

Self-Monitoring of Blood Glucose in Patients with Insulin-Treated Type 2 Diabetes Mellitus

Kyung-Soo Kim

Department of Internal Medicine, CHA Bundang Medical Center, CHA University, Seongnam, Korea

Knowing the blood glucose level is very important to achieve optimal glucose control in patients with diabetes [1]. To do this, blood glucose level or glycosylated hemoglobin (HbA1c) can be checked in hospitals, by self-monitoring of blood glucose (SMBG), or using devices for glucose monitoring system at home. However, it is difficult to manage blood glucose level as it constantly changes and thus varies from the result from hospitals. In addition, continuous glucose monitoring system or flash glucose monitoring system is very effective and comfortable to patients with diabetes, but its use is not easy due to the high cost and low accessibility [2]. SMBG is an easy and convenient method for glucose monitoring in patients with diabetes [3]. Several studies have demonstrated a strong correlation between SMBG and glycemic control in patients with both type 1 diabetes mellitus and type 2 diabetes mellitus (T2DM) [4-7].


Although it is already well-known that SMBG is important for improving glucose control, it is infrequently used by patients with diabetes due to pain and inconvenience. Besides these factors, its economic aspect is also a major issue that is often neglected. In Korea, a nationwide reimbursement program for SMBG for insulin-treated T2DM patients was introduced in November 2015 [8]. The supplies were expanded to include blood glucose test strips, lancets, insulin syringes, and pen needles. This policy is expected to relieve economic burden and improve glycemic control in the beneficiaries.

Song et al. [8] investigated whether this new reimbursement program for SMBG has improved the glycemic control in pa-

tients with insulin-treated T2DM. Compared to baseline (HbA1c, $8.5\% \pm 1.3\%$), significantly decreased HbA1c ($8.2\% \pm 1.2\%$) was observed at the end of follow-up (median, 6.1 months). Baseline HbA1c and fasting serum glucose levels showed moderate-to-strong inverse correlations with changes in HbA1c ($r = -0.694$, $P < 0.001$; $r = -0.349$, $P < 0.001$, respectively). These results are in agreement with previous studies [4,5]. Interestingly, T2DM patients supported by the Medical Aid Program were about 2.5-fold more likely to show an improvement in HbA1c levels compared to patients with Medical Insurance (odds ratio, 2.459; 95% confidence interval, 1.138 to 5.314; $P = 0.022$). Considering that the Medical Aid Program is provided for low-income individuals as a part of social welfare programs, we could assume that economic burden is one of the major hurdles for SMBG.

Because they did not analyze the actual frequency of SMBG before and after the reimbursement, the authors could not confirm that reimbursement for SMBG increased the frequency of use. Furthermore, in future studies, long-term benefits should be assessed since this study analyzed glucose level for only 6 months after the initiation of reimbursement for SMBG. However, this study provides evidence that policies for diabetes could effectively improve glycemic control in patients with diabetes. Improving glycemic control in patients with diabetes is very important to the nation because it not only helps patients but also helps to lower healthcare costs related to diabetes.

Until now, there have been debates regarding whether SMBG

Corresponding author: Kyung-Soo Kim  <https://orcid.org/0000-0002-7738-2284>
Department of Internal Medicine, CHA Bundang Medical Center, CHA University,
59 Yatap-ro, Bundang-gu, Seongnam 13496, Korea
E-mail: kks982@hanmail.net

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is beneficial for patients with non-insulin-treated T2DM [9-12]. Several studies have shown that if SMBG is properly implemented, it could improve HbA1c in patients with non-insulin-treated T2DM [13-15]. Because proper education and economic support is important for patients with diabetes to regularly perform SMBG, reimbursement program for SMBG will also help patients with non-insulin-treated T2DM in Korea. I will look forward to expanding this reimbursement program to all patients with diabetes.

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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