REVIEW ARTICLE

Diabetes Patient Counseling: The Pharmacist's Role

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Abstract

The position of a pharmacist has undergone significant transformation in the previous three decades. The focus of pharmacists is shifting from products to patients at the moment. A pharmacist's role in patient counseling involves educating patients about their conditions, drugs, and lifestyle changes. It has been demonstrated to enhance therapeutic results. Hyperglycemia is a hallmark of the metabolic illnesses known as diabetes mellitus, which is also defined by abnormalities in protein, lipid, and carbohydrate metabolism. Chronic problems can result in macrovascular, microvascular, and neuropathic illnesses. Self-management of diabetes and patient compliance to the recommended medications and lifestyle changes are extremely important, and pharmacists can play a significant role in counseling. The non-pharmacological and pharmaceutical measures should both be covered in the counseling strategy. It is important to educate people about both acute and chronic consequences. There is strong evidence that patient counseling offered by pharmacists increases treatment adherence and improves life quality outcomes in diabetes.

Key words: Adherence, counseling, diabetes mellitus, patient compliance, pharmacist

INTRODUCTION

The role of the pharmacist has changed significantly over the past 30 years. In the past, people thought of pharmacists as people who gave out medications to the general public. This position gradually changed to one that focused more on medication development. A new development known as clinical pharmacy, which emerged in the latter half of the 1960s, transformed the idea of a pharmacy from one that was focused on products to one that was patient-focused. Pharmacists are now essential for overseeing a patient's medicine regimen.[1]

The idea of pharmaceutical care, which is the responsible administration of pharmaceutical treatment with the goal of obtaining certain outcomes that enhance patients' quality of life, has an impact on clinical pharmacy. It includes the pharmacist's decision to start, stop, resume, or resume pharmacological therapy using both prescription and over-the-counter drugs. Thus, patients, physicians, nurses, and other healthcare workers collaborate in its execution. Optimizing a patient's life quality is the ultimate objective of pharmacological treatment. These outcomes may be reached through interfering with physiological functions that result in the best physiological changes, disease recovery, the elimination or reduction of symptoms, or the cessation or slowing of the illness's course.[2]

An essential part of receiving pharmacological care is patient counseling. It is defined as giving patients or its representative's information on medications, either verbally or in writing, on subjects such as dosage instructions, side effects advice, pre-cautions, storage, food, and lifestyle changes.[3]

An individual conversation between a patient and/or caretaker and a pharmacist is the interactive component of patient counseling. To increase the likelihood of successful therapy results, it included an evaluation of whether the patient understood how to apply the information and whether

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it was understood as intended.[4]

The ultimate objective of counseling is to convey knowledge aimed at promoting safe and appropriate pharmaceutical usage; hence, improving therapeutic results. Several recommendations outline the topics that the pharmacist must cover when counseling patients.[5]

DIABETES IS A SERIOUS GLOBAL PROBLEM

Lifestyle diseases like type 2 diabetes are becoming more common both locally and worldwide in today's fast-paced world. These health problems are caused by our hectic schedules and long work hours, which leave us with little time for our health. Diabetes became the first non-communicable disease in history when the World Health Organization deemed it to be an epidemic.

415 million people worldwide have diabetes, according to the World Health Organization. Global patterns point to a prevalence rate increase of roughly 2.5% per year. High blood glucose levels brought on by abnormalities in insulin secretion and/or activity are the hallmarks of diabetes mellitus (DM), a chronic metabolic illness. Anomalies in lipid, carbohydrate, and protein metabolism lead to chronic issues such as macrovascular, microvascular, and neuropathic disorders. Diabetes comes in two main forms: type 1 and type 2, with type 2 making up about 90% of cases. These diagnoses are based on etiology and pathophysiology.[6] Hence, over the past two decades, DM has become significantly more prevalent on a global scale. According to predictions, the number of people with DM will rise more in the coming years. The International Diabetes Federation, also known as the IDF, reports that during the previous 10 years, the global diabetes growth rate was approximately 3% annually. According to IDF projections, there will be 592 million diabetics globally by the year 2035. 46% of that group, or nearly half, will still be undiagnosed and thus at high risk of complications from not receiving treatment. Childhood and adolescent diabetes incidence has significantly increased in recent years.[7]

This has a lot to do with the rising incidence of obesity in both adults and kids. Based on research, individuals with body mass index (BMI) under 25.0 appear to have a lower risk of diabetes. A rising BMI is associated with an increased risk of type 2 diabetes. Glycemic control is inadequate in nearly 25% of adult diabetics, and nearly half (49.1%) are obese.[8]

A statistically significant increase in the risk of dying from cardiovascular causes is also linked to rising BMI values in type 2 diabetic patients.

