

Effect of Persistent Reinforcement of Behavioral and Pharmacological Intervention in Diabetics of Lower Socioeconomic Urban Population

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ABSTRACT

Introduction: The economic burden of Diabetes is very high, especially in developing countries like India, and more so in the lower economic group, who spend 25-34% of their income on diabetes care.

Aims & Objectives: To see the effect of persistent reinforcement of behavioural and pharmacological intervention on uncontrolled and undiagnosed diabetics in a lower socioeconomic urban population of Dibrugarh town in Assam.

Materials & Methods: We conducted a community based observational survey and two (2) wards (Ward no 12 and 13) of Dibrugarh town (Total 22 wards with a population of 2,54,627) were selected with a population of 4726 and 4429 respectively. A Diabetic Camp was conducted on 3rd Sunday of every month in 2015. Fasting blood sugar and post prandial blood sugar was seen. Subjects with FBS 100-125 mg/dl was defined as prediabetic, FBS > 126 mg/dl and PPBS > 200 mg/dl were considered as new diabetic or uncontrolled diabetic if previously diagnosed. Counselling to improve diet, exercise and proper management of blood sugar by OHA or insulin, management of complications and regular blood glucose monitoring was done.

Observations: Out of 9,155 (4726 in ward 12 and 4429 in ward 13), 538 patients were seen in 7 months from Jan 2015 to July 2015. Of them 247 (109 male and 136 female) were found to have abnormalities of glucose metabolism. 102 patients (33 male and 69 females) had prediabetes and 145 patients (76 male and 69 female) had diabetes. Patients attendance increased by 63.4%. The prediabetes increased three times and diabetics increased two fold. With persistent counselling

about diet, exercise, life style modification and importance of regular medication the patients with good control increased from 11.5% in January to 68% in July. Awareness about complications increased from 27% to 87%. Self-monitoring of blood sugar increased among participants by 57%.

Conclusion: Persistent reinforcement of behavioural and pharmacological intervention on uncontrolled and undiagnosed diabetics improves outcome of glycaemic control which may be a cost effective approach, especially in low socioeconomic group.

Key Words: Behavioural intervention, Diabetes Mellitus, Glycaemia control, Low socioeconomic population, Pharmacological intervention.

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INTRODUCTION

The economic burden of Diabetes Mellitus on the society is very high and it is more significant in a developing country like India. Ali MK et al has shown that direct expenses consume 27-34% of household incomes of rural and urban poor people while the middle-to-high income groups in rural and urban areas consume 5.0-12.6% and 4.8-16.9% of income respectively on diabetes care¹. The cost of diabetes in India (CODI) showed that ambulatory care constitutes 65% cost whereas hospitalization cost is 35%. Therapy cost is 31% of which specific anti-diabetic drug cost is only 17%. Ambulatory care including monitoring and doctor visits constitute 34% costs². These costs were more in urban population (median cost Rs 10,000/year) than in rural population (median cost Rs 6,260/year) as shown by Ramachandran A et al³. Moreover inertia in diabetic care both from the patients and physicians part has aggravated the problem. Diabetes-related distress is associated with less active self-care; therefore, one

sign that patients may be distressed is an unwillingness or inability to engage in active self-management despite recognition of the need for change. A proactive approach from the caregiver can counter this distress. Diabetes management is dependent on patient motivation, and motivational interviewing⁴ can be used to enhance motivation for diabetes self-care⁵.

AIMS AND OBJECTIVES

We identified an urban locality with significant population of lower socioeconomic status. After that we studied that if we reduce the economic burden by reducing the transportation costs, doctor fee, investigation and laboratory costs by going to the community; motivate the patients with persistent reinforcement of behavioral changes, what changes can be made in the glycemic control of patients with both uncontrolled and undiagnosed abnormalities of glucose metabolism.

MATERIALS AND METHODS

Dibrugarh town has a population of 139565 (Census 2011) divided in 22 wards. We selected two wards (Number 12 and 13) with a significant number of individuals with lower socioeconomic status. The population in ward number 12 and 13 is approximately 5000 to 6000 each with almost equal number of Assamese, Bengali and Hindi speaking persons.⁶ A Diabetic Camp was conducted on every third Sunday from January 2015, in a clinic near ward 12 and 13 where fasting and post prandial blood sugar was seen and other complications of diabetes were screened, diet was explained and motivational interview was conducted with the patients. Subjects with FBS 100-125 mg/dl was defined as prediabetic, FBS > 126 mg/dl and PPBS > 200 mg/dl were considered as new

diabetic or uncontrolled diabetic if previously diagnosed. Neuropathy was screened by monofilament and Biothesiometer. Nephropathy was screened by urine for microalbuminuria. Retinopathy was screened by indirect ophthalmoscopy.

