Where have all the diabetics gone?

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To the Editor: A recently published MRC Technical Report highlights the fact that the quality of diabetes care at all levels of public health care in South Africa is sub-optimal.[1] This is probably also true for diabetes care in the Free State (FS) province. The reasons for poor quality of care include patient numbers, acute staff shortages, inadequate training of nurses, lack of necessary equipment and sufficient medication, poor patient compliance and ineffective patient education.

An essential step in the planning of improved health care for diabetics in the FS is to establish the number of diabetic patients who are dependent on the public sector for their health care needs as well as the geographical distribution of patients and services. In the absence of a diabetes registry in the FS the number of diabetic patients in the province has to be estimated. Two approaches are possible, firstly to estimate the number of patients according to known prevalence rates of diabetes in the province, and secondly to calculate the number of patients according to the use of glucose-lowering medication provided by the provincial medicine depot during a specified period.

Estimated number of diabetics in the FS according to prevalence rates

The size of the FS population was 2.707 million in 2001; 1 314 810 were aged 25 years or older.[2] The age- and sex-adjusted prevalences of diabetes and impaired glucose tolerance (IGT) in Bloemfontein in black subjects aged 25 years and older were 7.1% and 13.1% respectively.[3] The calculated numbers of diabetics and subjects with IGT in the FS province were therefore approximately 93 352 and 172 240 respectively in 2005, provided that the population remained stable since 2001. As elsewhere in the world, only half of all affected individuals are aware of the fact they have diabetes[3] and the majority of patients with diabetes could be classified as having type 2 diabetes as this is the most prevalent type worldwide.[4] The total number of known patients with diabetes in the FS during the period June 2005 to May 2006 was therefore at least 46 676, while a similar number of individuals were unaware of the fact that they had diabetes.

Estimated number of diabetics in the FS according to annual usage of glucose-lowering medication

The FS provincial medicine depot provided on request the type, quantity and cost of glucose-lowering medication acquired during the period 1 June 2005 to 31 May 2006. According to the acquisition officer medicine is normally acquired on an on-going basis to maintain stock at the same level (J Meiring – personal communication). It is therefore safe to assume that the full amount of glucose-lowering medication acquired during this period was actually ordered by hospitals and clinics and eventually consumed by diabetic patients during a similar period.

A total volume of 1 259 460 ml of insulin (125 946 000 units) was bought at a cost of R6.471 million. The average weight of a diabetic patient attending the diabetes clinic at Universitas Hospital was 84 kg (J M M Koning – presentation at 37th meeting of the Society for Endocrinology, Metabolism and Diabetes of South Africa, Sandton, 2001). The average dose of insulin used per patient per day was estimated to be 0.75 U/kg or 63 U. This means that approximately 5 477 patients were treated with insulin during a 12-month period. Because the number of patients younger than 25 years suffering from type 1 diabetes is fairly small, these patients were not taken into consideration.

During the same period 19 802 144 metformin tablets (500 mg tablets) were acquired. If the average dose of metformin is estimated to be 4 - 6 tablets per patient per day, some 9 042 - 13 563 patients (average 11 303 patients) consumed these tablets during a 1-year period at a total cost of R1.992 million.

Gliclazide in the form of 80 mg tablets was the most prescribed sulphonylurea, of which a total of 9 081 800 tablets were acquired during the 12-month period. At an average dose of 2 - 4 tablets per day some 6 220 to 12 440 patients (average 9 331 patients) were treated during the 12-month period at a cost of R1.056 million. In addition, 2 624 328 glibenclamide tablets (5 mg) were also consumed during the same period. At an average dose of 3 tablets per patient per day, a further 2 397 patients were treated with a sulphonylurea at an additional cost of R1.071 million. The total number of patients taking sulphonylureas during the 12-month period was therefore approximately 11 728 at a total cost of R2.127 million.

Apart from the R10.59 million that was spent on glucose-lowering medication, an additional R1.67 million was spent on blood glucose test strips, bringing the total amount spent

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during a 1-year period in the FS on pharmaceuticals for diabetes care to R12.26 million (excluding the cost of disposable syringes).

The practice of combining insulin and oral agents has not yet become fashionable within the public service in the FS. Combining sulphonylurea and metformin therapy, however, is common practice in this province as it is elsewhere in South Africa.[5,6] Assuming that approximately 33% of patients treated with metformin also received a sulphonylurea, 7 573 patients received metformin only, 3 730 received metformin and a sulphonylurea, and 7 998 received only sulphonylureas (Fig. 1). The number of patients receiving glucose-lowering medication in the FS during 2005/6 therefore totalled 24 778. It is unlikely that more than 8% of patients were able to achieve satisfactory diabetes control by diet alone,[7] accounting for approximately another 3 734 patients.

