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Retrospective Study to evaluate factors associated with Glycaemic Control among Rural patients conducted at private clinic in Patna

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Abstract

Objective: *The objective of this study is to highlight the challenges and success faced by a Diabetes Centre in Patna, monitored and managed, using Hb1Ac as a measure of glycaemic control.*

Methods: *From patients OPD records demographic cross sectional data were collected. Medical records of patients who had visited one specialised diabetic clinic at Patna were included in the study and the demographic details including Age, sex, residential postcodeand glycated haemoglobin (HbA1c) levels were noted from their medical records.*

Results: *524 (58.7%) patients were termed as "Metro Patients" and 368 (41.1%) were termed as "Rural Patients". At initial baseline presentation only 230 (25.8%) patients were ay glycemic control of HbA1c≤7% in which 28% male and 25.3% female were from metro town and 24.8% male and 24.12% females were from rural town. This number was increased to 551 (62%) after proper treatment and there was more number of patients achieved glycemic control in metro town as compare to patients who were belongs to rural area.*

Conclusion: *Overall improvement in diabetes control was noticed among patients who attend the studied diabetes centre, however a negligible change over time were observed in female patients residing in town over time. Even within the diabetes centre, intensive intervention my needed for uncontrolled patient groups to achieve optimal diabetes control.*

Keywords: *Diabetes Mellitus, HbA1c, Diabetes Control, Diabetes Centre.*

Introduction

Enormous human, economic and social cost worldwide is caused by the prevalence of diabetes and now this has become Global epidemic. Current estimation of 415 million people who are living with diabetes and in whom 75% live in low and middle-income countries; it has been projected that number diabetic subjects will increase 642 million by 2040[1]. Developing countries has highest burden of diabetes and mostly affected low and middle income countries where screening and treatment availability is major concern[2] and under the age of 60 years most of the people died in this countries[3,4].

Uncontrolled diabetes led to further macro and micro vascular complication which further increase treatment cost and reduce life expectancy and quality of life[5-7]. Diabetic complications can be prevented with tight glycemic control which lead to decrease in therapy cost and increases quality of life[8-12].

In a rural areas in Bihar proper treatment of diabetes is almost an illusion. Most of the time it was non availability of proper screening and awareness regarding appropriate treatment which led to further complications and death. There were very few healthcare professional at Diabetes centres in district and remote rural areas than centres in advanced metropolitan areas. This may have an effect on the adequacy of treatment of individuals with diabetes and is an important consideration when managing people with diabetes outside of metropolitan centres.

The objective and purpose of this retrospective study is to highlight the challenges and success faced by a Diabetes Centre in Patna, managed and monitored glycaemic control by using Hb1Ac.

Methods

From patients OPD records demographic cross sectional demographic data including Age, sex, residential postcode and glycated haemoglobin (HbA1c) levels were collected. A pre designed questionnaire was used for the patient interview. Patients were referred to the centre from medical clinics or from general practices. In addition, postcode was used to determine proximity to diabetes centre. It was termed as "Metro Patients" and "Rural Patients" based on their respective residential post code.

The results were analysed using SPSS 10.0. Students unpaired 'T' test was used to compare between the two groups and Pearson correlation was used to find the correlation between the parameters of the study population. P value <0.01 was taken as the level of significance.116 patients

Results

A retrospective analysis was done among 892 patients who has attended the study centre. 54±6 was the mean age and enrolled female were more in n umber than the male.

524 (58.7%) patients were termed as "Metro Patients" and 368 (41.1%) were termed as "Rural Patients". Details of mean HbA1c levels at baseline presentation and most recent visit were demonstrated in table 1.