Treatment for diabetes has become more expensive since 2012; it now makes up about 11% of all healthcare spending worldwide. Up to 75% of healthcare spending related to diabetes in developed nations is spent in hospitals treating the disease's complications. The allocation of diabetes-related expenses varies slightly among developing nations; patients bear the majority of the bill and are responsible for covering their own treatment. The notable discrepancy between the observed and predicted rate of type 2 diabetes could be attributed to this. Compared to the actual records, projections allow for a larger number of cases.

The aging population is another significant factor – yet largely ignored – that contributes to the rising incidence of diabetes in Europe. It is now necessary to take comprehensive action to provide the ability to deal with the fallout from growing healthcare needs in the future, as this phenomenon will have a substantial impact on both highly developed and developing countries in the ensuing decades.[8]

US rates of diabetes increased from 8.9% to 12.3% between 1976 and 1994. With 625,000 new cases and over 178,000 deaths each year from the disease and its complications, diabetes affects about 8 million people in the United States. The etiology of type 2 diabetes is frequently unclear, leaving room for speculation regarding the presence or absence of a single or combination of factors contributing to hyperglycemia.[9]

Nearly half of non-traumatic lower limb amputations, over one-third of new cases of severe kidney disease, and 12% of all new cases of legal blindness are primarily caused by diabetes. In addition, research has revealed that patients with diabetes have a 3–4 times higher risk of death from heart illness or having a stroke. Eight diabetes prevalence in adults was projected to be 4.0% worldwide in 1995, and it is predicted to increase to 5.4% in the year 2025. The developed world has a greater rate than the developing world.

Need for counseling in diabetes

Patients with diabetes experience significant life changes, but effective treatment depends on their participation. Information, encouragement, and reassurance must be given by medical personnel. Educational programs to improve self-management are essential because the majority of a patient's care is managed by them and their families. The significance of self-care practices is demonstrated even by research on drug outcomes.[10]

Lowering the risk of small and large blood vessel diseases, relieving symptoms, lowering mortality, and improving quality of life are the main objectives of diabetes management. Crucial components of care include regulating blood pressure, blood sugar, and cholesterol levels; routinely monitoring for complications; modifying exercise and diet; adhering to prescribed medication regimens; monitoring blood sugar; and scheduling laboratory tests.

Studies have shown that maintaining good blood glucose control helps lessen the effects of diabetes.[11]

The right education and counseling for the patient can have an impact. The right control is reliant just on the patient's adherence to prescriptions, lifestyle changes, frequent blood glucose monitoring, etc. Pharmacy professionals have a huge obligation to provide these patients with counseling because they are essential members of the healthcare team.[12] Infections, neuropathy, nephropathy, retinopathy, hyperlipidemia, and diabetic foot ulcers are just a few of the issues that can arise from untreated diabetes.[13] Problems like these have an adverse effect on the patient's quality of life. "Quality of life" describes an individual's total state of well-being, encompassing their physical, psychological, and social aspects of health. Furthermore, it's common knowledge that patients with diabetes who receive patient counseling from pharmacists have a higher quality of life.[14]

THE PART PHARMACISTS PLAY IN MANAGING DIABETES

The role of the pharmacist in treating diabetic patients has grown as a result of the quick development of therapeutic drugs. The pharmacist can offer suggestions for additional products and services, verify for drug interactions, clarify surveillance devices, and give patients advice on how to use prescriptions safely.[15]

Although a pharmacist cannot diagnose diabetes, they are crucial in aiding patients in keeping their condition under control. Pharmacists can assist patients in keeping an eye on their blood sugar levels and talking to their doctors about any concerns they may not have brought up. These interactions can also teach patients more about diabetes. To keep strict control over blood sugar levels and prevent complications, pharmacists can offer advice on how to correctly administer insulin. Being available to patients' questions is another crucial responsibility of the pharmacist. In general, the pharmacist's job is to assist a diabetic in managing their condition as best they can.[16]

IMPORTANT ELEMENTS OF DIABETES COUNSELING

Diabetes is a chronic illness that has multiple effects on its patients, so lifestyle modifications, medication, and short- and long-term problems should be the main topics of counseling for diabetics.

Disease counseling

Individuals with DM should be informed that their illness is progressive and chronic, and that lifestyle modifications are imperative. The significance of taking medication and the necessity of closely following the recommended course of treatment should also be emphasized. It is important to let patients know that if their illness is not effectively managed, it could lower their quality of life.

