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Evaluation of SMBG, Diet and Physical Activity in DM II Patients, A Case Study at Tertiary Care Hospital of Larkana, Sindh, Pakistan

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Abstract

Self monitoring of blood glucose level helps to evaluate the result of dietary requirements, medical treatment, stress and physical activity on glucose levels within blood.Out of 400 patients 9% were involved in SMBG once daily, (14%) were involved in SMBG two times in a week, 7% were involved in SMBG three times in a week and 70% were involved in SMBG once in a 15 days or month(s). The frequency of SMBG and adjustment in dose of drug was as 28 (78%) once daily, 34 (60%) two times in a week, 19 (67%) three times in week and none of the patients who were involved in SMBG once in a 15 days or month(s) adjust their dose. The frequency of SMBG and adjustment in diet was as 34 (94%) once daily, 42 (75%) two times in a week, 21 (75%) three times in week, 4 (50%) once in a 15 days and 122 (44%) who were involved in SMBG once in a month(s) involved in adjustment of their diet. The frequency of SMBG and adjustment in physical activity was as 16 (44%) once daily, 19 (33%) two times in week, 7 (25%) three times in a week and 74 (27%) who were involved in SMBG once in a month(s) involved in adjustment of their physical activity.It was also concluded that the patients who were involved in SMBG as per recommendation got the benefit by adjusting their dose, diet and physical activity.

Keywords: Diabetes mellitus, Larkana, SMBG, tertiary care.

Introduction

Diabetes is a chronic metabolic disorder in which body either does not produce or use the insulin effectively[1]. Diabetes burden will persist to rise all over world without effective prevention and management program. 85%-95% cases of diabetes are of type 2 diabetes in high income countries where as more than 95 % in middle and low income countries. Type 1 diabetes cases are less common compare type 2 diabetes. The patients with gestational diabetes are increasing throughout the world[2]. Globally, with regard to its prevalence, complications, and costs diabetes is emerging as a disease of epidemic magnitude[3]. As one cannot change the therapy in diabetic patients based on glycated hemoglobin A1C test that's why SMBG is necessary for adjustment of the dose of anti diabetic medication, diet physical activities. SMBG plays a key role in effective glycaemic control for both type 1 diabetic and insulin-dependent type 2 diabetic patients demonstrated through clinical trials by providing help for adjusting the insulin dose through proper monitoring and helps to prevent hypoglycemia and pre-prandial as well post-prandial hyperglycemia. Routine SMBG in type 2 diabetic patient has been recommended by the American Diabetes Association. The progression risk of both macro as well microvascular complications can reduce by optimal management of glycaemia and other cardiovascular risk factors have demonstrated by numerous studies[4-8]. Using SMBG has potential to improve glycaemic control suggested by current evidence particularly by incorporating into comprehensive and ongoing education program that promotes management adjustments according to the ensuring blood glucose values[9-11].

SMBG is responsible for decreasing the HbA1c as compare to control group[12]. SMBG is expensive practice particularly for type 2 diabetic patients, therefore there is a substantial controversy about this but it is extensively recommended as a major part for diabetes control. However in proposed study it was observed that type 2 diabetic patients were able to get the advantage from SMBG by adjusting their dose of anti-diabetic medication, diet and physical activity based on their blood glucose level by identifying their glycemic control.

Methodology

For the collection of the data a well structured questionnaire was used which consist of some important parameters. The proposed study was done through descriptive research design means describing the peoples who were involved in the study design. Descriptive research design project can be done through three ways those are observational, case study and survey based. In proposed study the descriptive study was done through survey based method. The results are given on percentage basis by arranging the information in simple frequency tables. The percentage distribution was used for presenting research finding by making different graphs representing each parameter separately. Results are shown in graphs on percentage basis with the help of computer program.

Sample Size: The sample size was 400 patients.

Sample: Tertiary Care Hospital Larkana Outpatient Department is the area from where all the samples were taken by purposive sampling method one of the procedure that can be followed for the selection of items for statistical samples.

Data Collection Method: In biological science, there are different methods of data collections; I have collected the data with the help of structured questionnaire at tertiary care outpatient department which is also used in some related study [13,14]. The basic parameters of the questionnaire that is used include: Name of the patient, Age, Gender, Address, Diabetic and any other chronic disease history, Pregnancy lactation status, Alcohol intake history, Self blood glucose monitoring history, Diabetic associated complication, Medication history, Life Style Changes based on SMBG results, Adjustment in dose of Anti-Diabetic Medication based on SMBG result

Inclusion criteria: The inclusion criteria for current study were all diabetic patients having age between 30 years to 80 years.