Table 1: Mean HbA1c levels at baseline presentation and most recent visit 770

Mean HbA1c (%)	N	At baseline visit	Most recent visit	P Value
	892	7.9±0.3%	7.3±0.5%	0.001

At initial baseline presentation only 230 (25.8%) patients were ay glycemic control of HbA1c≤7% in which 28% male and 25.3% female were from metro town and 24.8% male and 24.12% females were from rural town. This number was increased to 551 (62%) after proper treatment and there was more number of patients achieved glycemic control in metro town as compare to patients who were belongs to rural area. (Table 2).

Subject Type	Gender	% at recommended Goal at Baseline	% at recommended Goal at Baseline
Metro Patients (N=524)	Males (N=240)	68 (28%)	139 (57.9%)
	Females (N=284)	72 (25.3%)	162 (57%)
Rural Patients (N=368)	Males (N= 169)	42 (24.8%)	119 (70%)
	Females (N=199)	48 (24.12%)	131 (65.8%)

In addition, there was a significant difference between male and female HbA1c, where female patients had significantly lower HbA1c levels than males at presentation and at the last Hb1Ac test as indicated in Table 2.

Discussion

Similar finding were seen in earlier trial were higher number of people from rural area were having uncontrolled diabetes[13]. The main reasons of this could be low awareness, counselling and education in rural areas as compare to metro station[14-20].

Literacy levels also plays an important role in awareness and education regarding diabetes and related complications. Even in this study it was observed that in town patients were more aware regarding the complication and prevention of diabetes as compare to the rural patients. More public and government organization should take more initiative majorly in rural areas regarding

awareness and knowledge of diabetes through various public connecting activities.

Within this retrospective study of examining HbA1c as one key parameter of diabetes control, it showed that the mean glycaemic levels were above the guideline for very good control of HbA1c≤7% at the initial visit to the diabetes centre with only 25.8% of patients at presentation and 62% patient at their most recent visit meeting the recommended targets for very good control. It should be noted that adequate control of diabetes (6.5-7%) may be the preferred target for many patients to avoid risks of hypoglycaemia which can occur in patients with very good control with an HbA1c ≤7%.

Males had significantly higher levels of HbA1c than their female counterparts at both the initial and final glycaemic tests, yet had a significant improvement in their glycaemic control levels compared to the female patient cohort. This shows that although males may present with, and continue to have, higher HbA1c levels, there is a higher level of control over time than in females.

Conclusion

Overall improvement in diabetes control was noticed among patients who attend the studied diabetes centre, however a negligible change over time were observed in female patients residing in town over time. Even within the diabetes centre, intensive intervention my needed for uncontrolled patient groups to achieve optimal diabetes control.

References

1. IDF Diabetes atlas: Seventh edition. www.diabetesatlas.org. Assessed 12 Aug 2016.

2. Shaw JE, Sicree RA, Zimmet PZ. Global estimates of the prevalence of diabetes for 2010 and 2030. Diabetes Res ClinPract. 2010;87:4–14. doi: 10.1016/j.diabres.2009.10.007.

3. Hall V, Thomsen RW, Henriksen O, Lohse N. Diabetes in Sub Saharan Africa 1999–2011: epidemiology and public health implications. A systematic review. BMC Public Health. 2011;11:564. doi: 10.1186/1471-2458-11-564.

4. Atun R, Gale EA. The challenge of diabetes in sub-Saharan Africa. Lancet Diabetes Endocrinol. 2015;3(9):675–677. doi: 10.1016/S2213-8587(15)00236-3.

5. Lloyd A, Sawyer W, Hopkinson P. Impact of long-term complications on quality of life in patients with type 2 diabetes not using insulin. Value Health. 2001;4(5):392–400. doi: 10.1046/j.1524-4733.2001.45029.x.

6. Stratton IM, Adler AI, Neil HAW, Matthews DR, Manley SE, Cull CA, et al. Association of glycaemia with macrovascular and microvascular complications of type 2 diabetes (UKPDS 35): prospective observational study. BMJ. 2000;321:405–412. doi: 10.1136/bmj.321.7258.405.

