

Postprandial Glucose Monitoring Further Improved Glycemia, Lipids, and Weight in Persons with Type 2 Diabetes Mellitus Who Had Already Reached Hemoglobin A1c Goal

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Abstract

Background:

Postprandial hyperglycemia contributes to poor glucose control and is associated with increased cardiovascular risk in type 2 diabetes mellitus (T2DM). The objective of the study was to determine the effect of postprandial self-monitoring of blood glucose (pp-SMBG) on glucose control, lipids, body weight, and cardiovascular events.

Method:

Subjects with T2DM hemoglobin A1c (A1C) between 6.5 to 7.0% were randomized into the study group (at least two pp-SMBG a day and dietary modification based on glucose readings) and control group (dietary modification based on glucose readings but no mandatory pp-SMBG) for a 6-month, observational study. Oral antidiabetic drugs or insulin regimen was unchanged in either group if A1C remained less than 7.0% during the study. End points included A1C, lipids, body weight, and cardiovascular events.

Results:

One hundred sixty-nine subjects, mean age 63 years, and body weight 88 kg were recruited. Hemoglobin A1c, weight, low-density lipoprotein (LDL), and triglycerides (TGs) were similar in the groups at baseline. By the end of 6 months, A1C (6.7 ± 0.1 to $6.4 \pm 0.1\%$, $p < .05$), body weight (88.5 ± 7.3 to 85.2 ± 6.3 kg, $p < .05$), LDL (92.3 ± 28.4 to 81.1 ± 22.6 mg/dl, $p < .05$), and TGs (141 ± 21 to 96 ± 17 mg/dl, $p < .05$) decreased in the study group, but did not change in the control group. No cardiovascular events were observed in either group during the 6-month study period.

Conclusions:

In T2DM subjects who had already reached their A1C goal, pp-SMBG at least twice a day was associated with further improvement in glycemia, lipids, and weight, as well as exercise and dietary habit. We assume that lifestyle modification promoted by postprandial hyperglycemia awareness may underlie these findings. These results substantiate the importance of implementing pp-SMBG into lifestyle modification, and emphasize that pp-SMBG is critical in the control of T2DM.

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Abbreviations: (ADA) American Diabetes Association, (A1C) hemoglobin A1c, (LDL) low-density lipoprotein, (PPBG) postprandial blood glucose, (pp-SMBG) postprandial self-monitoring of blood glucose, (SD) standard deviation, (T2DM) type 2 diabetes mellitus, (TG) triglyceride

Keywords: lifestyle modification, postprandial glucose monitoring, postprandial hyperglycemia, type 2 diabetes mellitus

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