What is Diabetes?

Several different types of diabetes are classified by the American Diabetes Association (ADA). Type 1 diabetes, Type 2 diabetes, gestational diabetes mellitus (GDM), and specific types of diabetes can all be caused by other conditions. Type 1 and Type 2 diabetes are heterogeneous diseases, which means that the presentation and disease progression may vary between individuals. Type 1 diabetes is due to autoimmune beta-cell destruction, leading to absolute insulin deficiency. Type 2 diabetes is due to progressive loss of beta-cell insulin secretion. GDM is diagnosed during the second or third trimester of pregnancy. Other types of diabetes are due to other causes, such as neonatal diabetes or maturity-onset diabetes of young children, diseases of the pancreas, and drug or chemical induced diabetes.

Diabetes is diagnosed through a variety of laboratory tests, including fasting plasma glucose (FPG), 2 hour plasma glucose levels (2-H PG), and hemoglobin A1c levels. To test the FPG level, the patient is not allowed to intake calories for at least 8 hours preceding the test. In the case for FPG level to be classified as ‘diabetic’, the FPG levels must be greater than or equal to 126 mg/dL. For the 2-H PG test, 75 mg of anhydrous glucose is dissolved in water and ingested two hours preceding the 2-H PG test. Levels greater than or equal to 200 mg/dL are indicative of diabetes. Hemoglobin A1c levels can also be evaluated, with a level of greater than or equal to 6.5% (48mmol/mol) indicating diabetes. In order for the diagnosis to be confirmed beyond concrete clinical presentation (i.e. hyperglycemic crisis), a second, confirmatory round of testing is required. If both tests exceed normal levels, a diagnosis can then be subsequently made.

Screening & Management Practices for Patients with Diabetes

To assess the knowledge and ability of healthcare providers to properly identify and diagnose patients who present with risk factors that would indicate a state of prediabetes or diabetes.

Understanding type 2 diabetes mellitus screening practices among primary care physicians: a qualitative chart-stimulated recall study

Hafed D, Nelson D, Martin E, Cohen A, Northway R, Kallgren J.

Purpose

To identify the factors involved in a primary care physician’s decision whether to screen patients for Type 2 diabetes mellitus.

• 20 physicians
• 134 non-diabetic, randomly selected physicians who met the ADA criteria for Type 2 diabetes mellitus screening.
• Patients were 45 years or older.

Method

Randomly selected physicians who met the ADA criteria for type 2 diabetes mellitus screening.

Results

• Previous screening test results, visit types, and patient age influenced PCPs’ decisions to screen for Type 2 diabetes mellitus.

Survey of primary care providers’ knowledge of screening, diagnosing and managing prediabetes

Using E, Greer R, O’Rourke F, Yeh H, McGinn M, Clark J, Mastron N.

A study to evaluate primary care providers’ (PCPs) knowledge of the risk factors that indicate the need for screening, laboratory criteria necessary for a prediabetes diagnosis, management of diabetes, and their attitudes and beliefs regarding prediabetes.

• 140 PCPs from multispecialty practices affiliated with an academic system that served over 243,000 patients in 2015.

Survey questions on knowledge, management, and attitudes and beliefs related to prediabetes.

• 8% of PCPs correctly identified all of the risk factors that indicate the need for prediabetes screening.

Decision Criteria for Diabetes Screening

1. Testing should be considered in overweight or obese (BMI ≥ 25 kg/m² or ≥ 23 kg/m² in Asian Americans) adults who have or more of the following risk factors:
   - AIC ≥7.9% (59 mmol/mol), IGT, or IFG on previous risk factors
   - First-degree relative with diabetes
   - High-risk race/ethnicity (e.g., African American, Latino, Native American, Asian American, Pacific Islander)
   - Women who were diagnosed with GDM
   - History of CV disease
   - Hypertension (or history of hypertension)
   - HDL cholesterol level <35 mg/dL (0.9 mmol/L) and/or triglyceride level >250 mg/dL (2.82 mmol/L)
   - Women with polycystic ovary syndrome
   - Physical inactivity
   - Other clinical conditions associated with insulin resistance (e.g., severe obesity, acanthosis nigricans).

2. For all patients, testing should begin at age 45 years.

3. If results are normal, testing should be repeated at a minimum of 3-year intervals, with consideration of more frequent testing depending on initial results. (e.g., those with prediabetes should be tested yearly) and risk status.

Economic Cost of Diabetes in the U.S. in 2012

American Diabetes Association

A study that updates previous estimates of the economic impact of diabetes and quantifies the increased health resource utilization along with the productivity loss associated with diabetes in 2012.

• Sex, race/ethnicity, non-Hispanic white, non-Hispanic black, non-Hispanic other, and Hispanic.
• Age groups under 18, 18-34, 35-44, 45-54, 55-59, 60-64, 65-69, and over 70 years of age.
• Insurance status (private, Medicare, Medicaid, children’s hospital insurance program, other government-sponsored coverage, and uninsured).

Prevalence-based approach including demographics of the U.S. population in 2012 with diabetes prevalence, epidemiological data, health care cost, and economic data into a Cost of Diabetes Model.

Total estimated cost of diagnosed diabetes in the U.S is $245 billion. However, the estimated economic costs for diabetes have medical expenditures about 2.3 times higher than what expenditures would be in the absence of diabetes.

References


Conclusions

The research indicates the need for further education for healthcare providers regarding the increasing epidemic of diabetes, due to the mounting costs and medical implications associated with rampant diabetes and prediabetes. Accordingly, physical therapists are in an optimal position to more accurately recognize and appropriately manage patients with diabetes or pre-diabetes; however, even primary care physicians lack the required knowledge to adequately assess, diagnose, and manage patients with diabetes. Further research is required to identify the current level of knowledge that physical therapists possess in this domain and their capacity to impact the current epidemic.