Advice on changing one's lifestyle

When giving advice on lifestyle modifications, the pharmacist should stress the value of proper diet, regular exercise, giving up smoking, and consuming less alcohol.[17]

Diet

Dietary counseling, also known as nutritional counseling, is the primary method used to help clients change their diets. The term has been defined as "a collaborative relationship between a counselor and their patient/client to identify goals, prioritize issues, and create customized action plans that accept and promote accountability for self-care and self-management," however this definition is not widely used. While many medical professionals can perform DC, dietitians have received specialized training in working one-on-one with clients to modify dietary behavior to optimize dietary intake. A healthy diet is crucial for preventing malnutrition and non-communicable diseases, as well as improving the quality of life and treatment of both acute and chronic illnesses.[18]

The foundation of type 1 diabetic treatment and type 2 diabetes management is dietary control. It is crucial to consider nutritional composition when giving dietary recommendations, including fats, carbohydrates, and fibers.

Carbohydrates

Blood glucose levels are significantly influenced by the quantity of carbs consumed. It is advisable to keep your daily intake generally consistent and to balance the amount of food you eat with your level of physical activity. While an old person may only require 100 g of carbs per day, most young people require 180 g. The percentage of calories from carbs in the diet may approach 50%-55% if fibers foods including whole grain bread, jacket potatoes, etc. are consumed. Although people with diabetes must restrict their daily sugar intake, eliminating sugar from the diet is neither required nor practical.

Fat

Avoid saturated fats and substitute unsaturated fats in place of them because diabetics have an increased risk of coronary artery disease. One other significant issue linked to diabetes is obesity, and fats provide about twice as many calories per unit weight as proteins or carbohydrates. People with hypercholesterolemia might need to adhere to more restrictions.[19]

Fiber

Dietary fiber has two advantages. Being physically large increases one's sense of satisfaction. Second, by postponing the digestion and absorption of complex carbohydrates, fiber reduces blood sugar levels. It is estimated that a daily intake of 15 g of soluble fiber will result in a 10% decrease in a person with NIDDM's fasting blood sugar, glycated hemoglobin, and low-density lipoprotein cholesterol levels (found in fruits, pulses, and vegetables).[20]

Physical exercise and activity

Combining exercise with calorie restriction can help reduce weight and improve overall health. To burn between 50% and 80% of their maximum oxygen consumption, people with type 2 diabetes should exercise three to 5 days a week. For those with type 1 diabetes, blood sugar checks are necessary to maintain ideal metabolic control both before and after exercise. If a patient has unstable blood sugar that is poorly managed or is more likely to experience complications from diabetes, exercise is not advised. Excessive exercise should be avoided by those who are hypoglycemic.[21]

Those who have diabetes should warm up before exercising and cool down afterward, just like people without the disease. Walking or cycling for 5–10 min is an excellent low-intensity aerobic warm-up. This facilitates increased activity by readying the heart, lungs, and muscles. Gentle muscle stretching should be done for a further 5–10 min after the warm-up.

Stretching should focus on the muscles that will be used during the physical exercise session, even though warming up is good too. You can perform stretching after a strenuous warm-up or first. The same planning should go into the cool-down as the warm-up after the workout. Regaining the pre-exercise heart rate should be the gradual goal of the 5–10 min cool-down.[22]

Alcohol intake

Even in patients with extremely well blood glucose, a small amount of alcohol will have a major impact on blood glucose levels. Patients with diabetes should generally follow the same consumption recommendations as the general public.[23,24]

Smoking

Diabetics are more likely to experience cardiovascular problems, especially those who are over 40, smoke, have high cholesterol, or have hypertension. Large blood veins that are clogged frequently result in heart disease and stroke (arteries). In addition, the tiny blood vessels in the feet and legs may harden or become clogged. Smoking has several harmful effects, including infections, gangrene, ulcers, and even amputations. Patients should be informed of the negative effects of smoking and the different ways they can stop it. Stressing the use of medical techniques to quit smoking is important.[25]

Counseling with medication advice

Although lifestyle changes are crucial for managing diabetes, it is clear from ground-breaking studies that rigorous glycemic control is the best way to avoid chronic problems. As a result, the pharmacist plays a crucial role in providing diabetes patients with pharmacological counseling. Both oral anti-diabetic medications and insulin should place a strong emphasis on counseling.

Oral hypoglycemic agents (OHAs)

OHAs are much more likely to prescribe to a patient if they have type 2 diabetes. Following are some of the regularly given oral hypoglycemic medications and crucial counseling considerations.[26]

Following are some general guidelines for patients receiving OHAs:

To prevent hypoglycemia, the patient should always be advised not to skip meals and to stick to a regular eating schedule. OHAs are safe drugs in general. Nevertheless, certain people might have diarrhea, cramps, nausea, vomiting, fatigue, and appetite loss. The subjects for individual OHA counseling are listed in Table 1.

