

# Prevalence of diabetes mellitus in a Saudi community

*Anjum Karim, MBBS, MRCP, Danny O. Ogbeide, FWACP, FRCGP, Saima Siddiqui, MBBS, MRCP, Ibrahim M. Al-Khalifa, FRCGP.*

---

## ABSTRACT

**Objective:** The aim of this retrospective cross sectional study is to find out the prevalence of Diabetes Mellitus according to age and sex in the population attending the family and community medicine clinic in Al-Kharj Armed Forces Hospital.

**Methods:** Total eligible patients of Al-Kharj Military Hospital are about 100,000. The case notes in Medical Records were selected randomly and examined. Data was collected from 3747 case notes. They were divided into different age groups and also separated into male and female groups.

**Results:** The prevalence of Diabetes Mellitus in this study sample of 3747 (1,683 males and 2,064 females) was

2.55% in males and 5.32% in females. In the age group of 35 and above the prevalence in males was 8.52% and in females 19.48%.

**Conclusion:** A high prevalence of Diabetes Mellitus was noted in the population and particularly in females. There is need for comprehensive programs for the prevention of Diabetes Mellitus particularly in the adult population.

**Keywords:** Prevalence, diabetes mellitus, population, prevention.

**Saudi Medical Journal 2000; Vol. 21 (5): 438-442**

---

Among the most common chronic disorders of modern time, Diabetes Mellitus remains unique because of its multisystem ramifications. The complications of Diabetes Mellitus have far reaching effects on the lives of the people and also has a big constraint on the budget for health services.<sup>1</sup> In Britain about 5-10 percent of the National Health Budget is spent on the management of Diabetes Mellitus and its complications.<sup>2</sup>

The prevalence of Diabetes Mellitus is about 3-7% in the western countries.<sup>3</sup> In countries like Saudi Arabia where modernization and industrialization are going on rapidly, Diabetes Mellitus appears to be increasing in incidence. There are no studies available on the prevalence of Diabetes Mellitus in this community. The objective of this part of our study is to find out the age/sex prevalence of

Diabetes Mellitus in the community. We believe the information will be useful in planning control, prevention, targeting health promotion exercises and forming a basis for comparing future trends.

**Methods.** This is a retrospective cross sectional study which is a suitable method for calculation of prevalence of conditions. The total eligible patients in Al-Kharj Military Hospital is about 100,000. The case notes in medical record library are arranged in cabinets and there are about 140 cabinets and 7 shelves in each cabinet. Five case notes were randomly selected and examined from each shelf (No. 1, 25, 50, 75, & 100). Thus, 3,747 case notes of patents are examined. Patients were divided into age groups of 0-17, 18-34, 35-64, 65-74, and 75 and above. The age and sex of those affected with

---

From the Department of Family and Community Medicine, (Karim, Ogbeide, Siddiqui), Al-Kharj Armed Forces Hospital, Riyadh, Riyadh Armed Forces Hospital, (Al-Khalifa), Riyadh, Kingdom of Saudi Arabia.

Received 30th November 1999. Accepted for publication in final form 23rd February 2000.

Address correspondence and reprint request to: Dr. Danny O. Ogbeide, Family and Community Medicine, Riyadh Armed Forces Hospital, PO Box 318, Al-Kharj 11942, Kingdom of Saudi Arabia. Tel/Fax 01 545 1870. Email Izehi.ogbe@prime.net.sa

**Table 1** - Diabetes melitus, data analysis - male.

<b>Data Analysis</b>	<b>0-17 yrs</b>	<b>18-34 yrs</b>	<b>35-64 yrs</b>	<b>65-74 yrs</b>	<b>75 yrs and above</b>	<b>Total</b>
Total no of patients	813	424	338	61	47	1683
Patients with DM	2	3	27	6	5	43
% of Diff. age groups (%)	48.30	25.19	20.08	3.62	2.79	
Prevalence of DM (%)	0.24	0.70	7.90	9.80	10.63	2.55
Total No. of patients = 1683						

**Table 2** - Diabetes melitus, data analysis - female.

<b>Data Analysis</b>	<b>0-17 yrs</b>	<b>18-34 yrs</b>	<b>35-64 yrs</b>	<b>65-74 yrs</b>	<b>75 yrs and above</b>	<b>Total</b>
Total no of patients	921	599	447	64	33	2064
Patients with DM	0	4	78	18	10	110
% of Diff. age groups (%)	44.62	29.02	21.65	3.10	1.59	
Prevalence of DM (%)	0	0.66	17.44	28	30.30	5.32
Total No. of patients = 2064						

