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Epidemiology of diabetes mellitus and its recent awareness with use of advance medication

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Abstract
Diabetes mellitus is one of the most widespread and melancholic chronic diseases, affecting the health of millions of persons worldwide. In accordance with the current Global Burden of Disease (GBD) report, the prevalence of diabetes rose from approximately 340 million persons in 2007 to approximately 455million persons in 2017, an increase of 30.6%. During the same interval, the annual number of deaths from diabetes rose from 1.2 million to 1.7 million. Diabetes mellitus (DM) is a metabolic disorder resulting from a defect in insulin secretion, insulin action, or both. Insulin deficiency in turn leads to chronic hyperglycaemia with disturbances of carbohydrate, fat and protein metabolism. Diabetes mellitus may be categorized into several types but the two major types are type 1 and type 2. Drugs are used primarily to save life and alleviate symptoms. Secondary aims are to prevent long-term diabetic complications and, by eliminating various risk factors, to increase longevity. Insulin replacement therapy is the mainstay for patients with type 1 DM while diet and lifestyle modifications are considered the cornerstone for the treatment and management of type 2 DM. Insulin is also important in type 2 DM when blood glucose levels cannot be controlled by diet, weight loss, exercise and oral medications. Oral hypoglycemic agents are also useful in the treatment of type 2 DM. Oral hypoglycemic agents include sulphonylureas, biguanides, alpha glucosidase inhibitors, meglitinide analogues, and thiazolidinediones. (Abdulfatai B. Olokoba *et al* 2012)

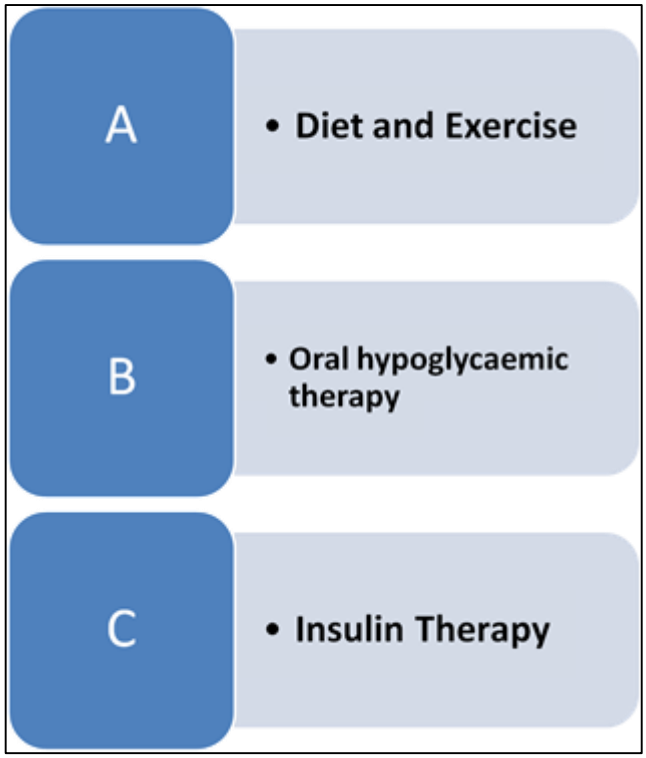
Keywords: diabetes mellitus, patient, health

Introduction
Diabetes mellitus is a heterogeneous metabolic disorder characterised by common feature of chronic hyperglycaemia with disturbance of carbohydrate, fat and protein metabolism. It is a condition characterised by an elevation of the level of glucose in the blood. Insulin, a hormone produced by the pancreas, controls the blood glucose level by regulating the production and storage of glucose. (Boulton AJ *et al* 2017) [2]

Classification of Diabetes Mellitus: The first mostly accepted classification of diabetes mellitus was published by WHO in the year 1980 and, it is modified in the year 1985. The classification encompasses both clinical stages and etiological types of diabetes mellitus and other categories of hyperglycemia. Primary diabetes mellitus probably represents a heterogeneous group of disorders that have hyperglycemia as a common feature (Ralph Brinks *et al* 2014)