Insulin

Anybody with type 1 diabetes needs insulin. In some cases, people with type 2 diabetes require insulin therapy after initially improving with dietary modifications and/or oral anti-diabetic medications. Numerous insulin formulations are currently accessible. Their starting point, length of action, point of maximum impact, and timing may differ.[27] The doctor will prescribe the type of insulin that is most appropriate for a specific patient. A set of counseling suggestions for patients who use insulin is provided in Table 2.[27]

Counseling for serious problems

Although infrequent and unrelated to the quality of life, uncontrolled acute diabetic symptoms can be lethal. Wherever feasible, severe problems should be avoided, and if they do arise, the pharmacist should focus on how to deal with and manage them. A handful of diabetes's immediate complications are covered here.[28]

Hypoglycemia

Hypoglycemia can be brought on by excessive consumption of alcohol, using some diabetes medications excessively, skipping or delaying meals, engaging in too much exercise, or consuming too many of these drugs. Early, intermediate, and advanced symptoms all fall into one of

Table 1: Advice on using oral hypoglycemic medications

Drugs	Administration time	Dosing schedule	Possible side effects	Comments
Glibenclamide	Taken either 15–30 min before or after meals.	Usually taken in a single or double dose	Hypoglycemia obesity	Interact with oral anticoagulants
Glimepiride	Taken with meal	Usually taken in a single or double dose	Hypoglycemia	Interact with oral anticoagulants
Gliclazide	Taken with meal	Usually taken in a single or double dose	Hypoglycemia	Interact with oral anticoagulants
Glipizide	Taken with meal	Usually taken in a single or double dose	Hypoglycemia	Interact with oral anticoagulation
Metformin	Take during or right after meals to reduce adverse effects on the digestive system.	Usually administered in doses of one to three	GI disturbances	should be discontinued before radiological investigations using contrast media and surgery.
Acarbose	Chew the first few mouthfuls of food or swallow whole with liquid before eating	Usually administered in doses of one to three	GI disturbances	In the event that the patient has hypoglycemia, sucrose should not be given.
Repaglinide	Taken with meal	Usually given in one to three doses	Hypoglycemia	-
Pioglitazone	Taken with meal	Usually consumed in one dose	Hypoglycemia	-

three categories.[29] Early symptoms of hypoglycemia include weakness, dizziness, appetite, vomiting, shaking, nausea, and sweating. As it worsens, headaches, double vision, disorientation, and poor coordination are possible symptoms. Seizures and unconsciousness may result in extreme cases.

Two or three glucose tablets, two teaspoons of raisins, one or two teaspoons of honey, a quarter cup of fruit juice or pulp, a regular soft drink, or concentrated glucose fluid can all be used to treat hypoglycemia.[30] For advanced hypoglycemia, medical intervention including subcutaneous or intramuscular injections of glucagon 1 mg is necessary.

By taking anti-diabetic drugs as prescribed, having regular meals, and monitoring blood sugar levels often, hypoglycemia can be mostly avoided. The overview of hypoglycemia prevention counseling points is provided in Figure 1.

Diabetic keto acidosis (DKA)

An anion gap metabolic acidosis, hyperglycemia, and increased blood ketones are the hallmarks of DKA, a dangerous consequence. Although type 2 diabetes patients with acute stress may also experience it, it primarily affects people with type 1 DM.

The following are risk factors for DKA: Very old age, inability to control blood sugar, low socioeconomic status, and treatment non-compliance. Neglecting or failing to take insulin is a significant risk factor for DKA. Advice on preventing DKA can be obtained from pharmacists.[31]

Non-ketotic hyperosmolar syndrome (NKHS)

High blood osmolarity, dehydration, and extremely elevated blood sugar levels are the hallmarks of NKHS. People with type 2 diabetes who are elderly frequently experience it. Women's gender, advanced age, acute infection, and treatment non-compliance are risk factors. Reducing the risk of NKHS can be achieved through counseling regarding the significance of compliance.[32]

Counseling for ongoing challenges

Diabetes is a chronic condition and since its long-term repercussions can negatively impact one's quality of life, it is important to emphasize them. It is generally known that strict adherence and appropriate lifestyle changes can prevent the chronic consequences of diabetes.[33] The following lists several chronic problems and the role that pharmacists play in assisting patients with these issues.

