

## Original Article

# Community level diabetes management through public private partnership initiative in Gujarat-results from Changing Diabetes® Barometer

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### ABSTRACT

**Introduction:** Diabetes is a huge and growing problem in developed and developing countries. For tackle this situation in effective manner a new approach is required in diabetes health-care setup. **Objectives:** To understand the changing diabetes® barometer program impact in Ahmedabad district, Gujarat. **Materials and Methods:** A total of 12,140 screened populations at five primary health centers from June 2012 to August 2012 are used in this report. **Results:** 13.1% diabetic and 11.3% pre-diabetes (PD) population were found in the screening camps. Diabetes detection rate was more among males (16.4%) and geriatric population (21.9%). High correlation was observed for people with diabetes and PD with high body mass index and high waist-to-hip ratio. Two-third of the total people turned out to the screening camps was found to be either hypertensive or pre-hypertensive. Glycated hemoglobin (HbA1c) results shown that nearly half of the diabetes patients (57.7%) having HbA1c more than or equal to 9%. **Conclusion:** Government of Gujarat and Novo Nordisk Education Foundation has jointly demonstrated to create awareness and education on diabetes management in the Ahmedabad district under private public partnership framework.

**Key words:** Changing diabetes® barometer, Novo Nordisk Education Foundation, private public partnership

## INTRODUCTION

Diabetes is increasing alarms in world-wide, recent International Diabetes Federation estimations indicated more than 371 million people living with diabetes globally and 63 million people living with diabetes in India.<sup>[1]</sup> There are no large community based survey reports available for Gujarat to estimate the prevalence rates. However, few sample studies done in Ahmadabad revealed high prevalence of diabetes and impaired fasting glucose in the city of Ahmedabad, Gujarat. The sex specific prevalence is 16.8% and 11.11% for males and females respectively.<sup>[2]</sup> Cost of diabetes in India study revealed that total hospital

expenditure for diabetes complications are Rs. 12,781, type 1 diabetes is 7,668 and type 2 diabetes 13,299 respectively.<sup>[3]</sup>

## PRIVATE PUBLIC PARTNERSHIP (P-P-P) IN HEALTH CARE

Globally private public partnership in health-care setup was well established in successive manner. Globally few success programs with P-P-P are global alliance for vaccine and immunization, global polio eradication initiative, European partnership project on tobacco dependences, UNAIDS/industry drug access initiative, stop tuberculosis initiative, roll back Malaria etc., There are also success stories for P-P-P in the health-care. In India emergency medical transport system was very successful P-P-P project under National Rural Health Mission with 6226 emergency ambulances serving the whole population in 19 states.<sup>[4]</sup> 108 services were launched in Gujarat on the 29<sup>th</sup> of August 2007 by the Chief Minister-Shri Narendra Modi. GVK Emergency Management and Research Institute started its

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operations with 15 ambulances covering Ahmedabad and Gandhinagar. This has grown and today 108 services are available across entire Gujarat covering all 26 districts and 5.07 crore population with a fleet of over 506 ambulances and has handled over 5 lakh emergency calls till date. There are many allied health-care services are also launched including “Khilkhilat” – a drop back service for mother and new born from hospital to house.<sup>[5]</sup>

## P-P-P IN DIABETES MANAGEMENT IN GUJARAT

India is experiencing a rapid health transition with a rising burden of non-communicable diseases (NCDs) and NCDs cause significant morbidity and mortality both in urban and rural population, with considerable loss in potentially productive years (aged 35-64 years) of life. Considering the huge burden of NCDs, States have already initiated some of the activities for prevention and control of NCDs especially cancer, diabetes, cardiovascular diseases (CVDs) and stroke. The central Government proposes to supplement their efforts by providing technical and financial support through national program for prevention and control of cancer, diabetes, cardiovascular diseases and stroke (NPCDCS).<sup>[6]</sup>

To make the NPCDCS program more effective, a P-P-P program in diabetes management would be a complementary to the whole efforts being put together by both public and private stakeholders. Successful P-P-P program of diabetes management in Goa and Bihar have created a base to launch such activity in Gujarat.

