

# Effectiveness of home blood glucose monitoring in controlling type II Diabetes mellitus

Diabetic patients play an important role in their medical care by controlling their lifestyle and medications. Testing blood glucose level at home gives immediate feedback, thus allowing diabetics to work with their health care provider to alter their treatment plan when required. This study aimed to find out the proportion of diabetic patients who used home blood glucose monitoring, and to assess the effectiveness of its use on controlling type II diabetes mellitus.

A cross-sectional study was conducted in a sample of type II diabetic patients following up at the diabetic clinics of two hospitals in Riyadh (King Abdul Aziz and King Khalid University Hospitals). Data was collected by direct interview of patients and documenting the last recorded level of HbA1C from their files.

The total number of interviewed diabetic patients was 300; with mean age of 53.2 years (SD ±9.95); 55.0% were illiterate; 66.0% were house wives; 19.0% were retired employees; and 93.0% had diabetes mellitus duration between 6-10 years.

The majority of diabetics in our study sample (64.0%) were on oral hypoglycemic agents, insulin alone was used by 22.0%, 13.3% were on both insulin and oral hypoglycemic, and 0.7% were under dietary control. Of the total, 66.3% had chronic diseases other than diabetes mellitus.

Less than half (48.3%) of the interviewed patients used home blood glucose monitoring kits, 51.7% of who used it according to doctor's advice. Their duration of use ranged between 1-5 years (73.8%); 52.0% checked their blood glucose by themselves, and 46.9% checked it by the help of others; 41.0% monitored their blood glucose when needed, 29.8% once a day, 17.9% twice a day, and 11.3% three times a day. However, only 9.7% recorded their blood glucose level after they had read it from the monitor; and only 55.9% had received teaching on how to use it.

Regarding the last recorded HbA1C levels in the patients' files, 30.0% of the total study population had levels ranging from 4.2 – 7.2; 50.3% between 7.3 – 10.2; and 19.7% had levels of 10 or more.

Of the 145 diabetics who monitored their blood glucose level at home, only 28.6% had abnormal HbA1C level, compared to 71.4% among those who did not, and the difference was statically significant (OR= 4.86, CI 2.37-10.28).

Factors that influenced using the home blood glucose monitor were educational level (OR= 2.98, 95% CI 1.75-5.19), and employment status (OR= 3.09, CI=1.67- 5.89).

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Editorial notes: Diabetes mellitus (DM) is an increasing health problem over the world. In the kingdom of Saudi Arabia, a community-based survey conducted among Saudi subjects in the 30- 70 year age group over a 5-year period estimated that the overall prevalence of DM was 23.7%, with 90% suffering from type II DM.1

In 2005, the WHO stepwise surveillance of non-communicable diseases in Saudi Arabia among adults 15 to 65 years of age, estimated that the prevalence of diabetes mellitus was 19.2% among males and 16.6% among females.2

Strict Glycemic control is important in delaying the onset and slowing the progression of complications of Diabetes Mellitus. Home glucose monitoring is, therefore, an opportunity for patients

with type II diabetes to control their own blood glucose level.

Aglycosylated hemoglobin (HbA1C) is measured in the blood of diabetics to estimate the average blood glucose level within the three months prior to the test. It is currently one of the best ways to check diabetes control, and should be done at least twice a year. The goal of DM control is to keep HbA1C level under 7%. Higher values reflect poor glycemic control, and indicate a greater risk of diabetic complications. This is especially true if the HbA1C level remains elevated on more than one occasion.3

In this study, almost half of the studied population used home blood glucose monitoring. A much higher proportion of those who used home blood glucose monitoring had HbA1C levels within normal limits compared to those who did not. However, it was noted that only 9.9% who used the monitor recorded their blood glucose level after reading it. For benefit from home glucose monitoring, it is imperative to record the result after monitoring to show to the attending doctor or diabetic educator for keeping or altering the treatment plan.

The study demonstrates that home blood glucose monitoring may be one of the important measures in controlling DM.

## References:

1. Al- Nozha MM, et al. Diabetes mellitus in Saudi Arabia. SMJ 2004; 25(11): 1603- 10.
2. Ministry of health. Stepwise surveillance report 1425, Kingdom of Saudi Arabia.
3. Ahmed S, Azab. Glycemic control among diabetic patients. SMJ 2001; 22(5): 407-8.

Table 1: Effect of home blood glucose monitoring on HBA1C level

HBA, C level	N	Home blood Glucose monitoring		OR	IC %59
		Yes	N		
Normal	89	66.3%	33.7%	4.86	2.37-10.28
Abnormal	56	28.6%	71.4%		