Diabetic neuropathy

Consistently high blood sugar levels that damage nerves are its defining feature. Loss of feeling or touch sensitivity in the feet can be brought on by neuropathy. Hand, arm, or leg pain could also be the outcome.[34] People frequently aren't even aware that they have nerve problems due to the slow nature of how nerve damage can develop. Therefore, it's crucial to have regular checkups to exclude out diabetic neuropathy. Blood pressure and glucose levels should be kept as near to average as possible to prevent diabetic neuropathy. Other safety measures include refraining from or restricting alcohol

Table 2: Insulin counseling points

Steps	Counseling points
Removing the vial of insulin	• To administer the recommended dosage of insulin, first draw air into the syringe in an account. • Inject the air into the vial • Turn the vial over and take out a little bit more insulin than is recommended. • Hold the vial upright at eye level. Return the extra insulin to the vial along with any air bubbles. Remove the needle.
Site of self-injection	• The front and outside sides of the thigh, as well as the abdomen, are the ideal locations for self injections.
Injection methods	• Use spirit to clean the injection site. • Make a wide pleat in the skin at the injection site, then insert the needle 45 degrees into the subcutaneous tissue. • Take a slow injection of insulin. Next, extract the needle while pressing your finger against the injection site.
Changing the injection site's rotation	• Rotate the injection site in the selected region to prevent damage to the subcutaneous tissue.
The needles' disposal	• It is necessary to dispose of disposable syringes to prevent injury to others. It is necessary to thoroughly clean both metal and glass syringes before each usage.
The timing of the administration	• It is important to counsel the patient to administer insulin in accordance with the physician's orders. Insulin preparation should generally be taken half an hour before eating.
Insulin storage	• The ideal temperature range for storing insulin is 2 to 8 degrees Celsius. The patient may be advised to place the vial in a glass of water if he does not have access to a refrigerator. In addition, the patient may be advised to use thermostat bags to maintain the preparation's stability.
Adverse reaction to medication	• One should advise the patient to keep an eye out for hypoglycemia and allergic reactions, particularly when using insulin derived from cows or pork.
Specialized instruments for the delivery of insulin	• The insulin pen offers ease of carrying, reduced pain, and precise dosage administration as benefits. The pharmacist should identify and recommend candidates who are a good fit for the insulin pen.

use, routinely inspecting your feet each day, and giving up smoking.[35]

Diabetic retinopathy

The majority of diabetics develop retinopathy, an eye condition. Retinopathy symptoms include seeing flashing lights, spotting black spots, and experiencing blurred vision. Diabetes can effectively be controlled once it has been identified to stop the advancement of retinopathy.

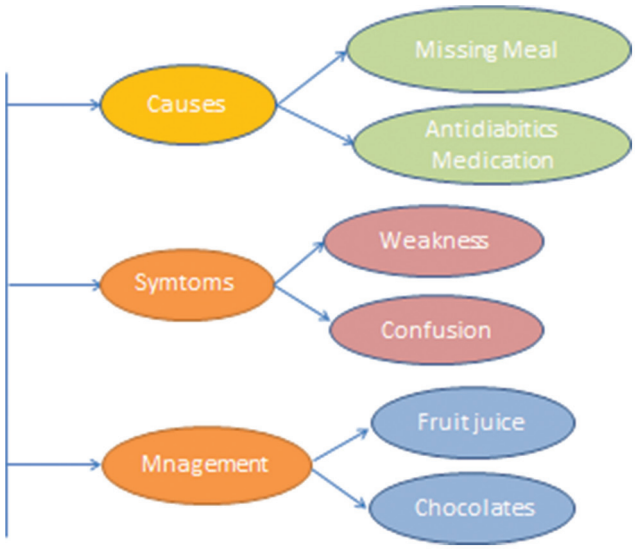

Figure 1: Counseling in relation to hypoglycemia

Diabetic nephropathy

One of the potentially fatal effects of diabetes is nephropathy, a condition of the kidney. Renal dysfunction and renal hypertrophy are both related to poorly controlled diabetes. Tight glycemic management can halt the onset and progression of nephropathy in diabetics.[36]

Infections

Patients with diabetes frequently have various infections. This is a sign of poorly managed diabetes. Mild infections in these patients can develop into life-threatening sepsis if left untreated.[37]

Counseling for unique groups of people

Pharmacist should modify their counseling approach based on the population, as different populations have different strategies for managing diabetes and its development. The counseling services provided to different special populations with diabetes are summarized as follows.[38]

Elderly

Typical comorbid problems for elderly diabetes patients include hypertension, hyperlipidemia, etc. They could potentially be experiencing some sort of psychological disorder. The emotional damage brought on by diabetes should be covered in the counseling for these individuals.

Children

Children, particularly those who have type-1 diabetes, require a variety of additional precautions. The pharmacist should

emphasize the risks of hypoglycemia while exercising, insulin delivery throughout school hours, insulin preservation in the school, and other important counseling subjects.