Novo Nordisk Education Foundation (NNEF) in collaboration with the Government of Gujarat (GoG) initiated the changing diabetes<sup>®</sup> barometer (CDB) program in June 2012. As part of commitment to tackle diabetes, NNEF through the CDB program aims to educate the community and health-care providers about diabetes, create capacity in health-care resources and generate a sustainable model of cooperation with GoG in the field of diabetes management in four districts i.e., Ahmedabad, Dahod, Banaskantha and Valsad.

The program was kick started in the district of Ahmadabad and within 6 months the program has facilitated a total of more than, 3000 screening for diabetes, blood pressure and other anthropometric parameters. Data available for analysis for first 3 months was to the tune of 12,140. The opportunistic screening camps the first 3 months were conducted in the Primary Health Centre (PHCs) of Dholka, Daskroi, Sanand, Bavla and Ahmadabad.

In all the camps, more proportion of female (52.31%) took the benefit of the unique diabetes education and awareness program than their male counterparts (47.69%). All the screening was carried out at the rural area (94.32%) except for the 2 days exhibitions held at Ahmadabad. The mean age of screened population was 45 years and more number of people was attended for screening from 40 to 60 years age group with 43.68% followed by people of less than 40 years (36.11%) and more than 60 years (20.21%). More other backward classes' population (40.47%), more lower economic strata (55.4%) and comparatively lesser educated (50.46%) were benefitted in terms of getting their blood sugar screened and counseling for diet and exercise for diabetes management. Maximum people were having body mass index (BMI) of < 23 kg/m<sup>2</sup> (54.72%) and normal waist-to-hip ratio (WHR) (58.86%).

## DIABETES AND PRE-DIABETES (PD)

A total of 13.1% population was found to be diabetic and 11.3% were PD in the screening camps organized under the program. From total screened population at the time of screening, the known diabetes (having diabetes before attending the screening) people were 10.1%. In known diabetes population, only 47.4% patients were having a controlled diabetes and 52.6% patients having uncontrolled diabetes. Screening through CDB found 3.0% patients as newly detected diabetes, 11.3% patients were reported as PD [Table 1].

People already diagnosed with diabetes (controlled and un-controlled) have come to the screenings camps more in number in Dascroi Taluka with 13% followed by Ahmedabad and Sanand with 10.2% each. Interestingly, newly diagnosed diabetes was found in higher proportion in Ahmedabad with 4.4%, which is completely urban area and only two screening camps were conducted [Table 2].

Diabetes detection rate was 16.4% among males and PD detection rate was 11.9%, which was high compared to females. Again diabetes detection rate (21.9%) and PD detection rate (13.5%) was more in geriatric population. High correlation was also observed for people with diabetes and PD with high BMI. This was also the case with high

**Table 1: Diabetes status in screened patients in Gujarat**

Diabetes risk groups	No. of patients	%
Diabetes	1229	10.0
Controlled diabetes	582	47.4
Uncontrolled diabetes	647	52.6
Newly detected diabetes	360	3.0
Pre-diabetes	1373	11.3
No diabetes	9178	75.6
Total	12140	100.0

**Table 2: Taluka wise status of diabetes**

Taluka	Controlled diabetes %	Un-controlled diabetes %	Newly diagnosed diabetes %	Pre-diabetes %	No diabetes %	Total
Ahmedabad	3.7	6.4	4.4	12.2	73.2	295
Bavala	4.5	3.5	1.7	9.2	81.1	2125
Dascroi	5.4	7.6	3.0	16.6	67.4	3154
Dholka	4.3	4.6	4.1	10.9	76.1	4097
Sanand	5.2	5.0	2.0	7.0	80.7	2469
Total	582	647	360	1373	9178	12140

WHR. Diabetes detection rate and PD detection rate was high in illiterate patients (<10<sup>th</sup> class) with 25.2% and 23.6%. Diabetes detection rate was also found to be high in high income group (19.0%) and in general caste (18.6%).

### HYPERTENSION

Two-third of the total people turned out to the screening camps were found to be either hypertensive or pre-hypertensive [Figure 1].

