

NURS-FPX4025 Assessment 1

Analyzing a Research Paper

Critical Appraisal of Continuous Glucose Monitoring Research

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Clinical focus	Type 2 diabetes mellitus and continuous glucose monitoring
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Educational sample notice

This original model demonstrates one strong way to organize the assessment. It is not an official Capella University document. Learners must use the current courseroom instructions, their own simulation evidence, their own presentation recording, and their own clinical judgment.

Primary keyword: NURS-FPX4025 Assessment 1 Analyzing a Research Paper

Related keywords: research article analysis, type 2 diabetes evidence, continuous glucose monitoring, randomized clinical trial, research credibility, evidence hierarchy

Research Evidence and Simulation Context

Public sample reconstruction - replace with learner evidence

The official task requires a screenshot of the selected Sentinel U patient and a screenshot of the research article abstract. This public sample does not reproduce proprietary simulation screens or a copyrighted abstract image. A learner should replace this panel with their own two screenshots before submission.

Selected diagnosis	Article evaluated
Type 2 diabetes mellitus with persistent hyperglycemia The selected adult patient uses basal insulin but continues to have glucose values above the individualized target. The central nursing concern is whether a monitoring method that shows glucose trends can support safer self-management and treatment adjustment.	Martens et al. (2021) <i>Effect of Continuous Glucose Monitoring on Glycemic Control in Patients With Type 2 Diabetes Treated With Basal Insulin: A Randomized Clinical Trial</i> JAMA, 325(22), 2262-2272. https://doi.org/10.1001/jama.2021.7444

Article Evaluation Matrix

Criterion	Evaluation
Type of study	Quantitative, multicenter randomized clinical trial. Random assignment created comparable intervention and control groups and allowed the investigators to test whether CGM caused better glycemic outcomes than blood glucose meter monitoring.
Evidence level	High-level experimental evidence. A single randomized controlled trial is commonly placed near the top of an intervention evidence hierarchy, below systematic reviews or meta-analyses of multiple RCTs.
Methodology	The trial enrolled 175 adults receiving primary care at 15 U.S. centers. Participants used basal insulin without prandial insulin and were assigned 2:1 to CGM (n = 116) or blood glucose meter monitoring (n = 59). The primary outcome was HbA1c at eight months; secondary outcomes included time in range, time above 250 mg/dL, and mean glucose.
Credibility factors	The article was peer reviewed and published in JAMA. The authors represented recognized academic and clinical centers. The protocol, trial registration, eligibility criteria, statistical methods, adverse events, funding, conflicts, and supplementary analyses were disclosed. A multicenter design, prespecified outcomes, and confidence intervals strengthen credibility.
Relevance to diagnosis	The population closely matches adults with type 2 diabetes whose glucose remains poorly controlled while using basal insulin. The intervention provides trend data and alerts that may help the patient recognize meals, missed medication, and patterns of hyperglycemia.
Workplace application	Nurses can use the findings to support shared decisions about CGM, teach sensor placement and alert response, review ambulatory glucose profiles, reinforce medication and nutrition plans, and escalate persistent hyperglycemia to the prescriber.

Summary of Findings

The selected article is credible and clinically useful because its research question, population, intervention, comparison, and outcomes are clearly defined. Martens et al. (2021) asked whether CGM improves glycemic control for adults with poorly controlled type 2 diabetes treated with basal insulin but not mealtime insulin. That question is directly relevant to primary care, where many adults use a less intensive insulin regimen yet continue to have elevated HbA1c values.

The methodology supports a cause-and-effect conclusion more strongly than an observational study would. Participants were randomly assigned to CGM or traditional blood glucose meter monitoring, and the trial followed them for eight months. HbA1c decreased by 1.1 percentage points in the CGM group and by 0.6 percentage points in the comparison group. Participants using CGM also spent more time between 70 and 180 mg/dL and less time above 250 mg/dL. These outcomes are clinically meaningful because they show both improved average control and fewer prolonged periods of marked hyperglycemia.

Several factors strengthen credibility. JAMA is a peer-reviewed medical journal. The study was conducted at 15 centers, the trial was registered, and the report explained the sample, intervention, statistical analysis, missing data approach, adverse events, and funding. The researchers reported adjusted differences and 95% confidence intervals rather than relying only on p values. Supplementary tables allowed readers to inspect subgroup and sensitivity analyses. These features make the methods transparent and the conclusions easier to verify.

The trial also has limitations. Participants and clinicians could not be blinded to the monitoring device. The sample was smaller than many medication trials, the allocation ratio produced a relatively small control group, and follow-up lasted eight months. Device-company support creates a potential conflict that readers should consider even though disclosures were provided. The trial measured glycemic outcomes rather than long-term microvascular or cardiovascular complications. Therefore, the findings support improved glucose control but do not prove that CGM alone prevents every long-term complication.

The evidence can be applied in nursing practice through careful patient selection and education. A nurse should assess the patient's vision, dexterity, health literacy, smartphone access, insurance coverage, readiness to respond to alerts, and ability to confirm readings when symptoms do not match the sensor. Teaching should include sensor use, interpretation of trend arrows, hypoglycemia treatment, medication safety, and when to contact the diabetes team. The nurse should review time in range and recurring patterns with the patient instead of treating every single value as an emergency.

Overall, the article offers strong evidence that CGM can improve glycemic control for adults with type 2 diabetes using basal insulin. It is credible, relevant to the selected diagnosis, and useful for a practice setting that can provide training and follow-up. The most defensible application is not simply to hand the patient a device, but to combine CGM with individualized education, structured data review, and coordinated treatment adjustment.

Practice Recommendation

Recommended decision: Offer a time-limited CGM trial to eligible adults with type 2 diabetes who use basal insulin and remain above their individualized glycemic goal. Pair the device with nurse-led onboarding, teach-back, a two-week data review, and prescriber follow-up. Evaluate HbA1c, time in range, hypoglycemia, patient confidence, and access barriers before continuing long-term use.

References

- American Diabetes Association Professional Practice Committee for Diabetes. (2026). 7. Diabetes technology: Standards of Care in Diabetes-2026. *Diabetes Care*, 49(Supplement 1), S150-S165. <https://doi.org/10.2337/dc26-S007>
- Martens, T., Beck, R. W., Bailey, R., Ruedy, K. J., Calhoun, P., Peters, A. L., Pop-Busui, R., Philis-Tsimikas, A., Bao, S., Umpierrez, G., Davis, G., Kruger, D., Bhargava, A., Young, L., McGill, J. B., Aleppo, G., Nguyen, Q. T., Orozco, I., Biggs, W., ... Bergenstal, R. M. (2021). Effect of continuous glucose monitoring on glycemic control in patients with type 2 diabetes treated with basal insulin: A randomized clinical trial. *JAMA*, 325(22), 2262-2272. <https://doi.org/10.1001/jama.2021.7444>
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Assessment Coverage Map

This table shows where the sample addresses the major assessment expectations.

Requirement	Location in Sample
Identify a diagnosis from the simulation and a related scholarly article.	Research Evidence and Simulation Context
Identify the study type, evidence level, and methodology.	Article Evaluation Matrix
Analyze factors that contribute to article credibility.	Article Evaluation Matrix and Summary of Findings
Explain relevance to the diagnosis and current practice.	Summary of Findings and Practice Recommendation
Provide screenshots of the patient and abstract.	Public sample reconstruction note identifies exactly what the learner must replace.