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## Can a Pharmacist improve life of Diabetes patient? An overview

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### ABSTRACT

In the last three decades role of pharmacist has changed dramatically. Presently, the pharmacists are becoming more patient oriented than product oriented. Patient counseling by pharmacist deals with providing information to the patients regarding the diseases, medications and lifestyle modifications. In diabetes, self management and patient adherence to the prescribed medication and lifestyle modifications is very essential and pharmacist can play an important role in counseling. A study was carried out to assess the influence of pharmacist provided patient counseling on patients' perception about quality of life in type 2 diabetes. 70 type-2 diabetes mellitus patients (48 males and 22 female) were enrolled and randomized into test and control groups. Out of these, two expired, four patients were hospitalized and four did not respond. The remaining 60 patients completed all follow ups. After the baseline, two follow ups were made with 60 days interval between the follow-ups. During each visit, patient's random capillary blood glucose was measured by using a standard glucometer. Mean capillary blood glucose levels were decreased in test group where as non-significant increase of capillary blood glucose levels was observed in the control group patients. Pharmacist provided patient counseling might be considered as an important element in implementing the disease management program.

**Keywords:** Role of Pharmacist, Patient Counselling, Quality of life, Diabetes Mellitus

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## INTRODUCTION

The role of pharmacist has changed dramatically over the past three decades. The later stage of 1960s revealed the growth of a new development that changed the concept of pharmacy from a product oriented to a patient focused one, called Clinical Pharmacy. The clinical pharmacy grew with the concept of pharmaceutical care. It involves the pharmacist's decision to avoid, initiate, maintain, or discontinue drug therapy, both of prescription and non- prescription drugs. It is thus practiced in collaboration with patients, physicians, nurses, and other health care workers. The ultimate goal of pharmaceutical care is to optimize a patient's quality of life.

### **Patient Counseling**

Patient counseling is an important means for achieving pharmaceutical care. It is defined as providing medication related information orally or in written form to the patients or their representatives, on topics like direction of use, advice on side effects, precautions, and storage, diet and life style modifications. Patient counseling is interactive in nature and involves a one-to-one interaction between a pharmacist and a patient and/or caregiver. The ultimate goal of counseling is to provide information directed at encouraging safe and appropriate use of medications, thereby enhancing therapeutic outcomes. Several guidelines specify the points to be covered by the pharmacist while counseling the patients.

### **Diabetes Patient & Pharmacist:**

#### **Diabetes: A Major Global Burden**

Diabetes mellitus (DM) is a group of metabolic disorders characterized by hyperglycemia. It is associated with abnormalities in carbohydrate, fat and protein metabolism, and results in chronic complications including microvascular, macrovascular, and neuropathic disorders. The worldwide prevalence of DM has risen dramatically over the past two decades. It has been projected that the number of individuals with DM will continue to increase in the near future. The one has to understand the following for better management of patient care. Need for counseling in diabetes, Patient knowledge, self-confidence and support. To improve self- management, By proper control of blood glucose. The proper control is dependent on the patient's adherence to medications, life style modifications, frequent monitoring of blood glucose, etc and can be influenced by proper education and counseling of the patient.

Diabetes, if untreated, can lead to various complications such as neuropathy, nephropathy, retinopathy, hyperlipidemia, diabetic foot ulcers, infections, etc. These complications adversely affect the quality of life of the patient.

#### **Role of pharmacists in diabetes management**

The pharmacist can Educate The Patients about the proper use of medication, screening for drug interactions, explain monitoring devices, and make recommendations for ancillary products and services.

The pharmacist, although not the health care professional to diagnose diabetes, is important in helping The Patient maintain control of their disease.

The pharmacists can also Counsel the Patients Regarding Insulin Administration Regularly so that the onset of complications can be postponed by having tight glycemic control.

### Essential components of diabetic counseling

Since diabetes is a chronic complication affecting the diabetic patient at various levels, the counseling should focus on the nature of the disease, lifestyle modifications, medications, and acute and chronic complications.

#### I. Counseling regarding the disease

#### II. Counseling regarding lifestyle modifications

- A). Diet: 1. Carbohydrates, 2. Fat, 3. Fiber, B). Exercise and physical activity  
C). Alcohol intake, D. Smoking

#### III. Counseling regarding medications

**1. Oral hypoglycemic agents (OHAs):** If the patient is diagnosed with Type 2 diabetes, he/she is more likely to be prescribed OHAs. Some of the commonly prescribed oral hypoglycemic agents and the important counseling points are discussed below.