RESULTS

Out of 9,155 (4726 in ward 12 and 4429 in ward 13), 538 patients attended the diabetic camp in 7 months from January 2015 to July 2015 (Table 1). Of them 247 (109 male and 136 female) were found to have abnormalities of glucose metabolism which is 45.9% of total attendance. 102 (18.96%) patients (33 male and 69 females) had prediabetes and 145 (26.9%) patients (76 male and 69 female) had diabetes.

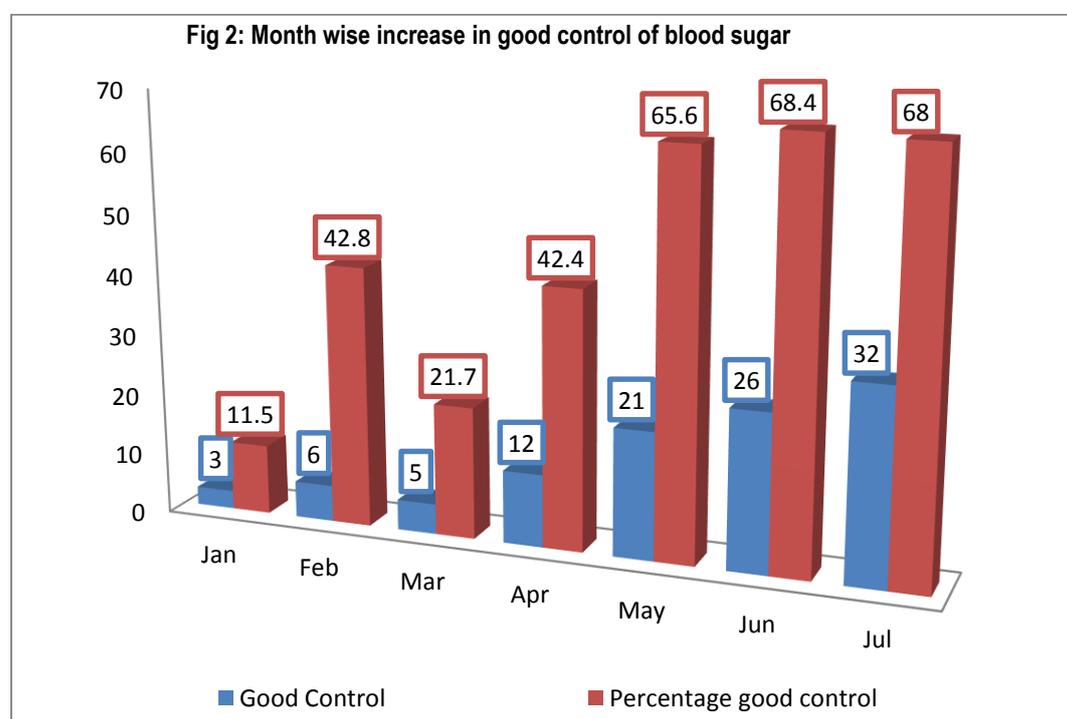
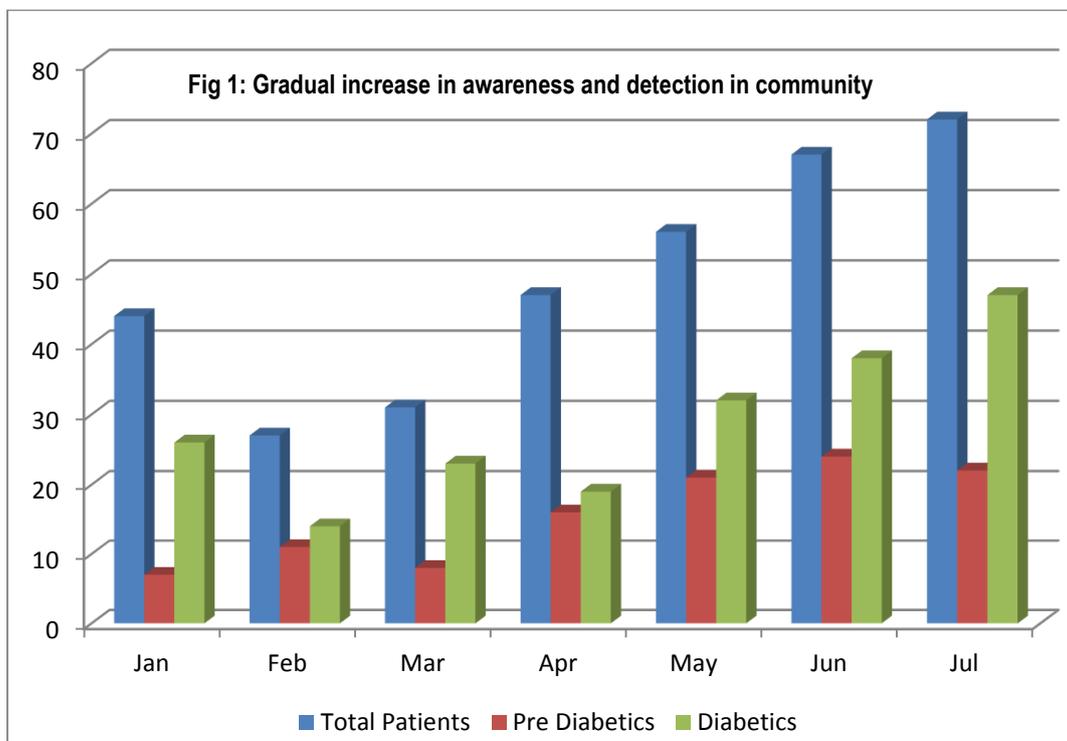


