Establishment of Blood Glucose Monitoring System Using the Internet

HYUK-SANG KWON, MD; JAE-HYOUNG CHO, MD; HEE-SOO KIM, MD; BOK-RE SONG, RN; SEUNG-HYUN KO, MD, PHD; JUNG-MIN LEE, MD; SUNG-RAE KIM, MD, PHD; SANG-AH CHANG, MD, PHD; HEE-SEUNG KIM, RN, PHD; BONG-YUN CHA, MD, PHD; KWANG-WOO LEE, MD, PHD; HO-YOUNG SON, MD, PHD; JIN-HEE LEE, MS; WON-CHUL LEE, MD, PHD; KUN-HO YOON, MD, PHD

OBJECTIVE—The Internet is used worldwide as a communication tool. To improve the quality of diabetes control, we investigated the effectiveness of an Internet-based blood glucose monitoring system (IBGMS) on controlling the changes in HbA1c levels.

RESEARCH DESIGN AND METHODS—We conducted a randomized clinical trial involving 110 patients who visited the outpatient clinic at the Kangnam St. Mary’s Hospital for 3 months. The study subjects were treated with IBGMS for 12 weeks, and the control group received the usual outpatient management over the same period. HbA1c and other laboratory tests were performed twice, once at the beginning of the study and again at the end of the study.

RESULTS—The test results from the beginning of the study established that there were no significant differences between the two groups with respect to age, sex, diabetes duration, BMI, blood pressure, HbA1c, and other laboratory data. On follow-up examination 12 weeks later, HbA1c levels were significantly decreased from 7.59 to 6.94% within the intervention group (P<0.001). At the end of the study, HbA1c levels in the intervention group were significantly lower than in the control group after adjusting the baseline HbA1c (6.94 vs. 7.62%; P < 0.001, respectively). Among patients with baseline HbA1c <7.0%, the patients in the intervention group had lower HbA1c than those in the control group (6.38 vs. 6.99%; P < 0.05). Among the patients with a baseline HbA1c ≥7.0%, the difference between the two groups appeared more obvious: HbA1c levels at the end of the study were 8.12%.

CONCLUSIONS—This new IBGMS resulted in a significant reduction of HbA1c during the study period. We propose that this IBGMS be used as a method for improving diabetes control.

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