

An Evolving Epidemic in Younger Population - Diabetes

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ABSTRACT

Aim: To study the age at diagnosis of diabetes mellitus that has been decreasing due to epidemics of obesity and inactivity.

Methods: Seven hundred and forty two diabetic patients were included in the study. They were asked about age at which diabetes was diagnosed.

Results: 225 Males and 517 females were included in the study. Average age for males to be diagnosed was 45 yrs and average age for diagnosis of females was 43.7 yrs. Total average age for both genders was 44.1 yrs. The median age was 44 yrs.

Conclusion: The average age for diagnosis of diabetes has shifted from early 50's to mid 40's.

Keywords: Diabetes mellitus, epidemic

INTRODUCTION

Diabetes Mellitus (DM), once thought of as a disease of older population and a leading cause of morbidity and mortality throughout the world, is now increasingly being seen in younger age. Diabetes is associated with high rates of lost work days, hospital admissions, blindness, renal failure and non-traumatic amputation¹. Diabetes is an expansive disease and it is an important contributor to the increasing healthcare cost worldwide². Diabetes is also one of the most common non-communicable diseases globally. Prevalence rates of DM vary considerably amongst different populations and ethnic groups³. In several developing countries, the disease is on a rise⁴. The World Health Organization (W.H.O.) has estimated that the global number of people with diabetes will be more than double over the next 25 years and the developing world would bear an increasingly larger burden of disease in this period⁵. South Asia is specially considered as the volcano which is exploding with diabetics and immigrants from these countries to developed countries have higher rates of diabetes than the host nations^{6,7}. A recent survey showed that about 8.8 million people are suffering from diabetes in Pakistan and this number is estimated to be doubled in the year 2025⁸. Pakistan is a developing country with a population of 140 million, of whom 75 % live in rural areas⁹. Large scale data based on urban and rural populations are not available but some surveys have shown a 4% prevalence of diabetes in the adult population. The prevalence is on the rise so is the onset as well. We do not have sufficient data about the average age at diagnosis of diabetes. The recent

study was designed to determine this in our setup.

MATERIALS AND METHODS

This study was conducted at diabetic clinic Ghurki trust teaching hospital. 742 consecutive diabetic patients were included. The inclusion criteria included:

1. Known diabetics already taking oral hypoglycemics or Insulin
2. Recently diagnosed diabetics (during last one month on the basis of 2 raised blood sugar levels or high HbA1c levels)
3. Patients who were sure about their age and were sure about when were they diagnosed.

Patients who were not mentally well or who were not sure about their age at diagnosis of diabetes were excluded from the study. After taking informed consent, their recent age and time since diagnosis was determined. The data was collected and analyzed on SPSS version 17.

RESULTS

Seven hundred and forty two patients who presented to diabetic OPD of GTTH were included in the study. The patients were 18-85 years of age. The age distribution is shown in the figure 1. 90(12%). Patients were between 18 and 30 years of age, 340(45.8%) patients were between 31 and 45 (193 between 31-40 years (26%) of age and 147(19.8% between 41-45 years) years whereas 268 (36.1%) patients were between 46 and 65 years of age and 26 (3.5%) patients were more than 65 years of age at diagnosis. 517 patients were females and 225 were male (Fig. 2). Average age (Mean) for males at the time of diagnosis was 45.03 yrs and average age for females was 43.7 yrs. Average age for both genders at the time of diagnosis (total population) was 44.1

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yrs. Median age at diagnosis was 44 yrs. Table 1 summarizes the mean and median for males and females and total population.

