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Original Research Article

Glycemic control in Type 2 Diabetes patients attending a clinic in Vijayawada, a South Indian city

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Abstract

Objective: Andhra Pradesh (A.P), a southern state in India, is faced with a significant burden of diabetes. Few studies are there mentioning the prevalence in some parts of the state and as a state as a whole. There is limited information regarding the glycemic control of these patients. We analyzed the status of glycemic control in a sample of patients attending a diabetic clinic, based at Vijayawada, a major city in A.P.

Methods: Data from patient records was collected for those with first visit during 2006 and analyzed for glycemic parameters at first visit and at 10 year follow up.

Results: A total of 104 Type 2 Diabetes Mellitus patients details have been considered for the study. Mean age of the sample at first visit is 51.2 years. Mean duration of follow up is 9.7 years. During this follow up the mean HbA1C is reduced significantly from 9.5 % at first visit to 7.8% at latest visit (ΔHbA1C=1.72, P<0.001). FBS and PPBS are also reduced significantly by 17.6 mg/dl (P<0.01) and 28.2 mg/dl (P<0.01) respectively. Proportion of patients achieving HbA1C target of less than 6.5%, 7% and 7.5% are 18%, 29% and 30% respectively at the latest visit. There is a slight increase in weight by 2 kg and a change of BMI by 0.98 kg/m^2 between first and latest visit.

Conclusion: Glycemic control in this clinic is satisfactory in terms of HbA1C control and proportion of patients achieving target.

Keywords: Diabetes; blood sugar; HbA1C; Glycaemia.

1. Introduction

Diabetes is a global epidemic with Indian prevalence at 8.6% in Adult population. Andhra Pradesh (A.P) is one of the states of India with high prevalence rates. There are some studies on prevalence of Type 2 Diabetes Mellitus (T2DM), risk factors and complications but there is very limited data regarding the glycemic control in T2DM patients on treatment from India and especially states like A.P[1,2,3]. This study is aimed to find the glycemic control in patients attending a diabetic clinic, with primary endpoint as change in HbA1C between first and latest visit. Changes in proportion of patients achieving HbA1C at different target levels, Fasting blood sugar (FBS), Post prandial blood sugar (PPBS), Weight and Body mass index (BMI) between the two visits are the secondary endpoints of the study.

2. Material and Methods

Data from medical records was collected for patients with first visit in 2006, just to ensure a follow up of around 10 years. The required sample size is 64 as per an estimated difference in HbA1C of 1% between the first and latest visit (SD taken as 2 and 1.5 at first and latest visits based on a pilot analysis of data from few patient records), with a power of 80 and C.I of 95%. We collected data from 104 patient records, just to ensure to accommodate for any missing data. Type 1 Diabetes Mellitus (T1DM) cases were excluded. Statistical analysis was done in SAS 9.1 and graphs were taken in MS Excel.

3. Results

A total of 104 patient records were considered for analysis. The demographics at first visit are given in Table.1. The mean age is 51 years (Range: 19-82 years) and males constituted 59% of the sample. The mean duration of diabetes at first visit is 6.87 years with a range from 0 i.e., newly detected to as chronic as 24 years. Mean weight and BMI are 73.4 kgs (Range: 34 - 160 kg) and 27.9 Kg/m^2 (Range: 14.7-51 Kg/m^2)

Table 1: Demographics at First Visit

First Visit	Mean (± SD), (Range)
Age (years) (n=105)	51.2 (±9.78), (9 – 73)
Males % (n=105)	59 %
Duration of diabetes (years) (n=104)	6.87 (±5.9), (0-24)*
Height (cms) (n=90)	161.85 (± 9.15), (140-183)
Weight (Kg) (n=105)	73.4 (± 15.45), (34.6-160)
BMI (n=90) (Kg/m^2)	27.9 (±4.9), (14.7-51)

* 0 = newly detected diabetes

There is a significant improvement in mean A1C from 9.5% at first to 7.89% at latest visit with a mean reduction of 1.72 % (P<0.001). Also there is a significant improvement in FBS and PPBS with a reduction of 17.6 mg/dl (P<0.01) and 28.3 mg/dl (P<0.01) respectively, from first to latest visit. . Proportion of patients achieving A1C target of less than 6.5%, 7% and 7.5% at first visit are 2.88%, 17.31% and 26.92% and at latest visit are 19.42%, 33.98% and 50.49% respectively. More number of patients at latest visit have achieved A1C target of <6.5% (P=0.48), <7% (P=0.033) and <7.5% (P = 0.087) compared to that of first visit.

The changes in glycemic and other parameters between first and latest visit is given in Table 2.

Table 2: Differences between first and latest visit

	First Visit	Latest Visit	Mean Difference	P-Value
A1C (n=104)	9.55 (±2.5)	7.82 (±1.4)	1.72 (±2.2)	**< 0.0001***
FBS (n=89)	153.84 (±57.2)	133.13 (±47.8)	17.62 (±60.1)	**0.0069***
PPBS (n=101)	232.75 (±87.7)	202.89 (±66.5)	28.28 (±92.8)	**0.0028***
% of Patients with A1C < 6.5	2.88	19.42	--	0.48
% of Patients with A1C < 7	17.31	33.98	--	**0.033***
% of Patients with A1C < 7.5	26.92	50.49	--	0.087
Weight (n=104)	73.85 (±15.0)	75.99 (±14.1)	-2.14 (±6.5)	**0.0012***
BMI (n=89)	28.06 (±4.7)	29.05 (±4.5)	-0.98 (±2.6)	**0.0007***

* Statistically significant

The mean weight increased significantly from 73.85 to 75.99 by 2.14 Kg. BMI also significantly increased from 28.06 to 29.05 by 0.98 Kg/m^2

4. Discussion

Mean age of the sample is 51 years with a mean duration of diabetes at first visit is 6.87 years and mean BMI at first visit is 27.9 Kg/m^2 representing the usual trend in general population. A post hoc analysis of the EDGE study by Brath *et al* shows similar baseline demographic profile concerned to Indian patients[4].

