



REVIEW ARTICLE

OPEN ACCESS

DOI: 10.5281/zenodo.4935848

A Review of Diabetic Management in Primary Health Care

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Diabetes is a fairly common medical condition that amounts to a huge burden on the health care system. Therefore, preventing the complications of diabetes is of utmost importance and has resulted in implementation of screening programs at the Primary Health Care level. In this review article we aimed at discussing the diabetic management at the level of Primary Health Care. The medical archives including Pubmed, Embase, index copernicus and index medicus were searched to find out suitable articles already published and written on the relevant subject considering diabetic management in Primary Health Care. Different managements were found and each had its scientific evidence and background. Switching from oral medications to insulin is a critical juncture when it comes to the management of diabetes. Diabetes is a clinical condition which needs further studies and research to evaluate the effectiveness of current management at the primary health care level.

Keywords: General Practice; Diabetes; Insulin; Primary Care

Citation: Shahid S. A Review of Diabetic Management in Primary Health Care. THE STETHO 2021;2(6):1-5

INTRODUCTION

The most common diagnosis ever encountered by physicians happens to be Diabetes mellitus. International Diabetes Federation (IDF) estimates the global burden of prediabetics at roughly 470

million people by the year 2035.¹ Diabetes is a clinical condition which needs further studies and research to evaluate the effectiveness of current management at the primary health care level. Thirst, frequent urination, weight loss and excessive food intake are the most common presenting complaints at the Primary Care of General

Practitioner's Clinic. However, some of the patients may also present with eye problems or other common infections. Preventing the complications of diabetes is of utmost importance and has resulted in implementation of screening programs at the Primary Health Care level. In this review article we will discuss the diabetic management in Primary Health Care.

METHODOLOGY

The medical archives including Pubmed, Embase, index copernicus and index medicus were searched to find out suitable articles already published and written on the relevant subject considering diabetic management in Primary Health Care. Different managements were found and each had its scientific evidence and background.

REVIEW

1. Screening

Diabetes screening is recommended with sugar level check-up for every person that is overweight or obese and especially for

adults between the age of 40 to 70. Overweight and obese kids should be started to screen from the ages of 10 years. The most important tool in this regard is testing the blood for glucose levels including Random and Fasting Blood Sugars, HbA1c and oral glucose tolerance test. These tests help the primary care physician in preventing the complications of diabetes and identifying the population at risk. The tests may therefore be repeated regularly if any deranged results are observed. There is a need to harmonize various systems in terms of diagnostics and therapeutics. The development of cheaper glucometers and decreased cost of testing strips has led to replacement of urine sugar with blood glucose testing, even at sub-centre level. All pregnant ladies should be screened during the 1st trimester for the random blood glucose levels. A reading over 140 mg% points towards workup for gestational diabetes.²

2. Diagnosis

The diagnostic criteria for screening of diabetics and prediabetics is tabulated as under:^{3, 4, 5}

Test	Prediabetic Values	Diabetic Values
Hb A1C	Between 5.7 and 6.4%	Equal to or more than 6.5%
Fasting Plasma Glucose	Between 100 and 125 mg/dL (5.6–6.9 mmol/L)	Equal to or more than 126 mg/dL (7.0 mmol/L)
75-g Oral Glucose Tolerance Test	Between 140 and 199 mg/dL (7.8–11.0 mmol/L)	Equal to or more than 200 mg/dL (11.1 mmol/L)
Random Plasma Glucose		Equal to or more than 200 mg/dL (11.1 mmol/L)

3. Management

Oral Hypoglycaemic

The 1st **Drug or Drug of Choice** (DOC), as soon as the diagnosis of diabetes is established, is metformin, which is available widely and very cost effective. As a family physician, persuading the patient into this option and following up with the patient are a critical point in management and helps in reducing the complications and better life quality for the patients. It is not recommended in the guidelines to put the patient on two or more different kinds of oral anti diabetic drugs; however, family physician may see people taking this regimen on daily basis. Unfortunately, this regimen can lead easily to hypoglycaemia, and thus knowledge of the drugs used by the patient (with a basic idea of their mechanism of action) is needed for the family physician, especially in diabetes. Generally, if the clinician is not confident in prescribing and switching the patient into insulin, he shall refer the patient immediately. This is due to the fact that delaying the proper management may fasten the complications rate. Moreover, it has been reported that 1% decrease in A1C will result in 21% drop-in complications rate, decrease mortality and morbidity rates in diabetic patients. Insulin prescription shall be combined with education of the treatment technique, sites and overall diabetic care, this is preferably done by a physician.⁶