Fig. 1: Age distribution of patients

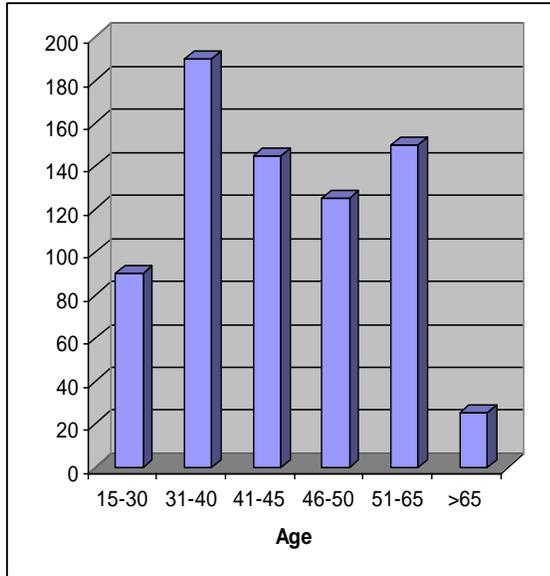


Figure 2: Gender Distribution

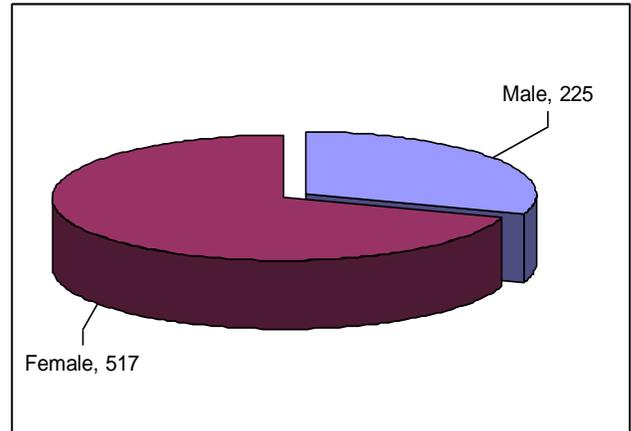


Table 1:

Mean			Median
Male	Female	Total	
45.03 yr	43.7 yr	44.1 yr	44 yr

Fig. 3: Distribution of Age at Diagnosis of Diabetes Among Adult Incident Cases Aged 18–79 Years, United States, 2011 [12]

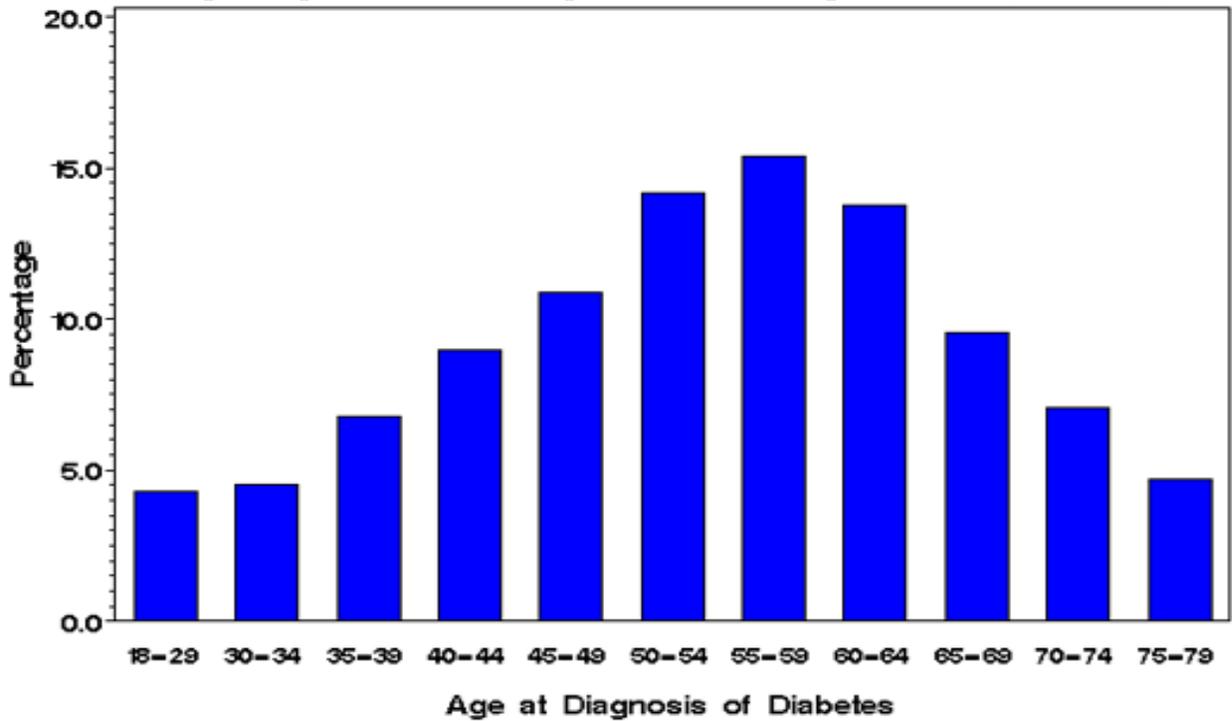
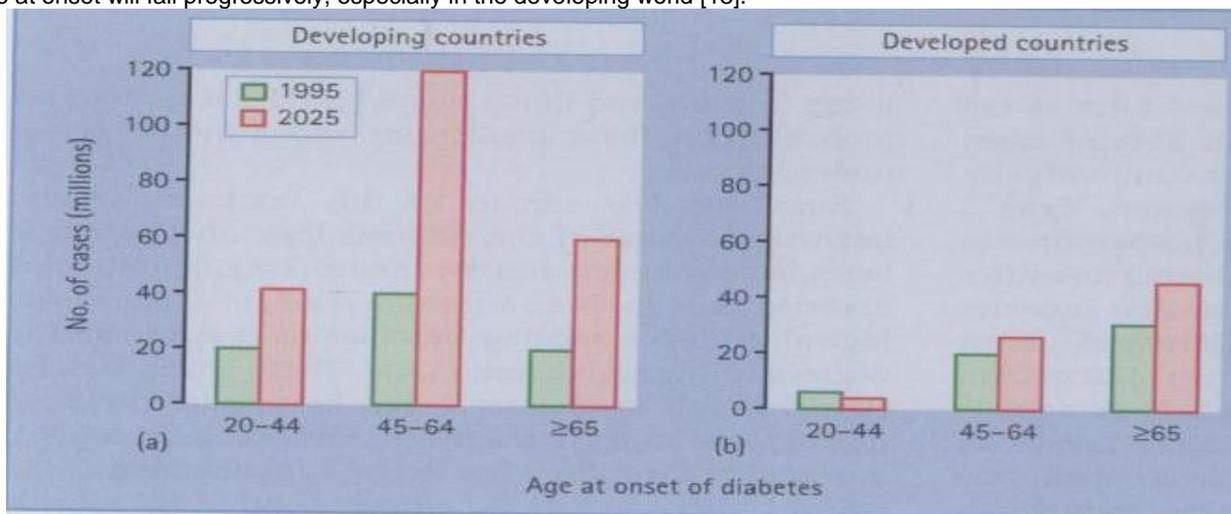


