

Diabetes self-management education: powerful tool for diabetes control in India



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Introduction

- Diabetes self-management education (DSME) is a critical element of care for diabetes management and is a powerful tool for reducing glycosylated haemoglobin (HbA_{1c}), risk for complications, hospital admissions and cost of care.
- The purpose of this study was to determine the impact of DSME in improving the outcomes of diabetes care as measured by glycaemic (FPG, PPG & HbA_{1c}), lipid (total cholesterol[TC], triglycerides[TG], low density lipoproteins[LDL] and high density lipoproteins [HDL]) and anthropometric parameters (weight, BMI & waist circumference) in individuals with type 2 diabetes mellitus (T2DM).

Methodology

- A retrospective analysis was performed for 160 adult T2DM patients who received DSME training in 2013–2014 from our center.
- DSME provided to the study participants was consistent with the requirements from the [National Standards for Diabetes Self-Management Education](#).
- Participants received one time 6 hours intensive group training. All education was provided by a team of diabetologists, certified diabetes educators who in addition are dietician and exercise physiologist.
- Patients received instruction in: diet/exercise education; self-monitoring of glucose levels; medication management specifically for insulin users; diabetes related problem solving, and lifestyle changes to help reduce the risks and complications of diabetes.
- Subjects were judged for their acquired knowledge about the disease by using a set of questionnaire and were awarded a score based on their performance.
- Their socioeconomic status was also ascertained by using Kuppaswamy scoring (KS score)² which looked at their education, monthly income and occupational status.
- The subjects' glycaemic parameters, lipid parameters and anthropometric measurements were checked before the DSME programme and at the end of 6 months and 12 months respectively.

Table 1: Characteristics of the study subjects as per DSME Score

	1 st Tertile (DSME Score <15), n= 50		2 nd Tertile (DSME Score 15–21), n= 53		3 rd Tertile (DSME Score >21), n= 57	
	Mean	SD	Mean	SD	Mean	SD
WT(kg)	62.01	10.73	66.73	12.52	67.22	17.78
BMI (kg/M ²)	24.59	3.43	25.85	4.60	25.71	3.95
SBP, mmHg	135.02	19.87	134.21	18.13	134.00	20.75
DBP,mmHg	79.73	9.53	79.91	8.19	80.78	7.27
WAIST (cm)	88.78	9.81	92.00	9.55	91.11	9.60
FPG,mg/dL	145.69	41.06	148.04	46.29	145.15	37.07
PPG,mg/dL	192.02	69.85	196.41	77.66	186.80	54.90
HBA1c,%	8.21	1.91	8.41	1.78	8.03	1.38
TC,mg/dL	147.76	40.61	160.72	54.11	154.43	42.71
TG,mg/dL	132.86	80.62	141.60	90.36	139.02	64.05
LDL,mg/dL	76.80	31.52	90.41	37.31	88.07	36.83
HDL,mg/dL	45.96	14.57	44.07	11.73	42.98	12.71
VLDL,mg/dL	26.75	16.23	28.63	19.53	27.29	12.88
ACR,mg/g	85.43	148.97	77.54	116.81	53.93	115.29

Results

- The DSME scores were divided into tertiles and lower tertile patients were compared to intermediate and higher tertile patients, to assess, whether differences in acquired knowledge about diabetes had impact on glycaemic, lipid and anthropometric parameters.
- It was revealed that waist circumference increased in all the three tertiles over the entire year following DSME without any statistically significant change in the weight and BMI over the year.
- Subjects with DSME score in the lowest tertile had an initial improvement in the FPG values at 6 month but a rebound increase at the end of the year made it lose statistical significance. There was however no statistically significant change in the HbA_{1c} and PPG over the year.
- The lipid parameters (TC and LDL) showed statistically significant progressive deterioration which perhaps emphasises the need for an intermittent reinforcement of education.
- Subjects with DSME score in the intermediate tertile had an improvement in the glycaemic parameters (FPG and HbA_{1c}) throughout the year but there was no improvement in the lipid parameters.
- Subjects with DSME score in the upper most tertile were already having better controls of their glycaemic parameters at the baseline and did not show significant improvements over the year but their lipid parameters (TC and LDL) did show a significant improvements over the year, perhaps secondary to their better understanding of the contribution of lipid control towards prevention of macro vascular complications.
- Further analysis of the data also revealed that DSME scores were independent of socioeconomic status even when analysed separately for income levels and educational qualification.

Conclusion

Comprehensive diabetes outcomes were correlated with adequacy of baseline diabetes education. Subjects with even minimal diabetes education (lowest tertile) had transient improvement in outcomes whereas those with optimal education had sustained multifactorial benefits. Moreover DSME benefits were independent of socio-economic and educational status indicating its widespread applicability even in resource limited settings. In India where the large number of diabetic population has a considerable economic implication on the state as well as on the individual, more widespread use of DSME can be a cost-effective option in fighting against the growing menace of the diabetes epidemic.