

SELF-MONITORING OF BLOOD GLUCOSE AND PERCEIVED OBSTACLES IN TURKISH PATIENTS WITH DIABETES MELLITUS

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BACKGROUND

Self-monitoring of blood glucose (SMBG) is the collection of detailed information of patients' blood glucose at many time points to maintain more constant glucose levels by more precise insulin regimens. SMBG is performed with personal blood glucose monitors several times per day [1]. SMBG allows real time measurement of blood glucose and reflects the influence of diet and physical activity [2]. Patients may play more active role in the control of their disease by monitoring of their blood glucose [3]. SMBG a necessary component of the treatment regimen in patients with type 1 diabetes. There is growing evidence suggesting that structured SMBG is beneficial for all type 2 diabetic patients regardless of mode of therapy [4]. Although some studies have found that individuals who practice SMBG achieve improved HbA1c values, much of the recent literature has concluded that SMBG behaviors are not associated with improved outcomes [5]. While SMBG is critical for management of diabetes, many patients do not follow their healthcare professionals' recommendations for self-monitoring. The aims of this study are to determine the proportion of patients with diabetes who perform SMBG in general practice and to identify patient-reported obstacles for SMBG.

METHODS

The study included 372 patients with type 1 or type 2 diabetes mellitus (DM), who attended to outpatient clinics of three State Hospitals in Turkey. To determine the prevalence and frequency of SMBG, patients were asked, "Do you or a family member or friend check your blood sugar?" Those who answered "yes" were asked, "How often do you/family member/friend check your blood sugar level?". They were classified into two groups based on SMBG frequency as SMBG frequency less than 4 tests/week and 4 or more tests/week, also asked "What makes it difficult for you to check your blood sugar". Sex, age, years of education, diabetes duration, current medications for diabetes, HbA1c levels of the patients were also recorded.

SUMMARY OF CONCLUSIONS

This study investigated the patients' perspective and practices of SMBG. Although most of our patients (91%) reported that they monitor their blood glucose, our results show that there are negative perceptions of patients for SMBG, which make it difficult to perform. Patients with diabetes will be more likely to follow healthcare professionals' recommendations if we can address these negative perceptions.

Much of the recent literature has concluded that SMBG behaviors are not associated with improved outcomes although some studies have found that individuals who practice SMBG achieve improved HbA1c values [6]. In our study, mean HbA1c levels were lower in patients who reported more frequent SMBG.

In conclusion, addressing patients' self monitoring-related concerns and motivations may be useful in reinforcing engagement with SMBG.

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RESULTS

Among 372 patients, 337 (91%) reported having used SMBG during the past 12 months. Overall, 58.2% (n=196) of patients who self-monitored their blood glucose did 1-3 tests/week and 41.8% (n=141) of patients did ≥ 4 tests/week. The groups were similar by means of age, sex and years of education. Patients using insulin or insulin plus oral anti-diabetic medications were more likely to report SMBG than were those using only oral anti-diabetic medications (49.5% vs 30.5%; $p < 0.001$). Mean HbA1c levels in less frequently testing group were significantly higher than more frequently testing group ($9.4 \pm 2.5\%$ vs. $8.8 \pm 2.2\%$; $p = 0.03$) (Table 1)

The most frequently reported barriers for testing were; I do not see any value in checking more often (8,9%); I find it unnecessary to check if I do not have any symptoms (10,1%) and the results make me feel bad and I'd rather not check (8,6%)(Table 2).

Table 1. Characteristics of study participants

	<4 tests/week (n=196)	≥ 4 tests/week (n=141)	p
Age (yrs)	55.8 \pm 12.7	53.8 \pm 13.9	0.157
Sex			
Men	63 (32.1%)	47 (33.3%)	0.818
Women	133 (67.9%)	94 (66.7%)	
Education			
None	94 (48%)	67(47.5%)	0.619
Primary School	63 (32.1%)	39 (27.7%)	
Secondary School	11 (5.6%)	12 (8.5%)	
Post-Secondary Education	28 (14.3%)	23 (16.3%)	
Disease Duration (yrs)	8 (1-34)	10 (1-30)	0.005
Treatment Regimen			
OAD	97 (49.5%)	43 (30.5%)	<0.001
Insulin plus OAD/Insulin only	99 (50.5%)	98 (69.5%)	
HbA1c (%)	9.4 \pm 2.5	8.8 \pm 2.2	0.03

Table 2. Self-monitoring of blood glucose obstacles as expressed by the patients

	N (%)
I'd rather check when I have symptoms	34 (10.1)
I forget to check	29 (8.6)
The results often make me feel bad, so I'd rather not check	29 (8.6)
I don't know how to check so I have to rely on others to do SMBG for me	29 (8.6)
It is too expensive	17 (5)
My glucometer is broken	14 (4.2)
I have blood phobia	12 (3.6)
This is my doctor's recommendation	11 (3.3)
I don't see any value in checking more often	9 (2.7)
It is too painful	6 (1.8)
I am too busy	6 (1.8)