**Table 3** - Diabetes melitus, data analysis - male and female.

<b>Data Analysis</b>	<b>0-17 yrs</b>	<b>18-34 yrs</b>	<b>35-64 yrs</b>	<b>65-74 yrs</b>	<b>75 yrs and above</b>	<b>Total</b>
Total no of patients	1734	1023	785	125	80	3747
Patients with DM	2	7	105	24	15	153
% of Diff. age groups (%)	46.27	27.30	20.95	3.33	2.13	
Prevalence of DM (%)	0.11	0.68	13.37	19.20	18.75	4.08
Total No. of patients = 3747						

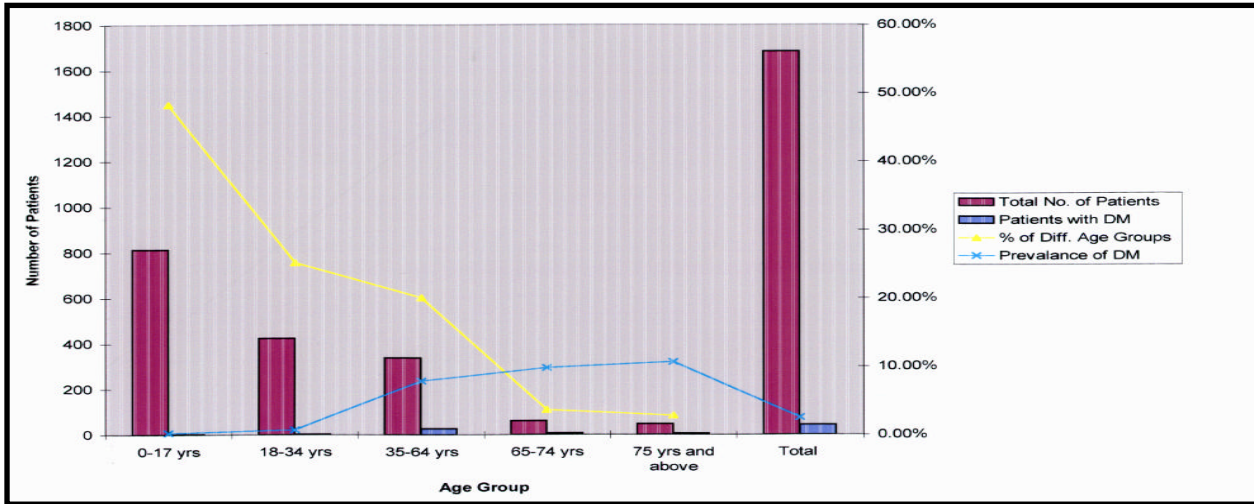


Figure 1 - Prevalence of diabetes mellitus in different age group in males.

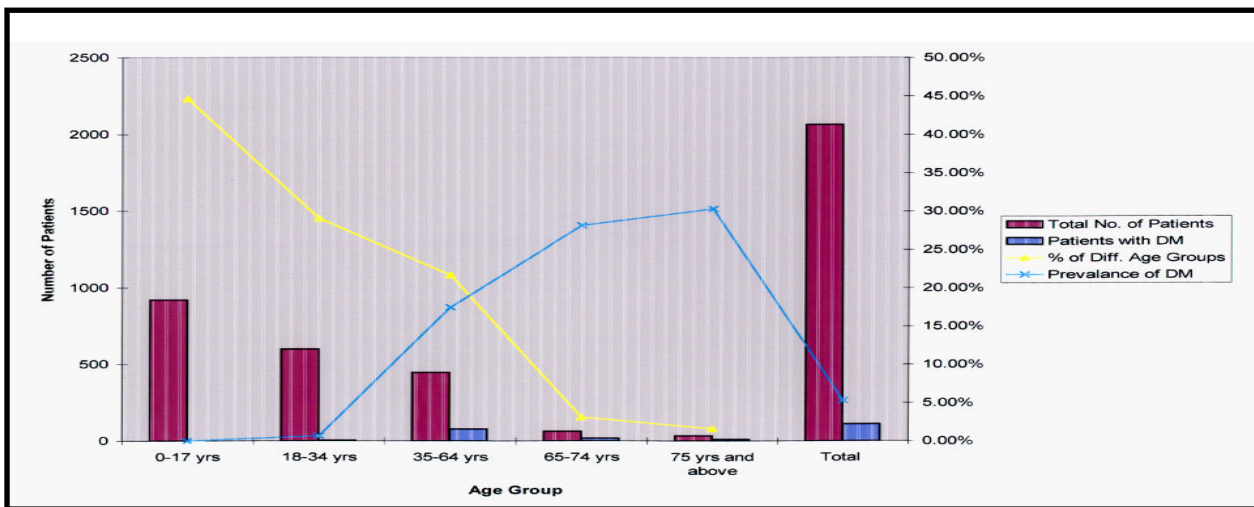


Figure 2 - Prevalence of diabetes mellitus in different age group in females.