Exclusion criteria: All the diabetic patients with any persistent kidney disorder, persistent liver disorder, alcohol abuse, pregnancy, lactating mother are exclusion criteria.

Results and Discussion

Total 400 diabetic patients were evaluated at tertiary care outpatient department with the help of structured questionnaire. Out of 400 patients 36 (9%) patients were involved in SMBG level in once daily, 56 (14%) patients were involved in SMBG level two times weekly, 28 (7%) patients were involved in SMBG level three times weekly, 8 (2%) patients were involved in checking their blood glucose level once in a 15 days while rest of 272 (68%) patients were involved in SMBG once after a month or few months (table-1 and figure-1). From the total 400 diabetic patients who were involved in the study 28 (78%) of the patients out of 36 who were involved in SMBG once daily adjust the dose of anti diabetic medication, 34 (60%) of the patients out of 56 who were involved in SMBG two times in a week adjust the dose of anti diabetic medication, 19 (67%) of the patients out of 28 who were involved in SMBG level three times in a week adjust the dose of anti diabetic medication and 280 (100%) out of 280 who were involved in SMBG level once in a 15 days or month(s) did not adjust the dose of anti diabetic medication themselves (table-2 and figure-2). Out of total 400 diabetic patients who were involved in the study 34 (94%) of the patients out of 36 who are involved in SMBG once daily adjust their diet, 42 (75%) of the patients out of 56 who were involved in SMBG two times in a week adjust their diet, 21 (75%) of the patients out of 28 who were involved in SMBG three times in a week adjust their diet, 4 (50%) of the patients out of 8 who are involved in SMBG once in a 15 days and 122 (44%) out of 272 who were involved in SMBG once in month(s) adjust their diet themselves compare to related study in which from the total patients who were involved in study and make the adjustment in their diet, 24.1% of the patients were involved in checking their blood glucose level occasionally or less than once a month while 25.1% of the patients were involved in checking their blood glucose level daily or two times in a day[13] which indicate that greater percentage of patients who were involved in SMBG adjust their diet in current study. (table-3). From the total 400 diabetic patients who were involved in the study 16 (44%) of the patients out of 36 who are involved in SMBG once daily adjust their physical activity, 19 (33%) of the patients out of 56 who were involved in SMBG two times in a week adjust their physical activity, 7 (25%) of the patients out of 28 who were involved in SMBG three times in a week adjust their physical activity, not a single patient out of 8 who are involved in SMBG once in a 15 days adjust their physical activity and 74 (27%) out of 272 who were involved in SMBG once in a month(s) adjust their physical activity themselves compare to related study in which from the total patients who were involved in study and make the adjustment in their physical activity, 24.6% of the patients were involved in checking their blood glucose level occasionally while 36.2% of the patients were involved in checking their blood glucose level three or more times in a day[13] which showed that the patients who were involved in SMBG on daily basis adjust their physical activity in current study (table-4 and figure-3).

Conclusion

It was concluded through this study that the SMBG is an essential tool for diabetic population. It was observed the greater percentage of the patients were got the benefit of adjusting their dose of anti-diabetic medication, diet and physical activity check their blood glucose level on daily basis. It was also seen that the patients who were involved in self monitoring of blood glucose level as per recommendations were convinced that SMBG is an important parameter for adjusting their routine life style modification and dose of anti-diabetic medication based on their blood glucose level.

Table-1
Self Blood Glucose Level (SMBG) Frequency

SMBG	No: of Patients	Percentage
Once Daily	36	9%
Two Times in a Week	56	14%
Three Times in a Week	28	7%
Once in 15 Days	8	2%
Once after a Month(s)	272	68%
Total	400	100%

