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Dr Paul Rheeder (MMed) (Int), FCP (SA), MSc (Clinical Epidemiology) is a consultant in the Department of Internal Medicine at the University of Pretoria.

He has a specific interest in diabetes and is involved in research in diabetes at Mamelodi Hospital in Pretoria.

This community hospital reflects accurately the real-world situation of diabetes care for most of South Africa's citizens. The support systems are deficient (lost file, lost results etc.) and the workload excessive.

Dr Rheeder's interest is in providing optimum care in sub-optimum conditions. He is a "hands-on" practical physician working daily with the real problem in the real world.

He understands the circumstances that many GP's work in and offers his practical solutions to practical everyday care.

South Africa's diabetics need his approach and this series of articles will help many clinicians provide an improved service to their diabetics.

Summary

The prevalence of diabetes in South Africa is approximately 5% amongst Blacks and Caucasians but much higher in the Indian population.

Obesity and physical inactivity are the most amenable risk factors for NIDDM.

Cardiovascular disease is the most important coexisting problem and thus both microvascular and macrovascular complications contribute to the increased morbidity and mortality. NIDDM and IDDM are heterogenous groups of diseases with latent onset auto immune diabetes (LADA) added into its classification.

EPIDEMIOLOGY OF DIABETES
The tip of an iceberg...

The incidence of diabetes among school children in the USA is similar to the incidence of all childhood cancers combined.

In the USA diabetes has been diagnosed in 8-million adults, approximately 90-95% of whom have non-insulin dependent diabetes mellitus (NIDDM). Studies indicate that at least an additional 8-million people have undiagnosed NIDDM.

In the USA the prevalence of known cases of diabetes is 6-7% for people aged 45-64 years and 10-12% for those aged 65 years and older. Higher rates are found in US minority populations[1].

On average NIDDM is present for 10-12 years before clinical diagnosis in the United States[2].

The incidence of diabetes among school children in the USA is similar to the incidence of all childhood cancers combined[3].

A comprehensive epidemiological survey done in Cape Town in the 1970s showed that diabetes (mainly NIDDM) had an age-adjusted prevalence of 4,2 % amongst urban Blacks, 3,6% amongst Caucasians and 19,7% amongst Asians[4]. *(Table I)*

The chief risk factors are obesity and advancing age. Approximately 80% of NIDDM patients are obese at the time of diagnosis. An increased waist-to-hip ratio appears to predict NIDDM. A lack of physical activity and smoking have also been implicated.

The modified WHO classification gives a clear picture of the heterogeneity of diabetes mellitus. *(Table II)*

It is now clear that IDDM is more common in adults than formerly believed and in fact close to 60% of cases develop after the age of 20 years[12]. This often appears as subjects in the NIDDM group who actually have IDDM but in a slowly evolving form, masquerading as NIDDM at their first presentation[13].

This syndrome was initially called Type 1 1/2 diabetes[14]. Most cases can now be recognised as latent auto immune diabetes in adults (LADA). LADA has been reported from various countries such as the USA[15], New Zealand[16] and Scandinavia[17]. No data exists concerning Africa, however.

In this series of articles various experts share their understanding and management of medical problems with us. The emphasis is on practical approaches to the problem concerned and reconciliation of the Ivory Tower and the Coalface.

Epidemiology of complications

Again, most of the experience comes from the USA. Their experience shows the following[18]:

Heart disease: Cardiovascular disease is 2-4 times more common among people with diabetes and it is present in 75% of diabetes-related deaths.

Stroke: The risk of stroke is 2-4 times higher among persons with diabetes.

Hypertension: An estimated 60-65% of persons with diabetes have high blood pressure.

Table I: Modifiable risk factors for NIDDM.

Magnitude	Risk factor
strong (RR > 4)	obesity
moderate (RR 2-4)	none
weak (RR < 2)	physical inactivity
possible	smoking, high fat/low fibre diet

(RR = relative risk)

Blindness: In the USA diabetes is the leading cause of new cases of blindness among adults 20-74 years of age.

Kidney disease: Diabetes is the leading cause of end stage renal disease, accounting for 30% of new cases.

Neuropathy: Approximately 60-70% of people with diabetes have mild to severe forms of neuropathy.

Amputations: More than half of lower limb amputations occur among people with diabetes.

Dental disease: Periodontal disease, which can lead to tooth loss, occurs with greater frequency and severity among persons with diabetes. In one study, 30% of IDDM patients aged 19 years and over had periodontal disease.

Complications in South Africa

Omar and Asmal[19] studied the prevalence of acute and chronic complications in Blacks and Indians.

Of the 92 Blacks, almost 70% developed ketoacidosis on one or more occasions, whereas 50% of the Indians manifested this complication. Most of the chronic complications were related to the duration of IDDM. Retinopathy was found in 14% of Blacks and 22% of Indian patients, nephropathy in 3% and 7% and neuropathy in 22% and 32% respectively.

In a retrospective study by Motala[20] *et al* to assess the development of microvascular risk factors in African and Indian patients, they found that of the 219 patients (172 NIDDM and 47 IDDM), persistent proteinuria was present in 24,4% of NIDDM and 25,5% of IDDM patients. Hypertension developed in 64,5% of NIDDM and 34% of IDDM patients. Abnormal serum creatinine was observed in 25,1 % of NIDDM and 17,8 % of IDDM patients . ●

Table II: Modified WHO classification of Diabetes Mellitus and allied categories of glucose intolerance

A. Clinical classes	B. Statistical risk classes
Insulin dependent diabetes mellitus (IDDM) **Non-insulin dependent diabetes mellitus (NIDDM)** a) non-obese b) obese	Previous abnormality of glucose tolerance. Potential abnormality of glucose tolerance. (Normal glucose tolerance but at an increased risk for developing DM)
Malnutrition-related diabetes mellitus (MRDM)	
Impaired glucose tolerance (IGT) a) non-obese b) obese c) associated with certain syndromes	**C. Other types of diabetes associated with certain conditions and syndromes** 1. Pancreatic disease 2. Diseases of hormonal aetiology 3. Drug induced or chemical induced conditions
Gestational diabetes mellitus (GDM)	4. Abnormality of insulin or its receptors
Latent autoimmune diabetes in adults (LADA)	5. Certain genetic syndromes 6. Miscellaneous

Table III: Features of latent autoimmune diabetes in adults (LADA)

- Age usually > 35 years
- Clinical presentation as NIDDM
- Initial control with diet/oral agents
- Insulin dependency within 1-3 years
- Other features of IDDM:
  Low serum C-peptide
  Island cell antibody positive
  or anti GAD antibody positive

Obesity and physical inactivity are the most amenable risk factors for NIDDM.

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