randomized, controlled study conducted at two institutions during fall 2022.
- **Randomization schema:** In each schools' patient skills laboratory, lab sections were randomized for students to wear a CGM device for 2 weeks (intervention) versus not (control).
- **Outcome assessments:** Surveys before (pre) and immediately after (immediate-post) this 2-week activity.
- **Statistical analysis plan:** Univariate linear regression for continuous variables and univariate logistic regression for categorical variables.

Figure 1. Study Design for Phases One (Short-term) and Two (Long-term)



Week 1 Laboratory Session Schedule

Minutes	Activity and Description
30	Introduction to CGM study and pre-survey administration
20	Interactive CGM lecture on below objectives: <ul style="list-style-type: none"> • Explain the role of CGM in patient care • Compare and contrast different types of CGM devices • Counsel on placement, alarms, and obtaining data
10	Manufacturer videos and live demos (G6 and Libre 2)
30	Place CGM sensor on self and set up phone app receiver (intervention group only); practice counseling in pairs (all)
25	Interactive CGM lecture on below objective: <ul style="list-style-type: none"> • Identify CGM-related goals of therapy
Total ~ 120 minutes	

• **Week 2 SP training:** SPs were trained per each school's best practice and were given an example video to grade.

Week 3 Laboratory Session Schedule

Minutes	Activity and Description
20	Immediate-post survey administration
~20	SP encounter on below objectives: <ul style="list-style-type: none"> • Counsel a patient on the appropriate technique for CGM sensor placement • Explain what typical CGM alarms are and assist patients in personalizing their CGM alarms • Advise patients on best practices for wearing a CGM device, such as frequency of scanning an intermittently scanned CGM and strategies to reduce the risk of the sensor falling off
	SP encounter timing: <ul style="list-style-type: none"> • Read door prompt + encounter: 12 minutes • SP scoring: 3 minutes • SP feedback: 3 minutes • Room disinfection: 1 minute
Total ~ 40 minutes	

RESULTS

- 63 of 86 students (73%) from both institutions consented to this study (32 intervention and 31 control).
- Demographic characteristics were similar between the intervention and control groups (i.e., age, gender, race, pharmacy experience, and previous experience with CGM).

Table 1. Primary and Secondary Outcome Results

	Total (N=63)	Intervention (n=32)	Control (n=31)	P-value
SP counseling total score, % (SD)	80.0 (9.3)	82.4 (8.8)	77.7 (9.4)	0.046
Overall confidence score (SD) ^a	2.0 (1.1)	2.3 (1.0)	1.7 (1.1)	0.020
Overall knowledge score (SD) ^b	1.4 (2.2)	1.5 (2.2)	1.2 (2.2)	0.55
Overall empathy score (SD) ^c	3.7 (12.2)	4.6 (11.2)	2.7 (13.3)	0.55

^aBetween-group change difference between pre and post of the confidence level using mean of 12 items, in which each item used a 5-point Likert scale rating of confidence from 1=not at all confident to 5=very confident

^bBetween-group change difference between pre and post of the knowledge level using sum of 12 items, in which each item was graded as binary outcome of 0=incorrect and 1=correct; the summed range for both pre-post values were 0-12

^cBetween-group change difference between pre and post of the empathy level using mean of 14 items with Likert scale 1-7, where 1=unnecessary and 7=extremely necessary for #1-7 and where 1=does not describe me and 7=describes me very well for #8-14

DISCUSSION

Strengths

- Focus on assessing the impact of wearing a CGM device on the performance of student pharmacists in counseling an SP with a new CGM prescription.
- Objective scoring rubrics used to evaluate counseling performance, providing a standardized and measurable assessment.

Limitations

- Lack of blinding, which may introduce bias as participants are aware of the group assignments.
- Small sample size, which may render the study underpowered to detect a statistically significant difference between groups in knowledge and empathy scores.

ACKNOWLEDGEMENTS: Authors would like to acknowledge Lauren Haggerty and Ashley Moody for their help with the initial study planning.

DISCLOSURE: Authors have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.

FUNDING: This study was supported by a National Association of Chain Drug Stores Foundation Innovation & Diversity in Pharmacy Education Grant