

# Diabetes care in primary care centres of the Riyadh region

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**Abstract** Diabetes mellitus is one of the common chronic diseases in Saudi Arabia. This study was conducted to assess the quality of care of diabetic patients in primary health care centres in Riyadh. All diabetic patients' charts (2130) in 30 health centres were analysed during July-August 1992. The overall prevalence of diabetes in these health centres was 1.0 per cent (0.8 per cent in urban and 1.6 per cent in rural areas). Insulin treated diabetics (ITDM) were found in 9 per cent of all diabetic patients. Family history of diabetes was positive in 32 per cent of patients while ideal body weight was found in only 23 per cent of all patients. Good control was seen in only 19 per cent of patients. Primary care physicians failed to report on the compliance of 56 per cent of patients. Health centres were not consistent in following acceptable and recognized screening methods for diabetes complications. Health centres missed the majority of diabetic patients.

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## Introduction

Over the last twenty years there has been a major change in the lifestyle of the Saudi population that has led to the appearance of certain diseases, of which diabetes mellitus has the major share.<sup>1</sup> The changes in lifestyle, in addition to the cultural norms and habits, have led to a mixture of both genetic and environmental risk factors for the occurrence of this disease.<sup>2</sup> *Fatani et al.* in 1984 reported diabetes prevalence to be 5.0 per cent and 4.3 per cent in urban and rural areas respectively in Jeddah (the Western province).<sup>3,4</sup> *Abu-Zaid & Al-Kasab* reported a prevalence of 5.5 per cent in males and 3.6 per cent in females in a selected semiurban-rural community in Southern Saudi Arabia.<sup>5</sup> There has been a growing feeling that the prevalence of diabetes mellitus in the kingdom is higher than has been reported so far, which makes this disease one of the most common chronic disorders seen in hospitals and primary care centres.

In 1984, Saudi Arabia adopted the 'health for all' strategy, which will run until the year 2000. Primary care centres play an important role in this project. One of the main objectives is to provide medical care for chronic diseases.<sup>6,7</sup> This horizontal approach is expected to have a positive impact on the preventive, curative and promotive aspects of diabetic patients' health. More than 75 per cent of the community health problems are managed at the level of primary care centres.<sup>8</sup>

Care for chronic diseases such as diabetes mellitus is expected to receive optimal attention through this horizontal approach. Primary care centres are available, accessible and acceptable to the Saudi community.<sup>9</sup> For this reason, the following study was conducted to assess the quality of health care provided to diabetic patients. In addition, a diabetic population attending health care centres was also studied with regards to the patients' socio-demographic characteristics, geographical location, type of diabetes, management, complications and other associated diseases.

## Methods

The population of the Riyadh region amounts to 2.11 million. There are 268 health centres providing free health care to that area. The overall doctor-population ratio was 1:3072 in urban areas and 1:1487 in rural areas covered by selected health centres. Primary care centres are required to keep a chronic diseases register which was used in this study. The city of Riyadh was divided into five sections. These sections contain more or less equivalent numbers of health centres. Three health centres were randomly selected from each section to make up a total of fifteen health centres which also represent the various socio-economic strata in Riyadh.

Fifteen health centres were again randomly selected from the rural area around the city of Riyadh. The total number of centres selected, thirty, represents 11 per cent of the total amount of health centres in the Riyadh region.

A data form was developed for the study, consisting of the following items:

- health centre location;
- socio-demographic data (such as age and sex);
- vital signs (blood pressure, weight, and height);
- biochemical markers for diabetes in the form of average fasting blood sugar for at least 3 readings denoting control;
- chronic complication markers (proteinuria);
- method of treatment: insulin treatment (ITDM) versus non-insulin treatment (NITDM);
- compliance according to the physician's judgment;
- presence of family history of diabetes mellitus.

