FREQUENCY OF SELF-MONITORING OF BLOOD GLUCOSE AMONG CASES OF TYPE II DM

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ABSTRACT

Objective; To determine the frequency of patients doing self-monitoring of blood glucose (SMBG) in cases with type II DM. **Methodology:** This was a cross sectional study, that was conducted during July to December 2018 at Mayo Hospital, Lahore. In this study, total 200 cases of type II DM enrolled. The SMBG was labeled as on basis of documentation of fasting and postprandial blood glucose values with date and time of blood glucose testing and any action taken if needed (e.g. increase in dose of oral hypoglycemic agents, change in oral hypoglycemic agents), after seeing the blood glucose values, for at least once per day over the last 6 weeks. **Results:** In this study there were total 200 cases out of which 110 (55%) were females and 90 (45%) males. The mean age and duration of type II DM were 45.31 ± 7.13 year and 6.14 ± 3.08 years respectively. In this study 58 (64.44%) out of 90 and 78 (70.91%) out of 110 females did SMBG with p= 0.74. There was no significant difference in terms of age groups with p= 0.94. There was significant association in terms of both residential status and education level where SMBG was more done in urban population and those with education level of more than graduation with p values of 0.01 and 0.001 respectively. **Conclusion;** SMBG is done in almost every $2/3^{rd}$ of cases and it is significantly higher done in cases that are urban and have education level more than graduation.

KEYWORDS: Type II DM, SMBG.

INTRODUCTION

Type 2 Diabetes Mellitus (type II DM) is an emerging global health issue and it consists of characteristic array of signs and symptoms that are characterized by features of hyperglycemia and features of decreased insulin functioning. This decrease in insulin functioning can be resulted from either the insulin resistance, inadequate secretion of insulin, or a combination of both. Further factors that can contribute include excessive or inappropriate glucagon secretion. The etiology of type 2 diabetes mellitus appears to involve complex interactions between environmental and genetic factors. Presumably, the disease develops when a diabetogenic lifestyle.[1-2]

Uncontrolled DM can result in various poor outcomes due to their micro vascular, macro vascular complications and these changes are usually irreversible except for few with earlier phase of the disease.[3]

The cases with type II DM are usually treated with oral hypoglycemic agents. Biguoanide, sulfonylureas are the most commonly used along with the other ones. However, many patients with type 2 diabetes are also initially and then ultimately treated with insulin. Because they retain the ability to secrete some endogenous insulin, they are considered to require insulin, but do not depend upon this.[4-5]

Uncontrolled DM can have detrimental effects and hence require multi disciplinary approach to avoid this. Strict blood glucose monitoring is the mainstay of the treatment. Self monitoring of the blood glucose (SMBG) and hence the appropriate steps taken to avoid further development of the complications is the focus of the treatment in recent times. The data has shown that this has led to better glycemic control. The factors associated to influence are the residential status, educational level, socioeconomic status, family history of DM, social and psychological factors as well as the support and have positive effects of SMBG and then ultimately on outcome in the form of good glycemic control.[5-7]

OBJECTIVE

To determine the frequency of patients doing self-monitoring of blood glucose (SMBG) in cases with type II DM.
Study Design: cross sectional study
Settings: Mayo Hospital, Lahore.
Duration of Study: July to December 2018

Sample technique
Non probability consecutive sampling

Sample selection
Inclusion Criteria
1. Both genders
2. Age 30-70 years
3. Known cases of DM for at least last 1 year

Exclusion Criteria
1. The cases of type I DM
2. The cases that are mentally handicapped.

MATERIAL AND METHODS

In this cross sectional study there were total 200 cases as per inclusion criteria. Detailed socio demographic data like age, gender was taken and other clinical information like duration of Type II DM, residential status as urban or rural, educational status was also taken. The SMBG was labeled as on basis of documentation of fasting and postprandial blood glucose values with date and time of blood glucose testing and any action taken if needed (e.g. increase in dose of oral hypoglycemic agents, change in oral hypoglycemic agents), after seeing the blood glucose values, for at least once per day over the last 6 weeks.

