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# Prevalence of Hypoglycemia Induced by Overtreatment in Elderly Type Two Diabetics Using Continuous Blood Glucose Monitors



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## Introduction

Type II diabetics typically check their blood glucose levels by pricking their finger and using a monitoring device. Continuous glucose monitoring (CGM) has become more popular, allowing patients to wear a sensor that records glucose levels and sends the data to a smartphone or device. Limited research exists on the effects of CGM combined with antihyperglycemic medications in Type II diabetics over 65 years old who live independently.

## Literature Review

### Category 1: Benefits of using CGM Devices versus Self-Manual Blood Glucose Monitoring

Key Points: Using continuous glucose monitors is beneficial because it has shown signs of increase in self-care behavior, decrease in hemoglobin A1C, and the ability to detect hypoglycemia through the night as compared to manually monitoring one's blood glucose.

### Category 2: Factors that induce Hypoglycemia

Key Points: Other factors such as exercise, use of ACE inhibitors, prolonged fasting, and alcohol use has shown to increase the prevalence of hypoglycemia.

## Research Objective/Question

To examine devices that monitor BG continuously compared to devices that monitor BG with periodic finger sticks. Are elderly patients with Type II Diabetes who live independently and use these devices, disproportionately affected by hypoglycemic episodes induced by over-treatment with anti-diabetic drugs?

## Study Design

Prospective longitudinal observational survey to gather data on prevalence of hypoglycemia in independent, Type II diabetics  $\geq 65$  years old while using CGM devices and antidiabetic medications.

### Length of Study:

Each observational period will last a total of 14 days which is approximately the length of time a CGM sensor lasts.

### Population/Sample:

- Type II diabetics
- $\geq 65$  years old
- Live independently
- Use CGM devices
- Prescribed antihyperglycemic medications

### Sample size:

100 participants

### Exclusion criteria:

- Pregnant
- Known coagulopathies
- Anticoagulant therapy
- impaired skin integrity

### Procedure:

Prior to study, participants will be educated on signs and symptoms of hypoglycemia and will be asked to report whenever their blood glucose is not within normal limits. Participants will be asked to keep a daily log of diet, physical activity and medication therapy. Self-manual finger sticks will be taken four times a day to confirm accuracies of CGM.

## Analysis

Results of this research will be analyzed at the end of each 14-day period in order to assess patterns. Results will be analyzed with descriptive statistics.

## Conclusion

The results of this review and proposed study will provide information for nursing on risks and benefits of using CGM for those that are above 65 and live alone. Secondly, accuracy of CGM devices will be checked.

## References

Bouillet, B., Tschertter, P., Vaillard, L., Nonciaux, C., Hourdain, P., Ravier, A., Rouland, A., Petit, J. M., Vergès, B., & Quilot, E. (2021). Frequent and severe hypoglycaemia detected with continuous glucose monitoring in older institutionalized patients with diabetes. *Age & Ageing*, 50(6), 2088–2093. <https://doi.org/10.1093/ageing/afab128>

## IRB

This research proposal will seek IRB approval



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