



UNIVERSITY OF WALES ———
Trinity Saint David
London

Name: Joyce Opoku-Baah

Student Number: 2021934

Module Code: BMHP5003

Module Title: Introduction to Physiology

Lecturer's Name: Laila Saurani

Introduction

Diabetes mellitus is a chronic, complicated illness. An increase in blood glucose is one of the symptoms of this illness. Insulin, controls how sugar is released and stored, hence lowering blood sugar levels when

necessary. A reduction in the production of these insulin may lead to diabetes which then lead to difficulties in the metabolism of food components.(Galicia-Garcia et al., 2020).When food is digested and passes into the blood stream, insulin moves sugar from the blood into cells where it is broken down to produce energy. But with a person living with diabetes, the body is unable to turn sugar into energy. The reason for this could be due to either inadequate or dysfunctional insulin, these factors hinders the movement of the sugar in the body. (NHS, 2019) Typical signs and symptoms of diabetes mellitus include dehydration, frequent urination, blurred eyesight, and fat loss. Ketoacidosis state may occur in its most critical stage, which can cause unconsciousness, paralysis, and, in the absence of adequate intervention, death. In the UK, over 90% of people with diabetes have the far more prevalent type-2 diabetes (NHS, 2019). Also, In the UK, the incidence of this diseases more than doubled in the last decade, rising from 2.4% to 5.3% of the overall population (Sharma et al., 2016).

Anatomy and physiology of Diabetes

This kind of illness is characterized by two main insulin-related irregularities: impaired glucose tolerance and cell malfunctioning (Leahy, 2005). Insulin resistance results from alterations in a variety of cellular processes, which lowers the sensitivity of neurons in periphery tissues to insulin, especially those in the muscles, organs, and adipose tissue. The reduction of insulin responsiveness in the early illness states lead cells to burnout in an effort to produce a compensatory rise in insulin production to preserve normoglycemia. Therefore, elevated levels of circulating insulin, reduces diabetes (DeFronzo, 2004). However, over time, pancreatic cells increasing secretion of insulin is insufficient to entirely compensate for the deteriorating insulin levels. Furthermore, the condition of the cells begins to degrade, and cell malfunction eventually leads to an insulin deficit. Because of this, normoglycemia cannot be sustained, and hyperglycemia emerges. Despite the drop in insulin levels, the release of insulin is typically enough to stop the recurrence (Muoio and Newgard, 2008).

Diabetes mellitus Type 2 advances little by little and asymptotically, with even slight hyperglycemia evolving over the years. As a result, the condition goes mainly undetected until the advanced phases of the illness, when it manifests the typical signs characterized by severe hyperglycemia, are weight loss, impaired growth, blurred vision, polyuria, and polydipsia. In conclusion, the etiology of this kind of diabetes is complicated and involves a number of both known and unknown elements, including both significant environmental impacts and genetic (polygenic) predispositions (Muoio and Newgard, 2008). Growing older, being obese, having a diabetes-related history in your family, and not exercising regularly, and adopting contemporary lifestyles have all been linked to it more frequently.

Health and lifestyle routine measure

Maintaining blood sugar levels within the recommended range may be challenging. That's because a number of unpredictable circumstances, can cause blood sugar levels to change.The following steps will assist in controlling diabetes mellitus.

Eat healthy:This is crucial if you are suffering from diabetes melitus as your body reacts to what you eat. No food is totally cancelled for a diabetic patient but always take in what you need at a time such as a large amount of vegetables, low fat milk and lean proteins. Eat fewer meals that are packed with calories

and sugar. If you take medication to control your sugar levels, then you must do this (DiLorenzo, 2021). Every food should have a sufficient amount of carbohydrates, fruits and veggies, nutrients, and lipids. Be careful while choosing your carbohydrate sources.