All Saudi patient charts (of patients over 25) in the diabetes register were reviewed by the primary care physicians during July-August 1992 and the data forms were completed. The investigators checked the patients, records and the research formats completed by primary health care physicians, in order to secure sufficient reliability. All diabetic patients included in the study met the WHO criteria 1985 for diag-

nosis of diabetes mellitus.<sup>10</sup> The completed data forms were entered into a PC computer using Professional file. The data were analysed using an SPSS-PC program.<sup>11</sup>

## Results

The selected health centres provided care for a population of 207,541; 2064 diabetic patients were found in the register. The patients were included in the register if they were known diabetics before the adoption of the PHC system register, presented with diabetic symptoms and were diagnosed accordingly, or were accidentally discovered to be diabetics.

The overall prevalence of diabetics in Riyadh region was 1.0 per cent; the rural area prevalence was almost twice the urban area prevalence (table 1). The vast majority of all patients were NITDM (table 2). Patients of 65 and over and females had higher rates among the ITDM group than those <65 years and males. A positive family history of diabetes mellitus was found among 4 per cent of ITDM and 30 per cent of NITDM. Of the patients whose weights and heights were recorded, only 23 per cent had a normal body weight. There was more overweight among the NITDM-patients. Out of all diabetic patients, 79 per cent were poorly controlled. There were more well-controlled patients among NITDM-patients and the urban population (table 3).

There was no consistent policy on checking patients' urine for proteinuria. A high proportion of patients (376) did not undergo regular checks for this problem. Data on compliance could be found for only 900 diabetics, 58 per cent of whom were compliant.

All health centres recognized the importance of public health education and all have arranged continuing medical education activities with regard to diabetes mellitus. Facilities for doing complete blood count, urine microscopy and urine dipstick were available in respectively 70 per cent, 70 per cent and 63 per cent of the health centres. Health centres have shortages of receptionists (67 per cent), as well as a lack

of facilities for doing fundoscopy (70 per cent), urea and electrolytes test (67 per cent), and glucose tolerance test (77 per cent).

Many health centres have adopted a

policy of repeating prescription every two weeks. However, 53 per cent of the urban and 40 per cent of the rural health centres preferred to follow up their diabetic patients every four weeks.

**Table 1** Geographical distribution

	Urban	Rural	Total
Population screened	166,180	41,361	207,541
Diabetic patients (%)	0.8	1.6	1.0

**Table 2** Characteristics of diabetic patients. Rounded percentages

	ITDM n=193	NITDM n=1871
<i>Age</i>		
25-45	28	29
46-65	60	60
>65	12	11
<i>Sex*</i>		
Male	44	51
Female	56	49
<i>Family history</i>		
+	39	31
-	55	63
unknown	6	7
<i>Body Mass Index (kg/m<sup>2</sup>)</i>		
<25	26	19
25 - 29.9	23	31
30 - 40	30	31
>40	4	3
Unknown	17	16

\*  $\chi^2$  test  $p < 0.05$ .

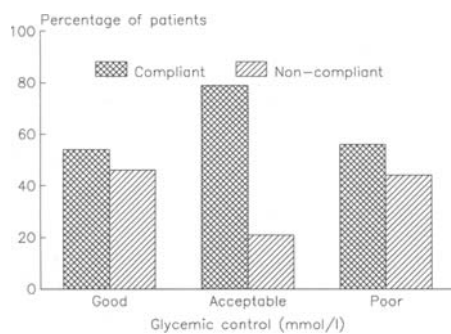
**Table 3** Average fasting blood sugar among diabetic patients. Rounded percentages

	ITDM*		NITDM†	
	urban n=111	rural n=82	urban n=1294	rural n=577
<8	24	10	17	12
8 - 14	3	13	4	9
>14	73	77	79	79

\*  $\chi^2$  test  $p < .001$ ; †  $\chi^2$  test  $p < .00001$ .