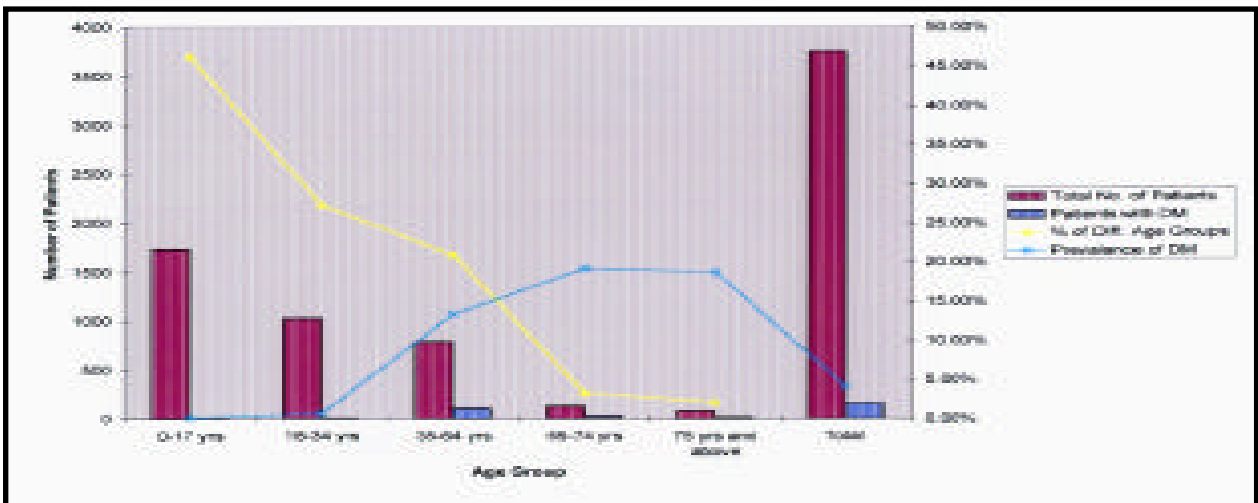


Figure 3 - Prevalence of diabetes mellitus in different age group in males and females.

Diabetes Mellitus were noted.

We calculated the percentage of different age groups in the total population and also percentage of affected population in different age groups in the total population.

**Results.** There were 3,747 total patients. Two thousand and sixty four females (55.08%) and 1,683 males (44.92%). As shown in Table 3, 1,734 of total patients were in the age group of 0-17 comprising 46.27% of total population. One thousand and twenty three were in age group of 18-34 (27.30% of total population). Seven hundred and eighty five in age group of 35-64 (20.95% of total population), 125 in age group of 65-74 (3.33% of total population) and 80 in age group of 75 and above (2.13% of total population). There were 2 patients with Diabetes Mellitus in 0-17 age group (Prevalence 0.11%), 7 patients with diabetes in age group 18-34 (Prevalence 0.68%), 105 patients in age group of 35-64 with Diabetes (Prevalence of 13.37%), 24 patients with diabetes in age group 65-74 (Prevalence 19.2%), 15 patients with Diabetes in age group of 75 and above (Prevalence 18.75%). This is also illustrated in Figure 3.

The total number of patients with Diabetes Mellitus in the study sample of 3,747 patients were 153 giving a prevalence rate of 4.08%.

As shown in Table 2, total number of male patients were 1,683 and there were 813 in age group of 0-17 (48.30% of total population). Four hundred and twenty four in age group of 18-34 (25.19% of total population), 338 in age group of 35-64 (20.08% of total population). Sixty one in age group of 65-74 (3.62% of total population) and 47 in age group of 75 and above, (2.79% of total population). The number of male patients with Diabetes in the different age groups were: in 0-17 were 2 (Prevalence of 0.24%); In age group 18-34; 3 patients with diabetes (prevalence of 0.70%); In 35-64 there were 27 with Diabetes (Prevalence of 7.90%); In 65-74 there were 6 patients with Diabetes (prevalence of 9.80%); In 75 and above there were 5 with Diabetes (prevalence of 10.63%). This is also illustrated in Figure 1.

In the male population there were 43 patients with Diabetes Mellitus giving a prevalence rate of 2.55%.

As shown in Table 2, total number of females in this cross-sectional study were 2,064. There were 921 patients in age group of 0-17 (44.62% of total population), 599 in age group of 18-34 (29.02% of total population). Four hundred and forty seven in age group of 35-64 (21.65% of total population). Sixty four in age group of 65-74 (3.10% of total population) and 33 in age group of 75 and above. (1.59% of total population). The number of female patients with Diabetes in age groups were: in 0-17 there were 0 (Prevalence of 0). In age group of 18-34, 4 patients with Diabetes (prevalence of 0.66%). In 35-64 there were 78 with Diabetes (Prevalence of

17.44%). In 65-74 there were 18 patients with Diabetes (prevalence of 28.12%). In 75 and above there were 10 with Diabetes (prevalence of 30.3%). This is also illustrated in Figure 2.