Biguanides, specifically metformin, is the recommended non-insulin therapy for diabetes, especially when combined with exercise and diet control. Caution should be taken with biguanides and patients should have their base creatinine level taken on a regular interval. Creatinine at 1.4 mg/dL, or

an eGFR >60 mL/minute is crucial to note and should guide the clinician into discontinuation of metformin prescription. It is a good practice to initiate doses from one quarter of the desired dosage for a week and increment steadily; taking the drug 2 hours postprandial is the best to avoid undesirable gastrointestinal disturbances. Metformin has many beneficial effects in diabetes including decreasing weight gain, and decreasing incidences of hypoglycaemic episodes relatively (compared to insulin and sulphonylureas). Metformin is recommended as the first line in overweight diabetic patients.

Acarbose (α Glucosidase inhibitors) work on glucose absorption from the intestines. Logically, it has adverse effects on the gastrointestinal tract ranging from flatulence to diarrhoea. These drugs are preferable in the elder patients, as there is the risk of hypoglycaemia, unlike in the former groups. DPP 4 inhibitors e.g., sitagliptin are insulin like oral drugs which selectively and reversibly block degradation of GLP 1 (glucose like peptidase 1) and other incretins. They induce insulin sensitivity and enhance the overall pancreatic β cell function.⁶

Insulin therapy

Insulin is usually divided either by duration of action (short and intermediate) or the base component be it human or analogue. Long-acting insulin include NPH insulin, Glargine insulin and detemir insulin. NPH and glargine are given once daily but detemir can be given twice a day and the usual basal effect of this class lasts over 24 hours. The time of injection is preferably in the morning in order to avoid possible hypoglycaemia while sleeping in the morning. If long-acting

insulin is used for regular patients, short acting insulin on the other hand is mainly used for intensive insulin therapy. This group includes regular insulin, insulin lispro, insulin aspart, insulin glulisine, and prompt insulin zinc and lower plasma glucose often within 15 min with short duration of action of less than 4 hours. The administration of these drugs is usually in basis of three times a day just before each meal. For intermediate insulin, the usage is less in clinical settings and main examples of this group is Isophane insulin, neutral protamine Hagedorn (commonly known as NPH), and Insulin zinc.⁷

Patients should self-monitor their glucose levels (preferably postprandial) if they can and these results shall be shared with their primary physician with 3 days interval in order to follow up and later on optimize the insulin dosage. Some events may require an increase in insulin dosage, such as stroke and retinopathy, and the A1C follow up is vital but the target differ between patients (adults have lower target than elderly or children). Family physicians must teach the patient how to inject (using needle or the pen), the locations of injection, and how to switch between them. Another important point to convey to the patient is how to store insulin in refrigerator and not freeze it. Clinician shall confirm that the patient has understood by making him write the steps or doing them in presence of the physician before starting the management. Another point the family physician should work on before initiating the treatment is teaching the patient about hypoglycemia and its symptoms such as cold sweating, tachycardia, blurred vision and changes in consciousness, and this will help in early recognition and even management of

this complication. Providing extra care to patients facing family or compliance issues, and involving the family and even the public (e. school) as well are other issues that the primary health care physician shall address are considered important.⁸

CONCLUSION

Diabetes is a fairly common medical condition that amounts to a huge burden on the health care system. Implementation of screening programs at the Primary Health Care level is an important component in reduction of complications and improving quality of life. Switching from oral medications to insulin is a critical juncture when it comes to the management of diabetes. A lot of drugs are being developed and more are under research in order to provide a more convenient and effective management for the patients. There is a need to harmonize various systems in terms of diagnostics and therapeutics.

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