Fig. 4: Age of onset of type 2 diabetes in developing and developed countries. Estimates projected to 2025 suggest that the age at onset will fall progressively, especially in the developing world [13].



Age at Diagnosis	Percent
18-29	4.3
30-34	4.5
35-39	6.8
40-44	8.9
45-49	10.9
50-54	14.2
55-59	15.4
60-64	13.8
65-69	9.5
70-74	7.1
75-79	4.7

DISCUSSION

We are in the midst of an epidemic of lack of exercise, obesity, insulin resistance syndrome (IRS), and of diabetes in young¹⁰. The diabetogenic process begins in fetal life, with low birth weight and poor nutrition combining with sedentary lifestyle and dietary factors to produce an insulin-resistant phenotype that may accelerate the development of renal pathology and cardiovascular disease (CVD)¹⁰. Worldwide, the number of persons with diabetes has tripled since 1985.

Ninety (12%) patients included in our study were diagnosed between 18 and 30 years of age, while 340 (45.8%) patients were between ages 31 and 45 years, whereas 268 (36.1%) patients were between 46 and 65 years of age and only 3.5% patients were more than 65 years of age at the time of diagnosis. These data shows that largest numbers of patients were being diagnosed between 31-45 years of age i.e. the age at diagnosis is decreasing. This data can be compared to distribution of age at diagnosis of diabetes among adult incident cases aged 18-79 years, United States, 2011. In 2011, 63% of the adult

(aged 18-79 years) incident cases of diabetes were diagnosed between the ages of 40 and 64 years. About 16% were diagnosed at age 18-39 years, and about 21% were diagnosed at age 65-79 years¹².

In Australia, 1.7 and 1.4% of persons aged 35-44 and 45-54 years, respectively, had diabetes in 1981, and these rates increased to 2.5 and 6.2% in 2000¹¹, suggesting a trend to earlier age of onset of diabetes.