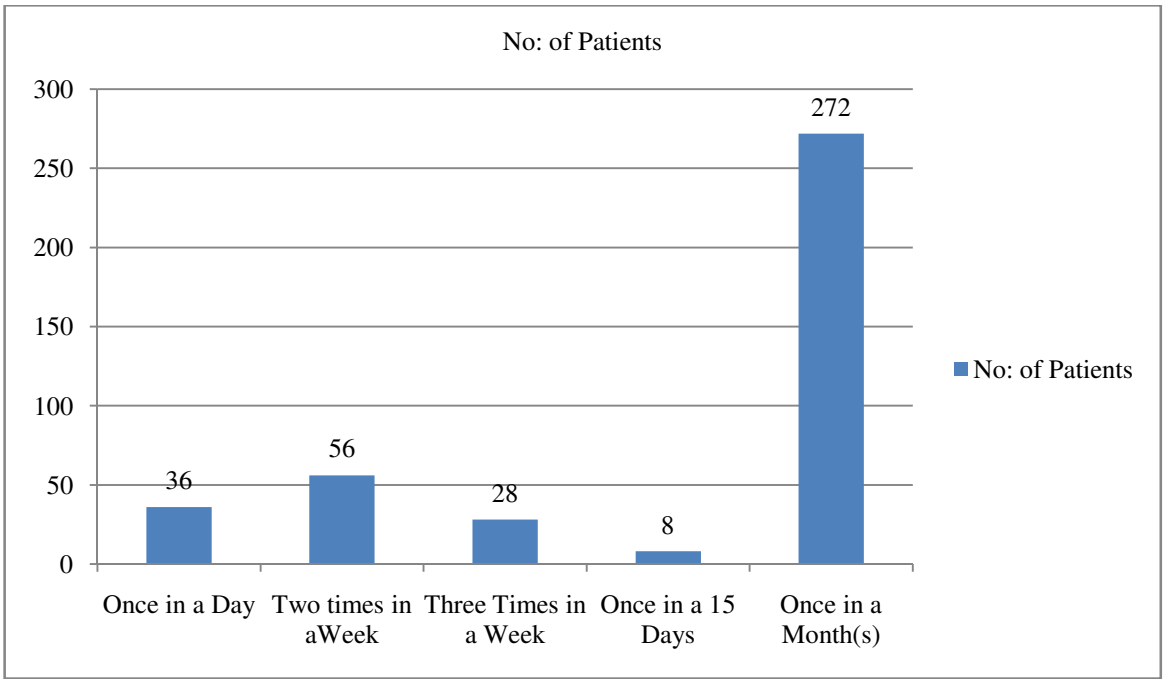

Figure-1
Self Blood Glucose Level (SMBG) Frequency

Table-2
SMBG Frequency and adjustment in Anti-Diabetes Medication Dose

SMBG	No: Of Patients	Adjustment in Anti-Diabetes medication dose	Percentage of Patients involved in Adjustment in Anti-Diabetes medication dose
Once Daily	36	28	78%
Two Times in a Week	56	34	60%
Three Times in a Week	28	19	67%
Once in 15 Days	8	0	0%
Once after a Month(s)	272	0	0%

Table-3
SMBG Frequency and adjustment in Diet

SMBG	No: Of Patients	Adjustment in Diet	Percentage of Patients involved in Diet
Once Daily	36	34	94%
Two Times in a Week	56	42	75%
Three Times in a Week	28	21	75%
Once in 15 Days	8	4	50%
Once after a Month(s)	272	122	44%