Pregnancy

Because increased blood glucose is linked to congenital defects, pregnant individuals should be urged to keep their blood glucose under careful control.

Multiple disorders

For conditions other than diabetes, patients with multiple illnesses need specialized advice. Informing patients that a MI might not hurt them and encouraging them to get regular cardiac exams are important steps in treating patients with underlying heart conditions.[39]

Frequent traveling

Patients with diabetes who travel regularly should be informed about using an insulin pen. In addition, they should receive advice on the value of having a meal plan when traveling and the potential for hypoglycemia. They should be cautioned not to ignore any infection, no matter how minor, as it could become lethal.

Counseling regarding glucose self-monitoring

Patients can keep control over their blood sugar and check their glucose levels more often thanks to the availability of blood-glucose monitoring equipment. Pharmacists can go into great depth with patients about how to use blood sugar monitors. Pharmacists may help patients in a number of ways, starting with helping them choose the appropriate glucose monitor and teaching them the proper way to use glucose meters. The significance of having fluctuating blood glucose levels and maintaining proper blood glucose levels can be discussed with a pharmacist. Better results may be expected as patients gain confidence in monitoring their blood sugar, managing their diet, and taking their medications.[40]

Miscellaneous

In addition to the aforementioned subjects, the pharmacist should offer further counseling to patients who require it. The following list includes some of the extra points that need to be advised.

Foot care

The substantial damage that is likely to happen to diabetics' feet can be avoided with careful foot hygiene and the selection of the right footwear.

Foot care advice

Never go barefoot either inside or outside. Every day, go over your shoes for any cracks, stones, nails, or other anomalies that can hurt your skin. Every day, go for a quick walk to increase circulation.

Eye care

People who have diabetes may have underlying ocular issues that they are not aware of at first. Early detection of eye issues is crucial for successful treatment and the prevention of blindness.[41]

Eye care advice

Just as individuals with type 2 diabetes should do so annually, women who intend to become pregnant should have their eyes examined before getting engaged. Blood pressure and glucose levels should be kept as close to normal as possible by the patient. It should be recommended that the patient notify the doctor right away if they experience any issues, such as blurred vision or the perception of black spots, flashing lights, or circles around lights.

Oral hygiene

Diabetes can cause a number of oral health issues, including dry mouth, burning sensations, painful sores, loss of taste, and coating on the tongue. Diabetes gum (periodontal) disease is one of the most typical oral complications of diabetes. Periodontitis can be quite serious and result in tooth loss if left untreated.[42] Early symptoms of gum disease include bad breath or poor taste for an extended period of time; swollen, red, sore, shrinking, or bleeding gums; fluid between teeth; changes in bite, teeth position, or denture fit; and bone loss.

Oral hygiene advice

After every meal and right before bed, brush your teeth with a soft-bristled toothbrush and give your gums a gentle massage. Do not forget to brush the tongue. It is recommended that the patient schedule a cleaning, examination, and polishing appointment with the dentist every 3 months.

METHODS TO IMPROVE COUNSELING FOR PATIENTS WITH DIABETES

Although diabetes is a chronic condition and diabetic patients experience varied degrees of memory impairment, unique counseling techniques should be used. A few of these are covered below.

Patient information leaflets (PILs)

Patients who need knowledge about diabetes can benefit from patient information booklets. The PILs should concentrate on dietary changes and medicines.

Compliance aids

The patient can be made aware of the various dose schedules of the drug, particularly the OHAs, with the aid of compliance tools such as prescription envelopes and calendars.[43]

The utilization of visual aids

A group of diabetic patients receiving advice from a dietitian who used graphic teaching aids complied with medical advice more than a control group receiving the same advice from the same counselor without the use of such aids, according to a study by Wedman and Kahan. 27 In a similar vein, the counseling pharmacist may employ audiovisual tools to enhance counseling results.[44]

Establishing a center for patient counseling

For efficient counseling, setting up a separate space close to the pharmacy's dispensing area can be helpful. It can also enhance the effectiveness and results of the counseling procedure.[45]

The counseling pharmacist's requirements

The pharmacist should have a sufficient understanding of diabetes in addition to the other skills that make a competent counselor. Such a pharmacist is an essential component of a program for managing diabetes.[46]

CONCLUSION

Diabetes is a chronic illness that requires a combination of non-pharmacological and pharmaceutical interventions for effective management. Adherence to medication regimens and lifestyle modifications are essential for the management of diabetes. Pharmacists play a critical role in giving these patients advice as essential members of the healthcare system. A good counselor will be a pharmacist who keeps up with the latest developments in the field and who possesses strong verbal and non-verbal communication skills.