Attendances of six or more times at the health centres were recorded in 59 per cent during one year. There was no formal referral to a hospital in 74 per cent of the patients. Hospital admission was recorded in only 5 per cent. There were 400 diabetic patients with hypertension. A systolic blood pressure of >160 mm Hg was recorded in 19 per cent, while diastolic blood pressure of >95 mm Hg was recorded in 26 per cent of patients.

The figure shows patient's compliance in relation to glycemic control. Compliant patients represent 65 per cent of the good and acceptable control groups while they represent 56 per cent in the poor control group.



**Figure** Patient compliance in relation to glycemic control

## Discussion

Lack of a well-defined screening policy may account for the low prevalence of diabetic patients among the health centre population.<sup>3,4,12</sup> Reasons such as drug availability and special consultations (for instance ophthalmology) have led to the low number of diabetics attending PHC. Some governmental sectors provide medical services to their employees and their dependents, which may have also contributed to the low number of diabetics attending PHC. The presence of several health sectors providing care for the same population may have led to dilution of patients care and an increased tendency of patients to shop around for medical care. Contrary to previous findings<sup>13-15</sup> the

health centres care for more diabetics in the rural than in urban areas. This may be due to the following reasons:

- PHC-centres are the only facilities available for the people in rural areas, while people in the urban areas have other options.
- Catchment areas in the rural areas are more well-defined. The rural families are well known to primary care teams and monitoring is less difficult than in urban areas.

In this study, treatment status was used as a proxy to insulin dependency. The ITDM/NITDM ratio in the present study were similar to a US study<sup>16</sup> but showed some differences to a study done in Jeddah (26/74 per cent).<sup>13</sup> Gender differences are overall negligible. However, some differences could be observed since females outnumbered males in ITDM and the contrary is true for NITDM. This is also different from other international findings.<sup>17</sup> The reasons for such differences cannot be substantiated.

This study showed age prevalence similar to a previous study done in Al-Kharj, South of Riyadh.<sup>18</sup> The age prevalence did not increase with age, as seen in international studies.<sup>19</sup> This difference may be attributed to the low percentage of elderly people in Saudi population and their underusage of health facilities.

Positive family history of diabetes mellitus (as far as patients were certain of their family history) was similar to previous studies.<sup>15</sup>

There are more obese patients in the NITDM group, which is to be expected.<sup>1</sup> Designing a policy which take into consideration the screening of high risk groups may identify many diabetic patients who are asymptomatic.

However, health centres have to deal with an artificial overload created by a policy which demands that all diabetic patients should consult their doctors every two weeks for repeat prescription. There is very little advantage in seeing all patients at such short intervals. Three months' or perhaps four months' follow-up is sufficient for well-controlled patients. The present repeat prescription sys-

tem needs to be reconsidered. These suggestions may reduce the overcrowding of health centres and minimize the problem of short consultation time.<sup>20</sup>

Patient compliance plays an important role in the control of chronic diseases.<sup>21</sup> However, the present study left a lot to be desired with regard to control and compliance. Unless public education is supported by more active screening for diabetes mellitus, progress will continue to be slow.

Lack of access to essential facilities reduces the efficiency of managing chronic diseases such as diabetes mellitus. Hospitals in the region should play a bigger role in backing up health centres with manpower as well as access to resources for investigations. Efforts at this level can help improve diabetic care to the level of care in conventional hospital clinics.<sup>22</sup>

It may be beneficial to prepare and follow a scientifically sound guideline in the care of these patients. It would be important to evaluate the level of care for chronic disease after adequate implementation of this program.