Statistical analysis
The data was assessed analyzed with the help of SPSS version 20. Quantitative variables were presented in terms of mean ± SD (Standard Deviation). Frequency & percentages were calculated for categorical data. Effect modifiers were controlled to look for the significance and post stratification chi-square test was applied taking p-value ≤ 0.05 as significant.

RESULTS

In this study there were total 200 cases out of which 110 (55%) were females and 90 (45%) males. The mean age and duration of type II DM were 45.31±7.13 year and 6.14±3.08 years respectively. There were 138 (69%) cases were urban residence, while 130 (65%) had education level of graduation or more. The SMBG was done by 136 (68%) of cases. In this study 58 (64.44%) out of 90 and 78 (70.91%) out of 110 females did SMBG with p= 0.74 as in table 1. There was no significant difference in terms of age groups with p= 0.94 (table 1). There was significant association in terms of both residential status and education level where SMBG was more done in urban population and those with education level of more than graduation with p values of 0.01 and 0.001 respectively in table 1.

Table 01: Smbg With Respect to Study Variables n= 100.

Variable		SMBG		p
		Yes	No	
Gender	Male	58 (64.44%)	32 (35.56%)	0.74
	Female	78 (70.91%)	32 (29.09%)	
Age Groups	30-49	66 (68.75%)	30 (31.25%)	
	50-70	70 (67.31%)	34 (32.69%)	0.94
	Rural	28 (45.16%)	34 (54.86%)	0.01
Residential Status	Urban	108 (78.26%)	30 (21.74%)	
Educational Stauus	Graduate	108 (83.08%)	22 (16.92%)	0.001
	Undergraduate	28 (40%)	42 (60%)	

DISCUSSION

Diabetes mellitus (DM) is a common chronic and costly condition associated with serious comorbidities. By 2030, the number of adults with diabetes is expected to rise to 552 million. Oral hypoglycemic are thought to be the mainstay of the treatment; though insulin is ultimately added to the regimen to get the good control of it. Uncontrolled DM can end up in catastrophic multi-organ damage. Strict glycemic control has been shown to reduce the risk of various micro- and macro vascular complications of this disease. Structured and personalized self-monitoring of blood glucose (SMBG) is a systematic approach to glucose monitoring throughout the day. SMBG has been demonstrated to be a beneficial approach for the achievement of long-term glycemic control in patients with T2DM.

In this study self-monitoring of blood glucose (SMBG) was done by 122 (64.89%) cases. The results of this study were similar to studies done by McIntosh B et al and SMBG International Working Group who also found these results from 58 to 65%.[119-120] However the results in the studies done by Ezenwaka CE et al, Poolsup N et al and Malanda UL et al had relatively lower number as compared to our study.[121-123] Why these numbers were higher in our study? This might be because firstly this study was done in one of the largest cities of Pakistan where literacy is good and patients' affording capabilities are also much higher. Secondly the other studies were in the form of meta-analysis, which included all the cases from poor to rich which ended up in a relatively lower number. Moreover the study done by Ezenwaka CE et al was conducted in the islands of West indies which is relatively a resource deprived country that's why the number using SMBG was slightly at lower side in their studies.[121]

Significant numbers were seen in cases with higher educational status and urban residence in terms of

SMBG with p value of 0.0001 & 0.0001 respectively. This was also observed by many studies that self-monitoring is mostly done in the urban settings and in cases that had a higher degree of education.[128-130] Both these entities seem to share the one or more of the same mechanisms. First of all the cases residing in urban population has better resources to health cares and also the cost is not a big issue for monitoring of these glucose levels. Secondly, the urban population is also more literate; hence has better understanding of the disease and its feared complications, that's why they use more of this entity.

CONCLUSION

SMBG is done in almost every 2/3rd of cases and it is significantly higher done in cases that are urban and have education level more than graduation.

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