**2. Insulin:** All patients with type 1 diabetes require insulin. Some patients with type 2 diabetes who initially respond to dietary modification and/ or oral anti diabetic medications eventually require insulin therapy.

**Table 1: Counseling Points for Oral Hypoglycemic Agents**

Drug	Administration time	Dosing schedule	Possible side effects	comments
Glibenclamide	Taken with meal or 15 to 30 mins before food	Usually taken one or two doses	Hypoglycemia, obesity	Interacts with oral anticoagulants
Glimiperide	Taken with meal	Usually taken in single dose	Hypoglycemia	Interacts with oral anticoagulants
Gliclazide	Taken with meal	Usually taken one or two doses	Hypoglycemia	Interacts with oral anticoagulants
Glipizide	Taken with meal	Usually taken one or two doses	Hypoglycemia	Interacts with oral anticoagulants
Metformin	Taken during or immediately after a meal to minimize gastrointestinal side effects	Usually taken one or three doses	GI disturbances	Should be stopped before surgery and radiological investigations involving contrast media
Acarbose	Swallow whole with liquid before meal or chew with the first few mouthfuls of food	Usually taken in one to three doses	GI disturbances	Sucrose should not be administered if the patient experience hypoglycemia
Repaglinide	Taken with meal	Usually taken three times in a day	Hypoglycemia	-
Pioglitazone	Taken with meal	Usually taken in a single dose	Hypoglycemia	-

**Table 2: Counseling points for insulin**

Steps	Counselling points
Drawing of insulin from the vial	Draw air in to the syringe in an amount corresponding to the prescribed amount of insulin. Invert the vial and draw up insulin little more than the prescribed amount
Site of self injection	The best site for self injection are the front and outer sides of the thigh and the abdomen
Injection techniques	Clean the injection site with spirit. Pinch the skin at the injection site in a broad fold and insert the needle at the angle of 45 degrees in to the subcutaneous tissue. Inject the insulin slowly then press your finger against the injection site while pulling out the needle.
Rotating the injection site	Rotate the injection site in the chosen area so as not to injure the tissue beneath the skin
Disposal of the needles	Disposable syringe must be discarded. So that they do not harm to others. Glass and metal syringes have to be thoroughly cleaned before every use.
Time of administration	The patient should be advisable to administer the insulin as per the doctor's advice. In general insulin preparations should be taken 30 mins before food.
Storage of insulin	Insulin should be stored at a temperature of 2-8 <sup>o</sup> C. In case the patient doesn't have a refrigerator he can be advised to put the vial in a glass of water. The patient can be also advised to have thermostate bags that can retain the stability of the preparation.
Adverse drug reactions	Advise the patient to monitor for allergic reactions (especially with bovine/porcine insulin) and also for hypoglycemia.
Specialised devices in administering insulin	Insulin pen has several advantages (easy to carry, less pain and accurate dose administration). Suitable candidates for insulin pen should be isolated and advised by the pharmacist.

#### IV. Counseling regarding acute complications

Though rare and not directly linked with the quality of life, the acute complications of diabetes can be morbid if not treated properly. The pharmacist should focus on strategies to prevent the occurrence of the acute complications and if they have occurred the methods to overcome and to manage the same. Some of the acute complications of diabetes are discussed below.

1. Hypoglycemia, 2. Diabetic keto acidosis, 3. Non Ketotic Hyperosmolar syndrome (NKHS)

**Table 3: Counseling regarding hypoglycemia**

Causes	Missing meal, antidiabetic medications
symptoms	Sweating, weakness, confusion
Prevention	Fruit juice, chocolates
Management	Regular eating plans, regular blood glucose checkups

#### V. Counseling regarding chronic complications

Diabetic neuropathy, Diabetic retinopathy, Diabetic nephropathy, Infections

#### VI. Counseling in special populations

Since the progression and the management pattern of diabetes vary significantly among different populations, the pharmacist should also tailor his counseling pattern according to the population. Some of the special populations with diabetes are mentioned below with the outline of the counseling in these patients. Elderly, Children, Pregnancy, Multiple disorders, Frequent traveling

## **VII. Counseling regarding self Monitoring of Glucose**

**VIII. Miscellaneous:** Foot care, Eye care, Oral hygiene.

## **Strategies to Improve Counseling in Diabetes Patients:**

**1. Patient information leaflets (PILs):** Patient information leaflets can help the patients in getting the information regarding diabetes. The PILs should focus on the lifestyle modifications and the medications.

