

Usability and Teachability of Continuous Glucose Monitoring (CGM) Devices in Older Adults and Diabetes Educators: a Task Analysis and Ease of Use Survey

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Background

It is important for diabetes technology to be easy to use. Ease of use can increase adoption of CGM, particularly in older adults. Recent studies have demonstrated improved glycemic outcomes with the use of CGM in older adults.¹⁻²

Objective

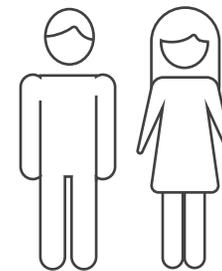
The purpose of this study was to evaluate the ease of use of Dexcom G7 CGM in older adults (≥65) and diabetes educators.

Study Outcomes Measured

- To assess if older adults found G7 easy to setup;
- To assess if CDCESs found G7 easier to train on than other CGM systems they worked with.

*The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: The authors are employees and stockholders of Dexcom, Inc.
1. Pratley RE, Kanapka LG, Rickels MR, Ahmann A, Aleppo G, Beck R, et al. Effect of continuous glucose monitoring on hypoglycemia in older adults with type 1 diabetes: A randomized clinical trial. JAMA. 2020 Jun 16;323(23):2397-406. PMID: 32543682. doi: 10.1001/jama.2020.6928.
2. Miller KM, Kanapka LG, Rickels MR, Ahmann AJ, Aleppo G, Ang L, et al. Benefit of Continuous Glucose Monitoring in Reducing Hypoglycemia Is Sustained Through 12 Months of Use Among Older Adults with Type 1 Diabetes. Diabetes Technol Ther. 2022 Jun;24(6):424-34. PMID: 35294272. doi: 10.1089/dia.2021.0503.

Participant Eligibility & Study Design



20
Participants



10 CGM-naïve older adults (≥65), avg age 69.7 and 10 CDCES†



T2D on Multiple Daily Injections (MDI)



Only in-box & in-app instructions used



Both groups completed post test survey. Patients also completed System Usability Scale‡ (SUS) survey



Usability Study:

- set up app
- insert sensor on themselves
- connect sensor to app
- complete post test survey

Task Analysis:

- evaluate fifth-, sixth-, and seventh generation CGM Systems
- Identify tasks required to complete sensor insertion



Both cohorts completed post test surveys
CGM-naïve patients also completed SUS survey

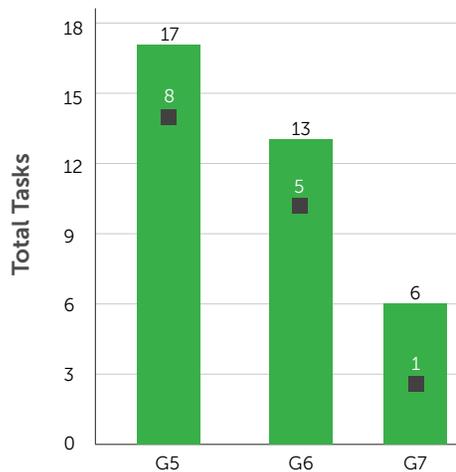
† Certified Diabetes Care and Education Specialist
‡ Brooke J. SUS: A quick and dirty usability scale. Usability Eval Ind. 1995 Nov 30;189.

Results

All CGM-naïve, older adult participants and CDCES participants successfully completed G7 app setup and sensor insertion. Time on task was recorded from the start of app setup through onboarding completion (including sensor insertion). Sensor insertion time was also recorded, with insertion time ranging from 58 seconds to three minutes (average = 1.95 minutes).³

Main Outcomes

Task analysis



92.8

System Usability Scale score (0-100)[‡]

Getting started on G7 is about half the steps of getting started on G6.³

■ Potential unrecoverable use errors[‡]

Average total setup time

12.6_{min}

CGM-naïve older adults (9-18 min)

7.15_{min}

CDCES (6-9 min)

- All participants in both cohorts successfully completed sensor insertion and app setup.
- Both groups reported overall high usability of Dexcom G7 App setup and sensor insertion.³

KEY TAKEAWAYS

- First ease of use study of Dexcom G7 RT-CGM.
- G7 sensor was easier to insert and set up and had fewer potential unrecoverable use errors compared to previous generations of the device.⁴
- Ease of use can improve utilization of CGM in older adults. Increased use of CGM in this population can lead to improved glycemic outcomes.⁵⁻⁶

[‡] Bangor A, Kortum P, Miller J. Determining what individual SUS scores mean: adding an adjective rating scale. J Usability Studies. 2009;4(3):114-23.

³ Psavko S, Katz N, Mirchi T, Green CR. Usability and teachability of continuous glucose monitoring devices in older adults and diabetes educators: a task analysis and ease of use survey. JMIR Hum Factors. 2022 Nov 8. doi: 10.2196/42057.

⁴ Welsh JB, Psavko S, Zhang X, Gao P, Balo AK. Comparisons of Fifth-, Sixth-, and Seventh- Generation Continuous Glucose Monitoring Systems. J Diabetes Sci Technol. 2022 Jun 13;19322968221099879. PMID: 35695305. doi: 10.1177/19322968221099879.

⁵ Pratley RE, Kanapka LG, Rickels MR, Ahmann A, Aleppo G, Beck R, et al. Effect of continuous glucose monitoring on hypoglycemia in older adults with type 1 diabetes: A randomized clinical trial. JAMA. 2020 Jun 16;323(23):2397-406. PMID: 32543682. doi: 10.1001/jama.2020.6928.

⁶ Miller KM, Kanapka LG, Rickels MR, Ahmann AJ, Aleppo G, Ang L, et al. Benefit of Continuous Glucose Monitoring in Reducing Hypoglycemia Is Sustained Through 12 Months of Use Among Older Adults with Type 1 Diabetes. Diabetes Technol Ther. 2022 Jun;24(6):424-34. PMID: 35294272. doi: 10.1089/dia.2021.0503.

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