Table 1: Demographics of patients attending diabetic camps

Camp Date	Total Patients			Pre Diabetes patients		Diabetic patients		Newly diagnosed Diabetics
	Male	Female	Total	Male	Female	Male	Female	
18/1/15	18	22	40	3	4	11	15	7
15/2/15	12	15	27	4	7	6	8	2
15/3/15	14	17	31	3	5	11	12	0
19/4/15	19	28	47	5	11	13	16	2
17/5/15	25	31	56	6	15	17	15	3
21/6/15	27	40	67	6	18	21	17	5
19/7/15	34	38	72	8	14	23	24	3
Total	109	136	247	33	69	76	69	22

The number of persons attending the camp increased significantly. Moreover patients with abnormalities of glucose metabolism increased from first to the seventh camp by 63.4%. Those with prediabetes increased three times and diabetics increased two fold (Figure 1). Neuropathy was found in 52 (35.8%), nephropathy was found in 19 (13.1%), retinopathy in 11(7.6%), cardiovascular complications in 26 (17.9%) and diabetic foot in 6 (4%) of diabetic patients. Though there was not much change in the complications of diabetes the number of patients with good control increased from 11 percent to almost 68 percent which was significant (Figure 2). Awareness about complications increased from 7 (27%) to 41 (87%). Self-monitoring of blood sugar increased from 7 patients in Jan to 11 in July.

DISCUSSION

Improving community awareness about diabetes is necessary to contain the Diabetic epidemic, especially in the lower socioeconomic population⁷. Long term motivational therapy with suitable follow-up is recommended in lowering blood sugar in patients with diabetes⁸. Rubak S et al showed that there was a significant improvement in metabolic status and excellent medication adherence after one year of Motivational interviewing⁸. We saw that conducting a health camp in community itself motivates patients to come forward for checkups. Our total patients almost doubled in 7 months. There were frequent revisits of patients who were newly diagnosed as pre diabetics and diabetes. We have also seen significant increase in glycemic control of the patients after seven months of persistent reinforcement of behavioral and pharmacological intervention.

Mohan V et al showed neuropathy was most common complication (24.6%), followed by cardiovascular (23.6%), renal (21.1%), eye (16.6%) and foot ulcer (5.1%)⁹. We found neuropathy was 35.8% and the rest of the complications were less common.

CONCLUSION

Persistent reinforcement of behavioural and pharmacological intervention on uncontrolled and undiagnosed diabetics improves outcome of glycaemic control which may be a cost effective approach, especially in low socioeconomic group.

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