7. LeRoith D, Smith DO. Monitoring glycemic control: the cornerstone of diabetes care. ClinTher. 2005;27(10): 1489–1499. doi: 10.1016/j.clinthera.2005.10.010.

8. UK Prospective Diabetes Study (UKPDS) Group Intensive blood-glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes. Lancet. 1998;352:837–853. doi: 10.1016/S0140-6736(98)07019-6.

9. The Diabetes Control and Complications Trial Research Group The effect of intensive treatment of diabetes on the development and progression of long-term complications in insulin-dependent diabetes mellitus. N Engl J Med. 1993;329:977–986. doi: 10.1056/NEJM199309303291401.

10. Valentine WJ, Plamer AJ, Nicklasson L, Cobden D, Roze S. Improving life expectancy and decreasing the incidence of complications associated with type 2

diabetes: a modeling study of HbA1c targets. Int J ClinPract. 2006;60(9):1138–1145. doi: 10.1111/j.1742-1241.2006.01102.x.

11. Banerji MA, Dunn JD. Impact of glycemic control on healthcare resource utilization and costs of type 2 diabetes: current and future pharmacologic approaches to improving outcomes. Am Health Drug Benefits. 2013;6(7):382–392.

12. Oglesby AK, Secnik K, Barron J, Al-Zakwani I, Lage MJ. The association between diabetes-related medical costs and glycemic control: a retrospective analysis. Cost Eff ResourAlloc. 2006;4(1):1. doi: 10.1186/1478-7547-4-1.

13. Abebe SM, Berhane Y, Worku A, Alemu S, Mesfin N. Level of sustained glycemic control and associated factors among patients with diabetes mellitus in Ethiopia: a hospital-based cross-sectional study. Diabetes MetabSyndrObes. 2015;8:65–71. doi: 10.2147/DMSO.S75467.

14. Supiyev A, Kossumov A, Kassenov A, Nurgozhin T, Zhumadilov Z, Peasey A, et al. Diabetes prevalence, awareness and treatment and their correlates in older persons in urban and rural population in the Astana region, Kazakhstan. Diabetes Res ClinPract. 2016;12:6–12. doi: 10.1016/j.diabres.2015.11.011.

15. Kassahun T, Eshetie T, Gesesew H. Factors associated with glycemic control among adult patients with type 2 diabetes mellitus: a cross-sectional survey in Ethiopia. BMC Res Notes. 2016;9:78. doi: 10.1186/s13104-016-1896-7.

16. Yin J, Yeung R, Luk A, Tutino G, Zhang Y, Kong A, et al. Gender, diabetes education, and psychosocial factors are associated with persistent poor glycemic control in patients with type 2 diabetes in the Joint Asia Diabetes Evaluation (JADE) program. J Diabetes. 2016;8(1):109–119. doi: 10.1111/1753-0407.12262.

17. Marden S, Thomas PW, Sheppard ZA, Knott J, Lueddeke J, Kerr D. Poor numeracy skills are associated with glycaemic control in Type 1 diabetes. Diabet Med. 2012;29(5):662–669. doi: 10.1111/j.1464-5491.2011.03466.x.

18. Cavanaugh K, Huizinga MM, Wallston KA, Gebretsadik T, Shintani A, Davis D, et al. Association of numeracy and diabetes control. Ann Intern Med. 2008;148(10):737–746. doi: 10.7326/0003-4819-148-10-200805200-00006.

19. Cavanaugh KL. Health literacy in diabetes care: explanation, evidence and equipment. Diabetes Manag (Lond) 2011;1(2):191–199. doi: 10.2217/dmt.11.5. [PMC free article] [PubMed] [CrossRef]

20. Roblin DW, Ntekop E, Becker ER. Improved intermediate clinical outcomes from participation in a diabetes health education program. J Ambul Care Manag. 2007;30(1):64–73. doi: 10.1097/00004479-200701000-00009.