Pakistan is a developing country in midst of epidemic of diabetes. Maximum patients were diagnosed between 31-45 years as opposed to maximum number between 40 and 64 years in USA. The pandemic of type 2 diabetes is progressing faster, with a particular worrying increase in younger age groups¹³ (Fig. 3). In developing countries, the peak age at diagnosis is now 45-64 years¹⁴ (compared with >65 years in developed countries), thus disproportionately affecting those of economically productive age.

The mean age at diagnosis of diabetes in our study was 44.1 years as opposed to 53.8 years in USA in 2011¹⁴. The mean age in a study from Sri Lanka is 46.1¹⁵. The mean age in developing countries is decreasing as compared to developed world. This decreasing age at diagnosis has resulted from urbanization of the population and adoption of increasingly sedentary lifestyle and westernized diets [5]. This coupled with continuing high birth rate could potentially lead to an epidemic of diabetes.

CONCLUSION

The age at which diabetes is diagnosed is decreasing in the Pakistan. This should lead to early screening and early determination of risk factors.

REFERENCES

1. American Diabetes Association; Diabetes 1996: Vital Statistics. Cowic CC, Eberhardt MS Eds. Alexandria, VA. American Diabetes Association 1996.
2. Rubin RJ, Altman WM, Mendelson DN. Health care expenditure for people with diabetes mellitus, 1992. *J. Clin. Endocrinol. Metab.*, 1994;78:809A-809F.
3. King H, Rewers M. Global estimates for prevalence of glucose intolerance. *Diabetes Care*, 1993; 16:121-25.
4. Ramaiya KL, Kodali VVR, Alberti KGMM. Epidemiology of diabetes in Asians of the Indian Subcontinent. *Diabetes Metab. Rev.*, 1990;6:125-46
5. Amos AJ, McCarty DJ, Zimmet P. The rising global burden of diabetes and its complications; estimates and projections to the year 2010. *Diabetic Medicine*, 1997; 14 (suppl):S7 - S84.
6. Mather HM, Keen H. The Southall Diabetes Survey. Prevalence of diabetes in Asians and Europeans. *Br. Med. J.* 1985;291: 1081-84.
7. Swat ABM, McLarrv DO, Chuwa LM. Diabetes and impaired glucose tolerance in an Asian community in Tanzania. *Diabetes Res. Clin. Pract.*, 1990; 8:227-34.
8. Shera AS, Rafique G, Khawaja IA, et al. Pakistan National Diabetic Survey: prevalence of glucose intolerance and associated factors in Shikarpur, Sindh province. *Diabetic Med.*1995; 12:1116-21.
9. Zarina M. Treating patients in a tertiary care centre in a developing country. *Diabetes Reviews International*. 1994; 3(2): 2-4.
10. Bloomgarden ZT. Type 2 Diabetes in the Young: The evolving epidemic *Diabetes Care* April 2004 27:998-1010; doi:10.2337/diacare.27.4.998
11. Dunstan D, Zimmet P, Welborn T, Sicree R, Armstrong T, Atkins R, Cameron A, Shaw J, Chadban S, on behalf of the Aus Diab Steering Committee: *Diabetes & Associated Disorders in Australia 2000 The Accelerating Epidemic*. Melbourne, Australia, International Diabetes Institute, 2001
12. Diabetes data and trends. CDC. Last modified on Jan 18th 2013. <http://www.cdc.gov/diabetes/statistics/age/fig1.htm>
13. Tarin SMA. Global 'epidemic' of diabetes. *NMJ* 2010; 2(2):56-60
14. King H, Aubert RE, Herman WH. Global burden of diabetes, 1995-2025: prevalence, numerical estimates and projections. *Diabetes Care*. 1998;21:1414-31.s
15. Katulanda P, Constantine GR, Mahesh JG, Sheriff R, Seneviratne RD, Wijeratne S, Wijesuriya M, McCarthy MI, Adler AI, Matthews DR. Prevalence and projections of diabetes and pre-diabetes in adults in Sri Lanka--Sri Lanka Diabetes, Cardiovascular Study (SLDCS). *Diabet Med*. 2008 Sep;25(9):1062-9. doi: 10.1111/j.1464-5491.2008.02523.x.