REFERENCES

1. Raza MA, Aziz S, Noreen M, Anjum I, Raza SM. A portrait of the pharmacy profession globally: Pharmacist universal professional identity and establishment of global pharmacy council. Innov Pharm 2022;13(1):10.
2. Hepler CD. Clinical pharmacy, pharmaceutical care, and the quality of drug therapy. Pharmacotherapy 2004;24:1491-8.
3. Showande SJ, Laniyan MW. Patient medication counselling in community pharmacy: Evaluation of the quality and content. J Pharm Policy Pract 2022;15:103.
4. Belay YB, Kassa TT, Welie AG, Alemayehu MS, Dinkashe FT. Assessment of counseling practice in medicine retail outlets in Mekelle City, Northern Ethiopia. Risk Manag Healthc Policy 2017;10:137-46.
5. Sanii Y, Torkamandi H, Gholami K, Hadavand N, Javadi M. Role of pharmacist counseling in pharmacotherapy quality improvement. J Res Pharm Pract 2016;5:132-7.
6. Kotwas A, Karakiewicz B, Zabielska P, Wieder-Huszla S, Jurczak A. Epidemiological factors for type 2 diabetes mellitus: Evidence from the Global Burden of Disease. Arch Public Health 2021;79:110.
7. Saeedi P, Peterson I, Salpea P, Malanda B, Karuranga S, Unwin N, *et al*. Global and regional diabetes prevalence estimates for 2019 and projections for 2030 and 2045: Results from the International Diabetes Federation Diabetes Atlas, 9th edition. Diabetes Res Clin Pract 2019;157:107843.
8. Ciezki S, Kurpiewska E, Bossowski A, Glowinska-Olszewska B. Multi-faceted influence of obesity on type 1 diabetes in children-from disease pathogenesis to complications. Front Endocrinol (Lausanne) 2022;13: 890833.
9. Shrivastava SR, Shrivastava PS, Ramasamy J. Role of self-care in management of diabetes mellitus. J Diabetes Metab Disord 2013;12:14.
10. Grady PA, Gough LG. Self-management: A comprehensive approach to management of chronic conditions. Am J Public Health 2014;104:e25-31.
11. Boussageon R, Pouchain D, Renard V. Prevention of complications in type 2 diabetes: Is drug glucose control evidence based? Br J Gen Pract 2017;67:85-7.
12. Telrandhe UB, Pethe MM, Pimpalshende PM. Potential benefits of *Moringa oleifera* for diabetic foot ulcers-future research and applications. Int J Pharm Qual Assurance 2024;15:1918-26.
13. Ai-Rubeaan K, Al Derwish M, Ouizi S, Youssef AM, Subhani SN, Ibrahim HM, *et al*. Diabetic foot complications and their risk factors from a large retrospective cohort study. PLoS One 2015;10:e0124446.
14. Deshpande PR, Rajan S, Sudeepthi BL, Abdul Nazir CP. Patient-reported outcomes: A new era in clinical research. Perspect Clin Res 2011;2:137-44.
15. Hughes JD, Wibowo Y, Sunderland B, Hoti K. The role of the pharmacist in the management of type 2 diabetes: Current insights and future directions. Integr Pharm Res Pract 2017;6:15-27.
16. Smith M. Pharmacists' role in improving diabetes medication management. J Diabetes Sci Technol 2009;3:175-9.
17. Giri AB, Shinde VT, Lengare PR, Shinde RD. Lifestyle modifications: A key to manage diabetes. GSC Biol Pharm Sci 2020;13:141-8.
18. Barkmeijer A, Te Molder H, Janssen M, Jager-Wittenaar H. Towards effective dietary counseling: A scoping review. Patient Educ Couns 2022;105:1801-17.
19. Wali JA, Jarzebska N, Raubenheimer D, Simpson SJ, Rodionov RN, O'Sullivan JF. Cardio-metabolic effects of high-fat diets and their underlying mechanisms-A narrative review. Nutrients 2020;12:1505.
20. Awuchi CG, Echeta CK, Igwe VS. Diabetes and the nutrition and diets for its prevention and treatment: A systematic review and dietetic perspective. Health Sci Res 2020;6:5-19.
21. Galaviz KI, Venkat Narayan KM, Lobelo F, Weber MB.