Exercise:It is an opportunity to start exercisesuch gardening, playing some online games that are not reductant, going for a stroll, or ride a bike. Make conscious effort towards carrying out these exercise for a good number of time in a day that will make you sweat and breather faster for a period. Living an active lifestyle lowers blood sugar levels, which aids in managing diabetes, reducing the chance of cardiovascular diseases and also contributing to weight loss and stress reduction. Exercise frequently because it improves the way your body utilizes insulin. These components work together to lower blood sugar levels. With increasing workout frequency, the effect lasts longer.Furthermore, other simple home chores like washing dishes, sweeping and mopping the flooror walking around the room can also lead to reduced level of blood sugar.

Get checkups:Because diabetes increases the risk of heart disease, it is good that you see your healthcare provider at least twice a year. Furthermore, it is a good idea to know your cholesterol, blood pressure, and typical blood sugar levels. Going in for a routine checkup gives the patient the chance to discuss any concerns they may have with the healthcare professional. It also gives them the chance to learn more about their diabetes and what they can do to maintain their blood sugar levels within the recommended range. Only during an examination can this target range be determined.Additionally, having a checkup will provide the medical professional a chance to verify that the service user is correctly taking the prescribed medications (Brownlee et al., 2020)

Manage stress:One of the primary issues for diabetic patients is stress. According to several research, anxiety and emotional stress are significant contributors to the onset, progression, and chronicity of diabetes (Alonso-Morán et al., 2014). When a diabetic is under stress, their blood sugar levels rise and they may find it difficult to control their diabetes. Stress might cause people to forget to exercise, eat healthfully, or take their medications. Therefore, finding techniques to reduce stress through deep breathing, yoga, hobbies, and other activities is extremely useful for someone with diabetes.

Stop smoking:Exposure to cigarette smoke is linked to cardiovascular harm, systemic inflammation, and stimulation of the blood-clotting process, it should come as no surprise that the negative consequences of smoking paired with diabetes and high blood sugar exacerbate cardiovascular damage (Pan et al., 2015). Smoking increases the chance of cardiovascular diseases, migraine, renal failure, arterial disease, and foot problems, all of which are health problems linked to diabetes. These diseases are more likely to develop in people with diabetes. Also, being an active smoker can make it more difficult to exercise, hence it is advised that a person with diabetes get advice from a healthcare provider on how to stop smoking.

Watch your alcohol:If a person with diabetes doesn't consume excessive amounts of beer, wine, or booze, controlling their blood sugar may be easier. The liver is often busy trying to releases stored sugar whenever there seems to be shortage in the bldy system, so combining this task with managing the alcohol in the body system might be difficult leading to low sugar level (Knott et al., 2015). Shortly after

consuming alcohol, as well as up to a day afterwards, low blood sugar might occur. Alcohol can cause blood sugar levels to swing too high or low. If the patient uses insulin or other diabetic medications, they should eat when they are drinking.

Health and Social care practice in UK

In order to combat diabetes in the UK, Diabetes UK and the NHS in 2016 introduced a program called "The Healthier You program." People who are found to have a higher risk of developing diabetes may be asked to go to the Healthier You program. The evidence-based lifestyle change program, which is delivered over the course of nine months, offers assistance with all the pillars of effective diabetes care, including weight management, a balanced diet, and physical activity. According to Diabetes UK (2019), diabetes is still a rising health problem. There are currently over four million individuals in the UK who are known to have the ailment, which has exponentially increased over the past 20 years. Over 500 diabetics die before their time each year as a result of the condition's macrovascular consequences, which continue to have a high mortality rate. Additionally, according to Gillet *et al.* (2010), self-management is frequently challenging for older adults with diabetes who also have additional diseases including alzheimer and rheumatism.

Additionally, the Health and Social Care (HSC, 2017) states that caregivers are in a good position to help diabetics in the community. Healthcare workers can participate in the delivery of services of a preventive comprehensive style in healthcare settings and treatment services to successfully manage the treatment of diabetes. In the UK, it is emphasized how vital it is to focus attention not just on managing and treating diabetes but also on preventing it and integrating it into community settings as part of the shift (Ali *et al*, 2012)

Recommendation

The following recommendation is deem necessary after this study

1. Diabetic patients should schedule regular doctor's appointments
2. Alcohol use by those with this diseases should be moderate.
3. They ought to take part in team sports, swimming, yoga, and other forms of fitness.

