Diabetes Mellitus: A Prevalent Scourge

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Outline

- Introduction
- Classification
- Symptoms
- Diagnosis
- Complications
- Management
- The Nigerian situation

Introduction

- Diabetes is one of the most common non-communicable diseases (NCDs).
- The fourth or fifth leading cause of death in most high-income countries.
- It has a global distribution
- Epidemic in many economically developing and newly industrialised countries.

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Introduction

- 382 million people have diabetes in 2013
- 592 million by 2035
- 80% of people with diabetes live in low- and middle-income countries
- The greatest number of people with diabetes are between 40 and 59 years of age.
- About 85% to 95% are type 2 diabetes

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Introduction

- Diabetes caused 5.1 million deaths in 2013
- Every six seconds a person dies from diabetes
- Diabetes caused at least USD 548 billion dollars in health expenditure in 2013 –
- 11% of total health spending on adults
- More than 21 million live births were affected by diabetes during pregnancy in 2013

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Introduction

- 3,921,500 cases of diabetes in adult Nigerians in 2013
- Prevalence of diabetes in adult Nigerians 4.99%
- Number of deaths in adults due to diabetes 105,091
- Mean healthcare expenditures due to diabetes per person with diabetes (USD)137

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What is Diabetes mellitus?

- A disorder of metabolism of carbohydrate, protein and fat that is characterised by hyperglycaemia and occur as a result of absolute or relative insulin deficiency or resistance to the effect of insulin

Classification of diabetes mellitus

- Type 1 (Autoimmune or idiopathic)
- Type 2 (insulin resistance)
- Gestational (onset of diabetes in pregnancy)
- Others or secondary

Symptoms of diabetes mellitus

- Asymptomatic
- Excessive passage of urine
- Excessive hunger and thirst
- Weight loss
- Recurrent skin infections
- Big babies
- Recurrent pregnancy loss or still birth

Symptoms of diabetes mellitus

- Visual impairment / blindness
- Numbness, pin or peppery sensation
- Erectile dysfunction
- Muscle pain and muscle weakness
- Foot ulcer
- Heart problem
- Kidney problem
- Premature death

Complications

- Acute
- Chronic
- Acute complications;

  hyperosmolar hyperglycaemic state,

  diabetic ketoacidosis,

  hypoglycaemia

Complications

- Chronic; Vascular and non vascular
- Vascular can be small or big vessels problems
- **Small vessels**:
- Retinopathy (eye disease) leading cause of blindness
- Nephropathy (kidney disease), most common cause of end stage kidney disease among Caucasians
- Neuropathy (nerve disease) numbness, lack of pain sensation

Complications

- **Big vessels problems**
- Cerebrovascular disease (stroke)
- Cardiovascular disease (heart attack, heart failure)
- Peripheral vascular disease (foot ulcers) commonest cause of non traumatic amputation

Diagnosis of diabetes mellitus

- Fasting blood glucose ≥ 7mmol/L
- Random blood sugar ≥ 11.1mmol/L
- If the patient is not symptomatic repeat test
- Glycated haemoglobin > 6.5%

Risk factors for type 2 diabetes mellitus

- Overweight (BMI ≥25 kg/m^2)
- Physical inactivity
- First-degree relative with diabetes
- Female with a history of delivering a baby weighing ≥4.1kg
- Diagnosis of Gestational diabetes
- Hypertension (≥140/90 mm Hg or on therapy for hypertension)

Risk factors for type 2 diabetes mellitus

- HDL cholesterol level <35 mg/dL (0.90 mmol/L) or triglyceride level >250 mg/dL (2.82 mmol/L) or both
- Female with polycystic ovary syndrome
- Haemoglobin A1C ≥5.7%,
- impaired glucose tolerance, or impaired fasting glucose on previous testing
- Other clinical conditions associated with insulin resistance (e.g., severe obesity, acanthosis nigricans

TREATMENT

- Non pharmacologic
- Pharmacologic
- Care of the feet
- Care of the eyes

Non-Drug interventions:

- Low fat, high fibre diet (CHO > 55%, Fat < 30% protein 10 –15%)
- Hypocaloric diet (500kcal deficit)
- Encourage exercise at least 150 minutes/week
  - Decreases in incidence of DM by 58%
  - Progression to DM from pre DM state by 40%.
- The Daqing study in China.