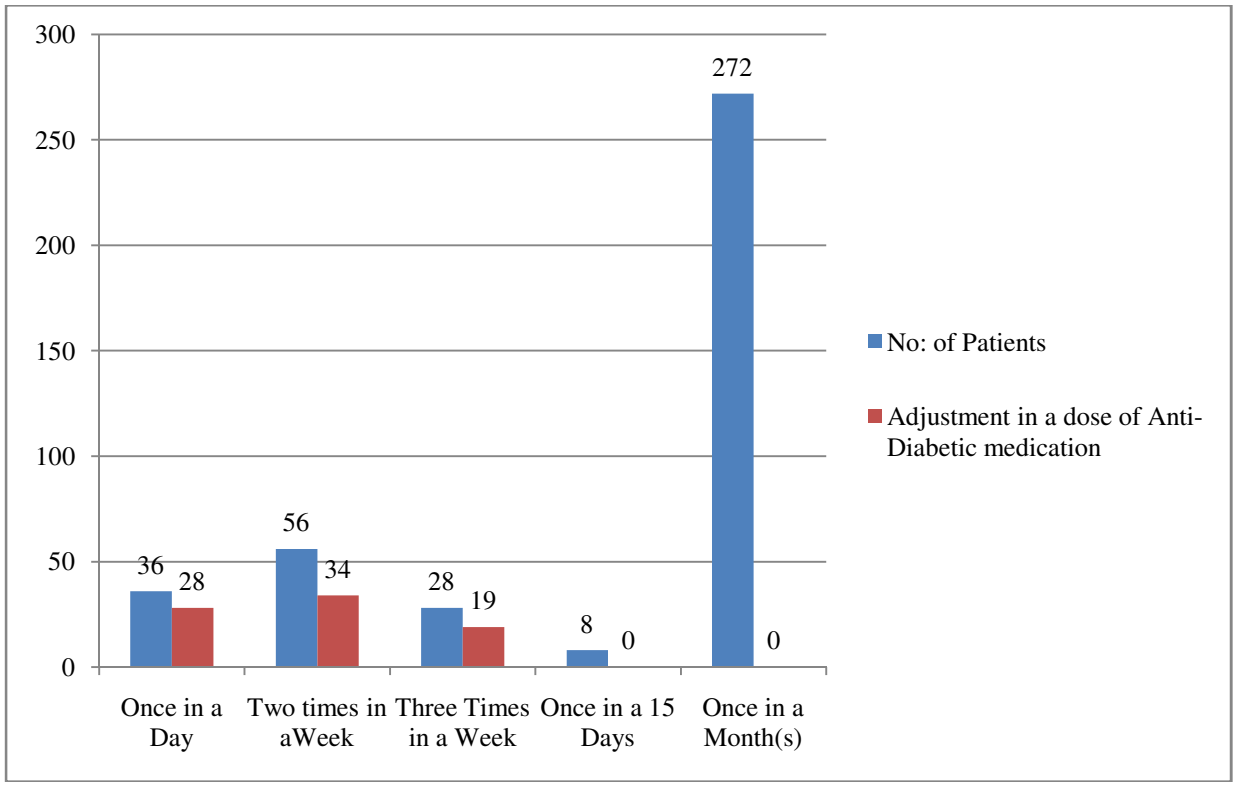

Figure-2
SMBG Frequency and adjustment in dose of Anti-Diabetic Medication

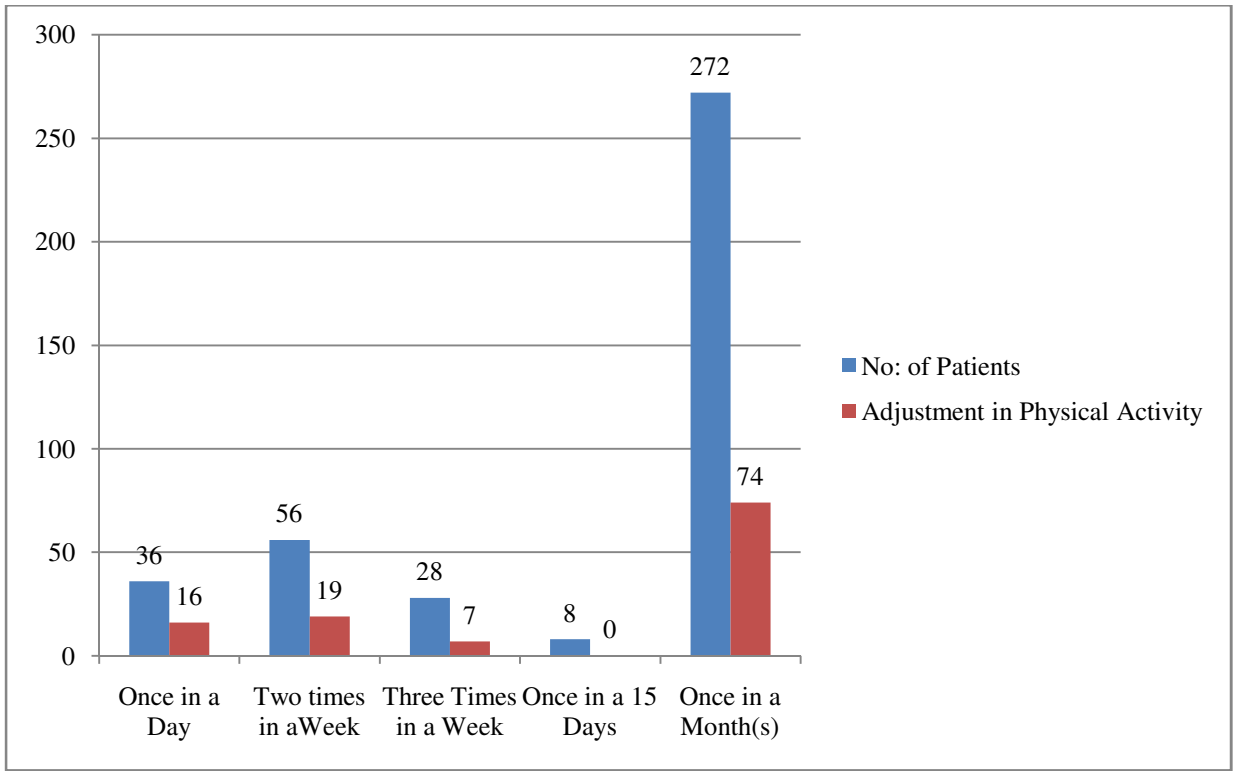

Figure-3
Frequency and adjustment in Physical activity

Table-4
SMBG Frequency and adjustment in Physical activity

SMBG	No: Of Patients	Adjustment in Physical Activity	Percentage of Patients involved in Adjustment in Physical Activity
Once Daily	36	16	44%
Two Times in a Week	56	19	33%
Three Times in a Week	28	7	25%
Once in 15 Days	8	0	0%
Once after a Month(s)	272	74	27%

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