Conclusion

A serious non-communicable illness with rising worldwide incidence is diabetes. It can cause a lot of health problems, such as heart problems, strokes, renal disease, eyesight, peripheral arterial disease, limb and foot amputations, and even death, if it is not adequately handled. Therefore, action should be made regarding the changeable elements that impact its advancement in order to prevent this condition, such as changing one's lifestyle and eating habits. Proper diagnosis, care, lifestyle modifications, exercise, and other physical activities, as well as their positive effects on human health and the prevention or treatment of diabetes, make it clear that encouraging adherence to this pattern is crucial for the general welfare.

REFERENCE

- Ali M.K., Echouffo-Tcheugui J.B. and Williamson D.F. (2012) 'How effective were lifestyle interventions in real-world settings that were modeled on the Diabetes Prevention Program'? *Health Aff (Millwood)* 31(1):67–75
- Alonso-Morán E. et al. (2014) 'Prevalence of depression in adults with type 2 diabetes in the Basque Country: relationship with glycaemic control and health care costs'. *BMC Public Health*. 14(1): 769.
- Brownlee M. et al. (2020) *Complications of diabetes mellitus*. In: Melmed S, Auchus RJ, Goldfine AB, Koenig RJ, Rosen CJ, eds. *Williams Textbook of Endocrinology*. 14th ed. Philadelphia, PA: Elsevier;
- DeFronzo R.A. (2004) 'Pathogenesis of type 2 diabetes mellitus'. *Med Clin North Am*. 88(9):787–83529.
- Muoio D.M. and Newgard C.B. (2008) 'Mechanisms of disease: molecular and metabolic mechanisms of insulin resistance and beta-cell failure in type 2 diabetes'. *Nat Rev Mol Cell Biol*. 9:193–205.
- Diabetes Uk (2019) *number of people with diabetes reaches 4.7 million*. Available at: https://www.diabetes.org.uk/about_us/news/new-stats-people-living-with-diabetes (Accessed December 18 2022)
- DiLonardo J.M. (2021) *6 Lifestyle Changes to Control Your Diabetes*. Available at: <https://www.webmd.com/diabetes/diabetes-lifestyle-tips> (Accessed December 15 2022)
- Galicía-García U. et al. (2020) 'Pathophysiology of Type 2 Diabetes Mellitus'. *Int J Mol Sci*. 21(17): 62-75.
- Gillet M., Dallosso H.M. and Dixon S. (2010) 'Delivering the diabetes education and self management for ongoing and newly diagnosed (DESMOND) programme for people with newly diagnosed Type 2 diabetes: cost effectiveness analysis'. *BMJ*. 341
- Health and Social Care (HSC) (2017). *DoH Diabetes Nurse Education Group, Diabetes Competency Nursing Tool*. Available at: <https://www.publichealth.hscni.net/sites/default/files/2019-04/Diabetes> (accessed 14 December 2022)
- Knott C., Bell S. and Britton A. (2015) 'Alcohol Consumption and the Risk of Type 2 Diabetes: A Systematic Review and Dose-Response Meta-analysis of More Than 1.9 Million Individuals From 38 Observational Studies'. *Diabetes Care*. 38(9):1804-12.
- Leahy J.L. (2005) 'Pathogenesis of type 2 diabetes mellitus'. *Arch Med Res*. 6:197–209.
- NHS, (2019) *Diabetes*. Available at: <https://www.nhs.uk/conditions/diabetes/> (Accessed December 16 2022).

Pan A. et al. (2015) 'Relation of active, passive, and quitting smoking with incident type 2 diabetes: a systematic review and meta-analysis'. *Lancet Diabetes Endocrinol.* 3:958–967

Sharma M., Nazareth I. and Petersen I. (2016) 'Trends in incidence, prevalence and prescribing in type 2 diabetes mellitus between 2000 and 2013 in primary care: a retrospective cohort study'. *BMJ Open.* 6