**2. Compliance aids:** The compliance aids like medication envelopes and medication calendars can help in making the patient understand the different dosing schedule of the medication, especially the OHAs.

**3. Use of audiovisual aids:** A study by Wedman and Kahan found that a group of patients with diabetes counseled by a dietitian who used graphic teaching aids, complied with health care advice better than did a control group advised by the same counselor without the use of graphic teaching aids. Similarly the counseling pharmacist can also use audiovisual aids in order to improve the outcome of counseling.

**4. Establishing patient counseling center:** Establishing a separate counseling area near the dispensing area of the pharmacy can be beneficial for effective counseling. It can also improve the quality and the outcomes of the counseling process.

**5. Requirements for the counseling pharmacist:** In addition to the desired qualities of a good counseling pharmacist, the pharmacist should also have adequate knowledge about diabetes. Such a pharmacist is a vital member in a diabetes management program.

## **HbA1c**

HbA1c is a test that measures the amount of glycated hemoglobin in your blood. Glycated hemoglobin is a substance in red blood cells formed when blood sugar (glucose) attaches to hemoglobin.

## **Why the test is performed**

Your doctor may order this test if you have diabetes. It is used to measure your blood sugar control over several months. It can give a good estimate of how well you have managed your diabetes over the last 2 or 3 months. You have more glycated hemoglobin if you have had high levels of glucose in your blood. In general, the higher your HbA1c, the

higher the risk that you will develop problems such as: Eye disease, Heart disease, Kidney disease, Nerve damage, Stroke

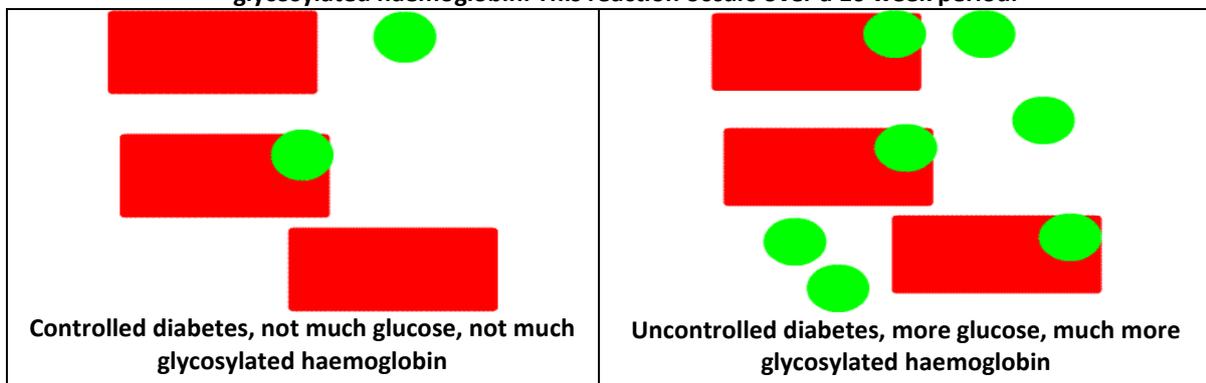
**Normal Values** An HbA1c of 6% or less is normal.

Normal ranges may vary slightly among different laboratories. Talk to your doctor about the meaning of your specific test results.

Illustrated diagrammatically



Haemoglobin in the blood (red, rectangle) combines with glucose in the blood (green, circle) to form glycosylated haemoglobin. This reaction occurs over a 10 week period.



Glucose levels fluctuate from minute to minute, hour to hour, and day to day. Thus for hour to hour control, or day to day, a glucose level is the best guide. The HbA1C level changes slowly over 10 weeks, so it can be used as a 'quality control' test. In diabetes glucoses tend to rise more than usual, dropping with exercise, rising after food, raising a lot more after sweet food, and can make it hard to control [1-10].

### CONCLUSION

Diabetes is a chronic illness that requires a combination of pharmacological & non-pharmacological measures for better control. Patient adherence to medication and lifestyle modifications plays an important role in diabetes management. Pharmacists being an important member of the healthcare system have an immense responsibility in counseling these patients.

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