

## **Type 2 Diabetes Mellitus**

Jada Sales-Morales

Margaret H. Rollings School of Nursing

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K. Zahner RN

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Type 2 diabetes is a condition that affects millions of people worldwide and has been becoming a significant health concern. Type 2 diabetes is when the body has trouble using insulin, your body is either insulin resistant or your pancreas can't produce enough insulin which leads to a high blood sugar level (Dickinson, 2023). Unlike type 1 diabetes, which is treated primarily with insulin, type 2 diabetes is treated by going after the risk factor such as poor dieting, obesity, and sedentary lifestyle. With type 2 diabetes, having hyperglycemia is common to happen which results to polyuria, polydipsia, and polyphagia. If type 2 diabetes is not controlled, it can lead to long term complications such as blindness, kidney failure, cardiovascular disease, and loss of lower extremities (CDC, 2022). Type 2 diabetes is a chronic condition that affects the body ability to regulate blood sugar levels, but it can be managed through lifestyle changes such as diet and exercise.

### **Statement of the Problem**

Type 2 diabetes is currently affecting “over 463 millions of people worldwide” while in the United States “10.5%” are diagnosed with diabetes mellitus. Within those 10.5%, 90-95% of people are diagnosed with type 2 diabetes mellitus (Kanaley et al., 2022). Type 2 diabetes is the most common type of diabetes, and it can be preventable by dieting and exercising. Common risk factors for type 2 Diabetes are obesity, elderly, sedentary lifestyle, and family history of Type 2 diabetes (Dickinson, 2023). Certain ethnic groups are more susceptible in developing Type 2 diabetes like African Americans and Hispanics due to socioeconomic factors. Diabetes involves controlling blood sugar, if it's too high, hyperglycemia, then to take insulin, but if it's too low, hypoglycemia, then to take a 15-20 grams of carbohydrate snack or a 4oz juice (Dickinson, 2023). However, controlling blood sugar gets complicated if there's little to no

compliance or understanding how managing blood glucose works. Type 2 diabetes occurs when the exocrine function of the pancreas specifically the beta cells are still producing insulin but either not enough or body chooses to ignore the insulin (Dickinson, 2023). Insulin is a hormone that allows glucose to enter the cells and be used for energy (Dickinson, 2023). Without enough insulin production, glucose tends to build up in the bloodstream resulting in hyperglycemia. The chances of death are double with type 2 diabetes compared to those without diabetes (Duan et al., 2021). While it affects over 463 millions of people, about “11.3% of deaths” occurred in 2019 due to Type 2 Diabetes, making it the seventh leading cause of death in the United States (Duan et al., 2021). If diabetes isn’t treated, it can lead to serious complications. For example, it can increase the risk of developing end-stage renal disease, chronic kidney disease, and even cause blindness (Dickinson, 2023). Diabetes can also lead to peripheral artery disease, foot ulcers, and in some cases amputations (Duan et al., 2021).

Type 2 Diabetes being left untreated can happen especially when medical costs is double the amount than someone who is not diagnosed with diabetes mellitus (CDC, 2022). When it’s untreated it results in more visits to the doctor, increase healthcare expenses, a higher susceptibility to complications, and a negative impact on ability to be productive and quality of life. Nurses play a crucial role in providing care and support people with diabetes. As diabetes mellitus is at high risk or worsens, it is prone to serious complications. If there is an increase of people who are not being treated then nurses may have to manage the complications such as blindness, renal, cardiovascular, and kidney disease on top of Type 2 Diabetes. Nurses will need to know diabetes management, what medications to give, wound care for any foot ulcers, and stay up to date with treatments (Kumar & Mohammadnezhad, 2022). It will be important for nurses to involve more multidisciplinary members such as audiologists, ophthalmologists,

podiatrists, pharmacists, and dentists for the complications that were developed (CDC, 2022). The nursing community will need to provide more intensive care, continuous monitoring of blood sugar, and assist with wound care.