The mean duration of follow up is close to 10 years indicating a good long term assessment of the glycemic response. During this period HbA1C is reduced significantly from 9.55 to 7.82 by 1.72%. This value at latest visit i.e., 7.82% is better than the one shown in the study by Brath *et al* where the Indian HbA1C is 8.6%. Of course, the patients in Brath *et al* were on dual antidiabetic treatment but it is a prospective observational study and a treat to target study.

FBS significantly reduced from 153.84 to 133.13 by 17.62 mg/dl. PPBS also significantly reduced from 232.75 to 202.89 by 28.28 mg/dl. These values are very

close to normal range or target range and represent a very good glycemic control[5,6].

Proportion of patients achieving HbA1C target < 6.5, < 7 and < 7.5 at First visit are 2.88%, 17.31% and 26.92% and at Latest visit are 19.42%, 33.98% and 50.49% respectively. Out of these the improvement is significant at < 7% target range. These improvements at different target levels are better than that shown in different other clinic based studies, though the study aims and designs are different[7,8,9].
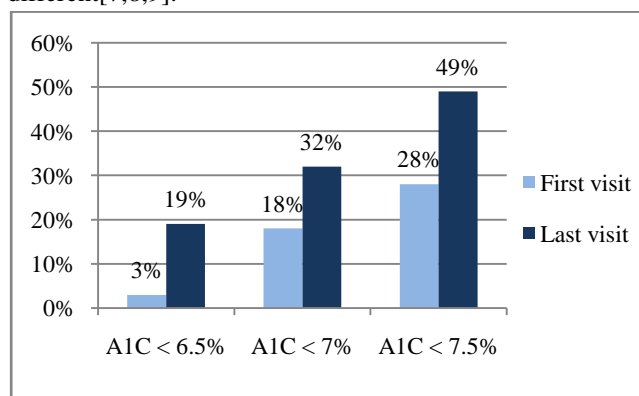

Figure 1: Proportion of patients achieving HbA1C target

There is significant increase in weight and BMI by 2.14 kg and 0.98 Kg/m^{2}though this is clinically important considering the long follow up of 10 years.

Achieving these glycemic control values despite the progression of the disease and over a long duration of follow up of 10 years seems to be a satisfactory achievement. Still there is scope to improve upon the proportion levels.

5. Conclusion

The glycemic control of patients attending this clinic is satisfactory in terms of A1C control as well as proportion of patients achieving A1C target. Still there is a scope for improvement for bringing more number of patients within desired A1C target range.

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References

[1]. Misra, P., Upadhyay, R. P., Misra, A. & Anand, K. A review of the epidemiology of diabetes in rural India. *Diabetes Res. Clin. Pract.* 2011; 92**,** 303–311.

[2]. Affan, E. T. *et al.* Prevalence of dysglycaemia in rural Andhra Pradesh: 2005, 2010, and 2014. *J. Diabetes* 2016; 8: 1–8.

[3]. Gupta, R. & Misra, A. Review: Type 2 diabetes in India: regional disparities. *Br. J. Diabetes Vasc. Dis.* 2007; **7:** 12–16.

[4]. Brath, H., Paldánius, P. M., Bader, G., Kolaczynski, W. M. & Nilsson, P. M. Differences in glycemic control across world regions: a post-hoc analysis in patients with type 2 diabetes mellitus on dual antidiabetes drug therapy. *Nutr. Diabetes* 2016; 6**:** e217.

[5]. Garber, A. J. *et al.* Consensus statement by the american association of clinical endocrinologists and american college of endocrinology on the comprehensive type 2 diabetes management algorithm – *2017 Executive Summary*. *Endocr. Pract.* 2017; 23**:** 207–238.

[6]. American Diabetes Association. Standards of Medical care in diabetes - 2017. *J. Clin. Appl. Res. Educ.* 2017; 40: 1–142.

[7]. Eid, M., Mafauzy, M. & Faridah, A. Glycaemic Control of Type 2 Diabetic Patients on Follow Up at Hospital Universiti Sains Malaysia. *Malaysian J. Med. Sci.* 2003; 10**:** 40–49.

[8]. BeLue, R., Ndiaye, K., NDao, F., Ba, F. N. N. & Diaw, M. Glycemic Control in a Clinic-Based Sample of Diabetics in M'Bour Senegal. *Heal. Educ. Behav.* 2016; 43: 112S–116S.

[9]. Weatherspoon, L. J., Kumanyika, S. K., Ludlow, R. & Schatz, D. Glycemic Control in a Sample of Black and White Clinic Patients with NIDDM. *Diabetes Care* 1994; 17: 1148 LP-1153.