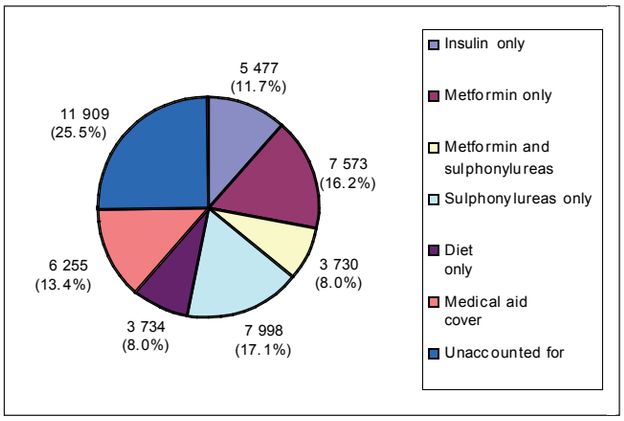

Fig. 1. Estimated number of patients 25 years and older with diabetes in the FS in 2006 according to prevalence rates (N = 46 676) and treatment status based on 2001 census figure.

Allowance also had to be made for patients cared for by the private sector. Approximately 6 million South Africans (13.4%) had medical aid cover during the preceding year.[8] This means that approximately 6 255 of the total number of diabetic patients in the FS received private medical care during the study period.

Discussion

According to these conservative estimates 11 909 or 25.5% of the 'known' diabetic patients could not be accounted for during the study period (Fig. 1). We acknowledge that the methods used to calculate patient numbers are not exact. Our main concern, however, is not the exact proportion of patients who cannot be accounted for, but the mere fact that such a sizeable group exists. Several possibilities exist to explain the 'missing' or unaccounted patients. Firstly, a sizeable proportion of the 'missing' patients may simply be non-compliant. Secondly, some of the diagnosed patients may be relatively asymptomatic and therefore opt not to take the trouble of re-entering the cumbersome primary health care system once diagnosed. Finally, other barriers such as lack of transport and ill health due to advanced HIV/AIDS or other diseases may prevent patients from seeking help. Another possible confounding factor is the fact that a number of patients with medical aid insurance run out of benefits towards the end of the year and then temporarily enter the public health care service for assistance, only to migrate back to the private sector at the start of a new financial cycle.

The main aim of this audit was to estimate patient numbers in the FS as a first step towards restructuring diabetes care in the province. It is now possible to plan diabetes services according to projected patient numbers per region. More importantly, it is now also possible to examine the capacity of the primary health care service at clinic and district level to provide proper diabetes care based on recognised national and international guidelines and according to estimated patient numbers. We trust that this audit will stimulate debate and contribute to an increased awareness of the shortcomings in diabetes care in both the public and private sectors in South Africa. There is a need not only to face the challenge of 'missing' patients but also to initiate a screening programme to find and treat the undiagnosed 'other half'.

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1. Steyn K, Levitt NS. Health Services Research in South Africa for Chronic Diseases of Lifestyle. In: Steyn K, Fourie J, Temple N, eds. *Chronic Diseases of Lifestyle in South Africa: 1995-2005*. MRC Technical Report, May 2006. www.mrc.ac.za/chronic/cdl1995-2005.pdf> (accessed 16 November 2006).
2. Statistics South Africa. http://www.statssa.gov.za/census01/html/default.asp (accessed 16 November 2006).
3. Mollentze WF. Hypertension, diabetes mellitus and related factors in black subjects residing in Bloemfontein and Qwaqwa. MD thesis, University of the Free State, 2003.
4. International Diabetes Federation. http://www.idf.org/home/index.cfm?node=19 (accessed 16 November 2006).
5. Kalk WJ, Huddle KRL, eds. *Practical Diabetes Management*. Johannesburg: Wits Diabetes Group, 1994. Diaset 2000.
6. Revised SEMDSA Guidelines for diagnosis and management of type 2 diabetes mellitus for primary health care in 2002. http://www.semdsa.org.za/files/dm2-guidelines.pdf (accessed 17 November 2006).
7. Turner RC, Cull CA, Frighi V, Holman RR. Glycemic control with diet, sulfonylurea, metformin, or insulin in patients with type 2 diabetes mellitus: progressive requirement for multiple therapies (UKPDS 49). UK Prospective Diabetes Study (UKPDS) Group. *JAMA* 1999; 281: 2005-2012.
8. South African Press Association. Med-aid benefits crunch looms. http://www.fin24.co.za/articles/default/display_article.aspx?Nav=ns&ArticleID=1518-1786_2010267 (accessed 17 November 2006).