### **Risk Reduction/Treatment of the Problem**

In type 2 diabetes, the body still has working beta cells, allowing for insulin productions. The key to prevent Type 2 diabetes is nutrition and exercise. Healthy diet includes reducing saturated and trans-fat, and low carbohydrate consumption. Most important thing during nutritional therapy is compliance to the diet. Diets can help reduce blood pressure, lipid profiles, and slow the rate of developing a long-term complication. Carbohydrate counting prevents blood sugar to quickly rise during meals, carbohydrates should be restricted and it's important to know how much is being taken. Fats should not be more than 25-30% of the meal (Dickinson, 2023). We can find healthy fats in olives, nuts, and avocados. Lean meat protein is recommended as primary the source of protein (Dickinson, 2023). Alcohol can still be drunk but it's important to ingest after meal and make sure someone is with you. Instead of adding sugar or drinking sodas, sweeteners can be use without messing with blood glucose (Dickinson, 2023).

Another prevention is exercising, it helps increase insulin sensitivity and lower blood glucose. It is important to have a carb snack before exercising to prevent hypoglycemia. Some examples of aerobic exercises are walking, jogging, bicycling, and hiking. By doing yoga or tai chi helps to "improve A1C, blood lipids, glycemic control, and neuropathic symptoms", it is all about promoting physical activity and reducing stress (Kanaley et al., 2022). In both men and women, one hour of aerobic exercise can lead to similar weight loss as cutting calories, so exercising first is beneficial (Kanaley et a., 2022). Number one is eating healthy, diet is important to prevent a hyperglycemia episode by lowering down glucose intake. Number two is

regular physical activity, if that's running, jogging, or swimming. It's important to exercise three times a week to increase HDL and improve insulin sensitivity. Regular blood sugar monitoring helps to keep an eye on what is going on in the body, and lifestyle choices are based on the blood sugar level.

Even if someone has risk factors, we can use diagnostic tests to diagnose and see how well diabetes is being managed. Typically, it's diagnosed through routine lab work or when symptoms become more noticeable (Dickinson, 2023). However, when signs and symptoms starts to show such as polyuria, polydipsia, polyphagia, fatigue, recurring infections, and changes in vision, it means that 50-80% of beta cells are no longer secreting insulin (Dickinson, 2023). Hemoglobin A1C is used to see how well blood glucose is being managed and if there's sugar hanging in the blood in the last 90-120 days (Dickinson, 2023). Goal for A1C is to be less than 6.5%. It's important to monitor hemoglobin A1C to determine current treatment plan. Fasting plasma glucose is the "modest sensitivity for hyperglycemia" (Duan et al., 2021). To do a fasting plasma glucose level, it requires NPO for eight hours, however the body should be able to maintain a normal blood sugar within 70-110 mg/dL. If it's over 126 it indicates diabetes. A type of diagnostic that can help distinguish between type 1 and type 2 diabetes is collecting insulin serum. A venipuncture is performed where one sample of insulin and another for glucose level is being collected (Lippincott, 2022). If there's severe decrease in insulin level and glucose level is high it indicates type 1 diabetes but if insulin level is high and blood glucose is normal then it indicates Type 2 diabetes (Lippincott, 2022).

### **Planning of Teaching Content**

Two objectives of learning outcomes is that they will understand that exercising doesn't require running, it can be walking for 30 minutes every day. They will walk 30 minutes every

day or exercise 2-3 times per week. I will give out examples of exercise that has something involved with their interests. I will suggest putting timers and planning out a schedule for what days to exercise. Another objective is that they will understand what type of foods correlates to type of nutrients and relate it to their favorite foods. A person will learn what to eat and be engaged by using their favorite foods as examples. They will teach back what a diabetic diet consists or we can create a meal plan with them that has low fat and low carb. They will also continue to monitor blood glucose before meals. We will utilize a tri fold poster and handouts that contains food ingredients and exercise examples. In our teaching plan, we will include signs and symptoms of hypoglycemia and hyperglycemia so they can recognize and know what to do if that happens. We will teach the importance of monitoring feet, skin, and eyes to detect complications. We will encourage the community to engage by asking them questions, play a spin the wheel game to assess what they learned, and give out snacks that are low fat and sugar free.

### **Conclusion**

Untreated Type 2 diabetes can lead to significant complications such as cardiovascular disease, kidney dysfunction, and neuropathy. However, there is hope in preventions by focusing on a balance healthy diet and regular physical activity every week. It is crucial to raise awareness among susceptible ethnicities by providing them with the knowledge and resources that will encourage them to adopt a healthier lifestyle for their quality of life. By taking action and educating the community about the impact that diabetes mellitus has on our body, it will them better understand why it's important to make positive choices. By ensuring that they understand the key points of type 2 diabetes, we can promote a better overall health and decrease the risk of diabetes progression.

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