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## References

- 1 Sebai ZA. Health in Saudi Arabia. Riyadh: King Abdulaziz City for Science and Technology, 1987: 76-80.
- 2 Bacchus RA, Bell JL, Madkour M, Kilshaw B. The prevalence of diabetes mellitus in male Saudi Arabs. *Diabetologia* 1982; 23: 330-2.
- 3 Fatani HH, Mira SA, El-Zubier AG. The prevalence of diabetes mellitus in urban Saudi Arabia; proceeding of the Third World Congress on Diabetes in the tropics and developing countries, December 2-5 1984, Bangkok, Thailand 8-16, 1985.
- 4 Fatani HH, Mira SA, El-Zubier AG. Prevalence of diabetes mellitus in rural Saudi Arabia. *Diabetes Care* 1987; 10: 180-3.
- 5 Abu-Zeid HAH, Al-Kassab AK. Pre-

- valence and health care features of hyperglycemia in semiurban-rural communities in Southern of Saudi Arabia. *Diabetes Care* 1992; 15: 484-9.
- 6 Al-Mazrou Y, Al-Shehri S, Rao M. Principles and practice of primary health care. Directorate of Health Centres. Ministry of Health, KSA. Riyadh: Al-Helal Press, 1990: 13-7.
  - 7 Anonymous. Primary health care. Report of the international conference in primary health care. Alma-Ata, USSR, 1978. Geneva World Health Organization, 1978: 23-34.
  - 8 Joint Saudi Ministry of Health and WHO Committee. In-depth review of primary health care in the kingdom of Saudi Arabia, 1989: 2-11.
  - 9 Al-Shammari SA, Khoja T, Jarallah JS. Public attitude towards acceptability, availability and acceptability of immunization services in Riyadh, Saudi Arabia. *Ann Saudi Med* 1992; 12: 339-44.
  - 10 WHO study Group. Diabetes mellitus. Technical report series 727. Geneva: WHO, 1985.
  - 11 Nie NH, Hull CH, Jenkins G, et al. Statistical package for the social sciences (SPSS/PC). 2nd ed. New York: McGraw-Hill, 1986.
  - 12 National Diabetes Data group. Diabetes in America. Diabetes Data compiled 1984. Department of Health and Human Services, 1985.
  - 13 Fatani HH, Mira SA, El-Zubier AG. The pattern of complications in Saudi Arabian Diabetics. *Ann Saudi Med* 1989; 9: 44-7.
  - 14 Knowler WC, Pettit DJ, Savage PJ, Bennett PH. Diabetes incidence in Pima Indians: Contributions of obesity and parenteral diabetes. *Am J Epidemiol* 1981; 113: 144-56.
  - 15 Krowelski AS, Warram HJ. Epidemiology of diabetes mellitus. In: Marble, LP, Krall RF, Bradley AR, et al, eds. *Joslin's diabetes mellitus*. 12th ed. Philadelphia: Lea and Febiger, 1985(2): 12-42.
  - 16 Anonymous. Symposium on diabetes mellitus in Saudi Arabia, Medical City, King Fahad National Guard Hospital, Riyadh, Saudi Arabia. *Ann Saudi Med* 1987; 7: S3-S8.
  - 17 Ekoe JM. Diabetes mellitus. Aspects of the worldwide epidemiology of diabetes mellitus and its long-term complication. Amsterdam: Elsevier, 1988.
  - 18 Bacchus RA, Bell JL, Madkour M, Kilshaw B. The prevalence of diabetes mellitus in male Saudi Arabs. *Diabetologia* 1982; 23: 330-2.
  - 19 Harris M. Epidemiologic characteristics of impaired glucose tolerance in the USA population. National Diabetes Data Group. Bethesda MD: National Institutes of Health, 1984
  - 20 Al-Shammari SA. Factors associated with consultation time in Riyadh Primary Health Care Centres, Saudi Arabia. *Saudi Med J* 1990; 12: 371-5.
  - 21 Griffith S. A review of the factors associated with patient compliance and the taking of prescribed medicine. *Br J Gen Pract* 1990; 40: 114-6.
  - 22 Parnell SJ, Zalin AM, Clarke CW. Care of diabetic patients in hospital clinics and general practice clinics. A study in Dudley. *Br J Gen Pract* 1993; 43: 65-9.