In the female population there were total 110 patients with Diabetes Mellitus giving a prevalence rate of 5.32%.

**Discussion.** The results of this study clearly shows that the prevalence of Diabetes Mellitus is very high in the age group of 35 and above, especially in females where it almost reaches epidemic proportions. In females, about 19.48% are Diabetic in the age group 35 and above and males 8.52% are Diabetic in the same age group. Overall, in our study, the prevalence rate of Diabetes Mellitus was 4.08% (2.55% in males and 5.32% in females). Another study carried out in Riyadh in King Khalid University Hospital on the prevalence of glucose intolerance and Diabetes Mellitus in urban and rural population in Saudi Arabia in age 15 and over showed prevalence of Diabetes Mellitus in urban population (males 12% and females 14%) and in rural population (males 7% and females 7.7%).<sup>4</sup> In Isfahan City, Iran another study carried out on the prevalence of Diabetes Mellitus in age group of 40 and over showed the prevalence rate of 7.54% in males and 7.97% in females.<sup>5</sup> The results in these two studies compare favorably with our study. But a study in Oman, Jordan in subjects above the age of 25 showed the prevalence of 14.9% in males and 12.5% in females.<sup>7</sup> Also another study on prevalence of Diabetes Mellitus carried out in Shanghai, China on the population of 25 and older showed a higher prevalence rate of 2.54% in males than the 2.14% in females which was not statistically significant.<sup>6</sup>

As shown in the results that prevalence of Diabetes Mellitus in age group of 0-17 is almost nil in both males and females and also very low in the age group of 18-34. Diabetes Mellitus in this society is mostly a disease of adult population and related to the factors of obesity and sedentary life style.<sup>8,9</sup>

In conclusion, it is clear from the study that the prevalence of Diabetes Mellitus is very high in the adult population in this community. Since diabetes is a risk factor for IHD and complications of Diabetes Mellitus has devastating effects on the patients life and a lot of constrains on the Health Service budget, there is a need for a comprehensive program for the prevention of Diabetes Mellitus especially for control of obesity, particularly in adult female population and emphasis on lifestyle changes.

**Acknowledgments.** We would like to thank the Medical Record staff for their assistance during our collection of data in the Medical Record Library. We also like to extend our thanks to the Research and Ethical Committee for providing some funds for statistical assistance, Mariya Karim for her secretarial assistance and Al Tayeb Al Sheikh for Arabic translation of the Abstract.

## References

1. Amos AF, McCarty DJ, Zimmet P. The rising global burden of diabetes and its complications: Estimates and projecting to the year 2010. *Diabetic Med* 1997; 14 (suppl 5): S1-85.
2. Zimmet PZ, Alberti KGMM. The changing face of macrovascular disease in non-insulin-dependant diabetes: An epidemic in progress. *Lancet* 1997; 350: 1-4.
3. Harris M I, Zimmet P. Classification of Diabetes Mellitus and Other Categories of Glucose Intolerance. In: Alberti KGMM, Zimmet P, DeFronzo RA, Keen H, eds. *International Textbook of Diabetes Mellitus*. 2nd ed. Chichester: Wiley, 1997: 9-23.
4. Al-Nuaim AR. Prevalence of Glucose Intolerance in urban and rural Communities in Saudi Arabia. *Diabetes Mellitus* July 1997; 14: 595-602.
5. Amini M, Afshin-Nia F, Bashardoost M, Aminorroaya A, Shahparian M, Kazemi M. Prevalence and Risk factor of Diabetes Mellitus in the Isfahan City population. *Diabetes Res Clin Pract* 1997; 38: 185-190.
6. Shi HL, Fang JC, Zhu XX. Prevalence of Diabetes Mellitus and associated risk factors in adult urban population in Shanghai, *Diabetes Metab* 1998; 24: 539-542.
7. Ajlouni K, Jaddou H, Batiha A. Diabetes and Impaired Glucose Tolerance in Jordan: Prevalence and associated Risk Factors. *J Internal Med* 1998; 244: 317-323.
8. Ogbeyide DO, Bamgboye EA, Karim A, Al-Khalifa I. The prevalence of overweight and obesity and its correlation with chronic diseases in Al-Kharj adult outpatients, Saudi Arabia. *Saudi Medical Journal* 1996; 17: 327-332.
9. Ebbesson SO, Schraer CD, Risica PM, Adler AL, Ebbesson L, Mayer AM. Diabetes and impaired glucose tolerance in three Alaskan Eskimo populations. The Alaska-Siberia Project. *Diabetes Care (United States)* April 1998; 21: 563-569.