Class Name	*Characteristics*
Type 1–Insulin dependent Diabetes mellitus (IDDM)	Autoimmune diabetes also known as juvenile onset. cell destruction which leads to absolute insulin deficiency. Autoimmune destruction of b-cells has multiple genetic predispositions and is also related to environmental factors that are still poorly defined. Type 1 is usually characterized by the presence of anti–glutamic acid decarboxylase, islet cell or insulin antibodies which identify the autoimmune processes which leads to beta-cell destruction
Type 2- Non insulin dependent Diabetes mellitus(NIDDM)	Also known as adult onset diabetes. The progressive insulin secretary defect on the background of insulin resistance. People with this type of diabetes frequently are resistant to the action of insulin. The long-term complications in blood vessels, kidneys, eyes and nerves occur in both types and are the major causes of morbidity and death from diabetes. The causes are multifunctional and predisposing factor includes: Obesity, Sedentary lifestyle, increasing age, Genetic factor such patients are at increased risk of developing macrovascular and micro vascular complications
Gestational diabetes(GDM)	GDM has been defined as any degree of glucose intolerance with onset or first recognition during pregnancy. Although most cases resolve with delivery, the definition applied whether or not the condition persisted after pregnancy and did not exclude the possibility that unrecognized glucose intolerance may have antedated or begun concomitantly with the pregnancy.
Other Specific Diabetes Types: Diseases of the exocrine pancreas Endocrinopathies Drug induced Generic defects of the β-cell function	Excess growth hormone and deficiency states, Glucocorticoid excess, Catecholamine excess Primary hyperaldosteronism, hyperthyroidism

Management of Diabetes mellitus



Classification of oral hypoglycemic agent with mechanism of action:

Oral hypoglycemic agent	***Mechanism of action***
Sulphonylureas	Stimulate the release of insulin from pancreatic beta cells
1First generation	
Tolbutamide Chlorpropamide	
2. Second generation	Increase insulin secretion by pancreatic beta cells
Glimepiride Glipizide *Glyburide*	
Meglitinides	Stimulate and increase insulin secretion by beta pancreatic cells
Repaglinide Nateglinide	
Thiazolidinediones	Increase glucose uptake by skeletal muscle
Pioglitazone	
Biguanide	Inhibit glucose production by liver
Metformin	
Alpha-glucosidase inhibitors	Inhibit carbohydrate absorbtion in small intestine
Acarbose Voglibose Miglitol	
Dpp-4 inhibitors	Mainly block or inhibit the Dpp-4 enzyme
Sitagliptin Vildagliptin	

Epidemiology

It is estimated that 366 million people had DM in 2011; by 2030 this would have risen to 552 million.8 The number of people with type 2 DM is increasing in every country with 80% of people with DM living in low- and middle-income countries. DM caused 4.6 million deaths in 2011.8 It is estimated that 439 million people would have type 2 DM by the year 2030.9 The incidence of type 2 DM varies substantially from one geographical region to the other as a result of environmental and lifestyle risk factor.

Future in Drug Therapy Inhaled Insulin

The inhaled form of rapidly acting insulin which became available in 2006, 55 after it was approved by both the European Medicines Evaluation Agency and FDA for treatment of type 1 and type 2 DM in adults.55-57 It is a rapid acting form of insulin that was indicated for use in adults with type 1 and type 2 DM and has the advantage of delivery directly into the lungs. Studies have however shown that inhaled insulin is as effective as, but not better than short acting insulin.55 It was withdrawn from the market by the manufacturer in October 2007 due to poor sales

Conclusion

DM is a metabolic disease that can be prevented through lifestyle modification, diet control, and control of overweight and obesity. Education of the populace is still key to the control of this emerging epidemic. Novel drugs are being developed, yet no cure is available in sight for the disease, despite new insight into the pathophysiology of the disease. Management should be tailored to improve the quality of life of individuals with this disease.

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