U.K prospective diabetes study epidemiological study revealed that, each 10-mmHg decrease in mean systolic blood pressure was associated with reductions in risk of 12% for any complication related to diabetes, 15% for deaths related to diabetes, 11% for myocardial infarction and 13% for micro-vascular complications.<sup>[7]</sup>

### GLYCATED HEMOGLOBIN (HbA1c) RESULTS

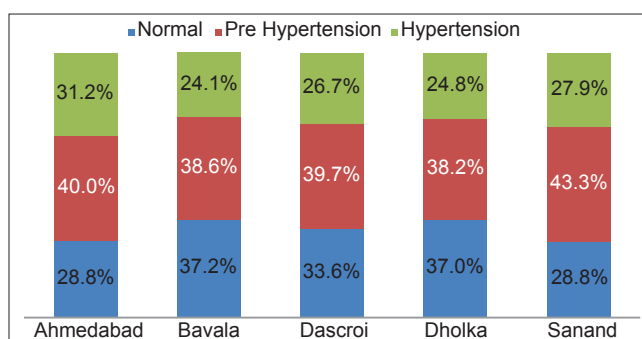
As a part of project, improvement follow-up was facilitated for all the people found to be diabetes with a baseline HbA1c. The HbA1c baseline helps in tracking the improvement in the status after the provision of intervention in terms of diet and exercise counselling, proper medication and other psychological support through the project [Table 3].

Baseline HbA1c results revealed that nearly half of the diabetes patients (57.7%) having HbA1c more than or equal to 9%, 27.6% patients having HbA1c between 7% and 9% and 14.8% patients having HbA1c of less than 7%. Almost equal proportion of males and females (~85%) were having HbA1c of more than or equal to 7%.

In a systematic review of 16 prospective studies examining the relationship between HbA1c and future incidence of diabetes mellitus, risk of diabetes increased sharply with HbA1c across the range of 5-6.5%.<sup>[8]</sup> For persons with HbA1c between 5.5% and 6.0% and 6.0 to 6.5%, the projected 5-year risk of diabetes ranged from 9 to 25% and 25 to 50%, respectively. In the largest prospective cohort study of 26,563 women followed for 10 years, baseline HbA1c level was an independent predictor of

**Table 3: Baseline HbA1c status**

HbA1c	%
<7	14.8
≥7-<9	27.6
≥9	57.7
Grand total	100.0



**Figure 1:** Taluka-wise status of hypertension

type 2 diabetes, even at levels considered to be within the normal range.<sup>[9]</sup>

### CONCLUSIONS

It has been a challenge in conceptualizing and implementing effective measures for managing the growing incidence of NCD like diabetes and hypertension. Making the opportunistic screening really for the community is the first step towards preparing a road map for effective management of NCDs. Stratifying people with high risk, moderate risk and low risk would help in building strategies.

The opportunistic diabetes screening camps helps in improving the diagnosis rates. Therefore, such camps are of high importance particularly places where the diagnostic rate is very low. The diagnostic rate for diabetes remains at very low level in India, mainly because of the low awareness level. The success of the opportunistic screening camps therefore depends on the proportion of people detected with diabetes mellitus for the first time. The activities in the current project revealed that 2.5% of female and 3.5% male were newly diagnosed with diabetes mellitus. However, by considering the overall diabetes detection

rate, the newly diagnosed numbers indicated that there is an improvement of 24% in the diagnostic rate.

Apart from improving the diagnosis rate the CDB project facilitates a strong diabetes database and diabetes registry at PHC, Community Health Centers level, which would further empowers the stakeholders and good management strategies for the community.

From this experience, it can be concluded that Government of Gujarat and NNEF have acted strategically to create awareness and education on diabetes management to reduce the HbA1c less than 7 in people with diabetes from 3 months experience in five Talukas we received very interesting insights in diabetes burden in Ahmedabad district. I hope this CDB program after 1 year in four districts will create a benchmark for good P-P-P in health-care in India and also provide facts on burden of diabetes in Gujarat.

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