Lifestyle and the prevention of type 2 diabetes: A status report. Am J Lifestyle Med 2018;12:4-20.
22. Sigal RJ, Kenny GP, Wasserman DH, Castaneda-Sceppa C. Physical activity/exercise and type 2 diabetes. Diabetes Care 2004;27:2518-39.
23. White ND. Alcohol use in young adults with type 1 diabetes mellitus. Am J Lifestyle Med 2017;11:433-5.
24. Engler PA, Ramsey SE, Smith RJ. Alcohol use of diabetes patients: The need for assessment and intervention. Acta Diabetol 2013;50:93-9.
25. Campagna D, Alamo A, Di Pino A, Russo C, Calogero AE, Purrello F, *et al*. Smoking and diabetes: Dangerous liaisons and confusing relationships. Diabetol Metab Syndr 2019;11:85.
26. Bannister M, Berlanga J. Effective utilization of oral hypoglycemic agents to achieve individualized HbA1c targets in patients with type 2 diabetes mellitus. Diabetes Ther 2016;7:387-99.
27. Bretzel RG, Eckhard M, Landgraf W, Owens DR, Linn T. Initiating insulin therapy in type 2 diabetic patients failing on oral hypoglycemic agents: Basal or prandial insulin? The APOLLO trial and beyond. Diabetes Care 2009;32:S260-5.
28. American Diabetes Association. Diagnosis and classification of diabetes mellitus. Diabetes Care 2010;33:S62-9.
29. Emanuele NV, Swade TF, Emanuele MA. Consequences of alcohol use in diabetics. Alcohol Health Res World 1998;22:211-9.
30. Nakhleh A, Shehadeh N. Hypoglycemia in diabetes: An update on pathophysiology, treatment, and prevention. World J Diabetes 2021;12:2036-49.
31. Haghighatpanah M, Nejad AS, Haghighatpanah M, Thunga G, Mallayasamy S. Factors that correlate with poor glycemic control in type 2 diabetes mellitus patients with complications. Osong Public Health Res Perspect 2018;9:167-74.
32. Lizzo JM, Goyal A, Gupta V. Adult diabetic ketoacidosis. InStatPearls. Treasure Island, FL: StatPearls Publishing; 2023.
33. Trikkalinou A, Papazafiropoulou AK, Melidonis A. Type 2 diabetes and quality of life. World J Diabetes 2017;8:120-9.
34. Stino AM, Smith AG. Peripheral neuropathy in prediabetes and the metabolic syndrome. J Diabetes Investig 2017;8:646-55.
35. Smith S, Normahani P, Lane T, Hohenschurz-Schmidt D, Oliver N, Davies AH. Prevention and management strategies for diabetic neuropathy. Life (Basel) 2022;12:1185.
36. Kifle ZD, Adugna M, Awgichew A, Chanie A, Sewnet G, Asrie AB. Knowledge towards diabetes and its chronic complications and associated factors among diabetes patients in University of Gondar comprehensive and specialized hospital, Gondar, Northwest Ethiopia. Clin Epidemiol Glob Health 2022;15:101033.
37. Casqueiro J, Casqueiro J, Alves C. Infections in patients with diabetes mellitus: A review of pathogenesis. Indian J Endocrinol Metab 2012;16:S27-36.
38. Hening WN, Sartika RA, Sauriasari R. Effect of hospital pharmacist counseling on clinical outcomes of type 2 diabetes mellitus outpatients. J Res Pharm Pract 2019;8:155-61.
39. Jaarsma T, Hill L, Bayes-Genis A, La Rocca HP, Castiello T, Čelutkienė J, *et al*. Self-care of heart failure patients: Practical management recommendations from the Heart Failure Association of the European Society of Cardiology. Eur J Heart Fail 2021;23:157-74.
40. Kirk JK, Stegner J. Self-monitoring of blood glucose: Practical aspects. J Diabetes Sci Technol 2010;4:435-9.
41. Skarbez K, Priestley Y, Hoepf M, Koevary SB. Comprehensive review of the effects of diabetes on ocular health. Expert Rev Ophthalmol 2010;5:557-77.
42. Rohani B. Oral manifestations in patients with diabetes mellitus. World J Diabetes 2019;10:485-9.
43. Jimmy B, Jose J. Patient medication adherence: Measures in daily practice. Oman Med J 2011;26:155-9.
44. Steane DA, Scotland RW, Mabberley DJ, Olmstead RG. Molecular systematics of *Clerodendrum* (Lamiaceae): ITS sequences and total evidence. Am J Bot 1999;86:98-107.
45. Ali S, Shimels T, Bilal AI. Assessment of patient counseling on dispensing of medicines in outpatient pharmacy of Tikur-Anbessa Specialized Hospital, Ethiopia. Ethiop J Health Sci 2019;29:727-36.
46. Pousinho S, Morgado M, Falcao A, Alves G. Pharmacist interventions in the management of type 2 diabetes mellitus: A systematic review of randomized controlled trials. J Manag Care Spec Pharm 2016;22:493-515.

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