The Diabetes prevention study in Finland

The Diabetes prevention programme in USA

Pharmacologic therapy

- Oral glucose lowering agents
- Insulin
- Treatment of associated conditions like hypertension, dyslipidaemia, obesity

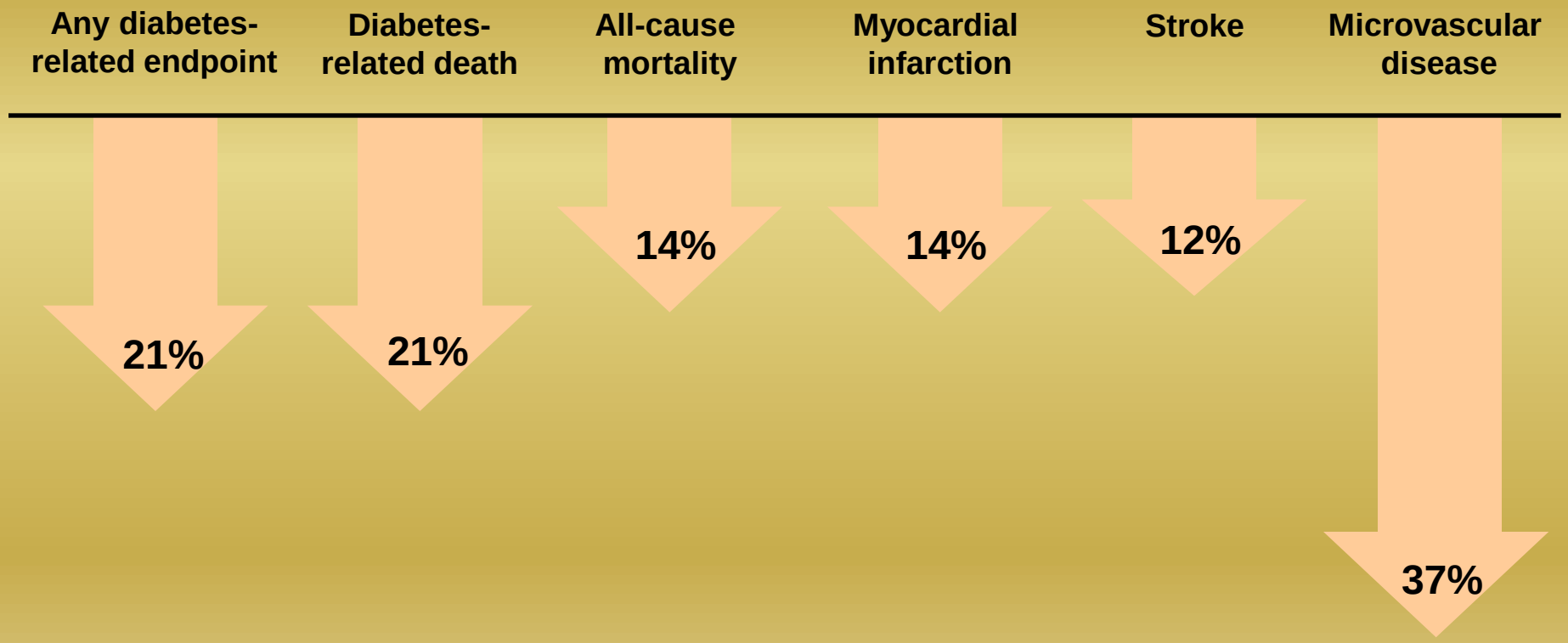
Goals of diabetes management

- Fasting blood sugar < 7mmol/L
- 2hours post meal glucose < 10mmol/L
- HbA1C < 7%
- Blood pressure < 130/80mmHg
- LDL cholesterol < 100mg/dl
- HDL cholesterol >40mg/dl for men, > 50mg/dl for women
- Triglyceride <1 50mg/dl

American Diabetes Association. Diabetes care 2005:

UKPDS: reducing blood glucose levels reduces the risk of complications

Over 10 years, each 1% reduction in HbA_{1c} was associated with:



Relative risk reductions for a 1% fall in HbA_{1c}
$P < 0.0001$ for all reductions except stroke, $P = 0.035$

Stratton IM, *et al.* UKPDS 35. *BMJ* 2000; 321:405–412.

Lowering A1C Reduces Complications in Type 1 and Type 2 Diabetes

A1C	DCCT 9% → 7%	Kumamoto 9% → 7%	UKPDS 8% → 7%
Retinopathy	↓ 63%	↓ 69%	↓ 17–21%
Nephropathy	↓ 54%	↓ 70%	↓ 24–33%
Neuropathy	↓ 60%	Significantly improved	—
Macrovascular disease	↓ 41%	—	↓ 16%*

*Myocardial infarction

DCCT Research Group. *N Engl J Med* 1993;329:977-986; Ohkubo Y et al. *Diabetes Res Clin Pract* 1995;28:103-117; UKPDS Group. *Lancet* 1998;352:837-853

The Nigerian Situation

- Ignorance, leading to delay in diagnosis.
- Poverty- Cash and Carry System ? NHIS.
- Problem with alternative medicare.
- Poor Healthcare delivery system;- Organisation
  - Structure
  - Skilled Personnel
- Suboptimal adherence of patients to lifestyle and pharmacological agents.
- Fake and Ineffective drugs.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APPRECIATION

THANK YOU