

**INTRODUCTION TO PHYSIOLOGY
(BMHP5003_LON)**

Assessment Component 2

Assessment Written Report

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Learner declaration

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1.0 Introduction

Diabetes has become the seventh deadly disease worldwide, and in England, about two million people have been estimated to be at a high risk of getting diabetes (WHO, 2021). Therefore, as social and healthcare professionals who seek to help preserve the lives of diabetic patients and prevent the growth of this illness, there is a need to fully appreciate and understand the structure and functioning human body to help in the care planning of these diabetic patients (International Diabetes Federation, 2020). "Health assessment is the process of gathering, verifying, analysing, and communicating data about a patient." (Weilitz and Potter, 2007, p. 5). This shows that health assessment is important when it comes to an understanding the overall health of a patient. The report also seeks to analyse the relationship between findings based on lifestyle questionnaire, body functioning, anatomy, and physiology of patient A compared to the current health recommendation. The assessment report will also provide health recommendations to be considered during the planning of care for the patient at a high risk of getting diabetes, considering the patient's holistic needs. Lastly, the report will conclude by discussing the impact of recommendations and current campaigns on the patient's lifestyle.

2.0 Case study

In compliance with the data protection Act 1998 and GDPR 2018, the case study participants will be represented as "Patient A" for confidentiality and anonymity. The case study is based on patient A's health report on his health and lifestyle. After the interview, it was identified that patient A has high blood pressure with a BP of 140/90 and is exposed to smoking. It was found that he smokes 1-9 times daily. In addition, patient A's sister has hyperlipidaemia (a high level of cholesterol). It was found that she only exercises once a month, and her diet is mainly based on high protein foods, fatty foods, and high surgery foods. Which is frequently ate at night times. Lastly, looking at patient A's health report, it was found that he drinks 3-4 glasses of beer daily. After looking through patient a's health report, the patient may be at risk of getting diabetes in the early future and will need support and education on promoting her health and living a healthy lifestyle. The patient is at high

risk of getting diabetes because, Smoking cigarettes, high intake of alcohol, eating high protein and surgery foods, high blood pressure, and lack of exercise are risk factors of diabetes (Pan et al., 2015).

3.0 Health Assessment

After looking at the health status of patient A, it was found that she might be at a high risk of diabetes. This is because, according to her health assessment report, patient A smoke 1-9 days per day, and according to epidemiological studies, cigarette smoking has a significant effect on adults developing diabetes as they age, and it is a distinct cause of type 2 diabetes; therefore, smoking is never suitable for the body organisations (Foy et al., 2005). studies have shown that women who smoke from 9 to over 40 pieces of cigarettes daily have a 75% increased risk of getting diabetes than non-smoking women (Mariola and Halina, 2017). When there is continuous smoke of a cigarette, it triggers an inflammatory reaction in the body and, if not stopped, leads to chronic pancreatitis. The exocrine portion of the pancreas can be damaged by long-term smoking, whereas the pancreatic islets get constricted and eventually obliterated (Śliwińska-Mossoń, 2015). The Chemical component from smoking tobacco causes direct harmful effects on the pancreas and β -cell ability to function in adults. This causes higher levels of inflammatory markers [C-reactive protein and interleukin-6 (IL-6)], which is consequently resulting in diabetes (Pradhan et al., 2001).

In healthy young men, intense cigarette smoking showed an increased insulin resistance (Attvall et al., 1993). An hour after smoking, people habituated to smoking had a substantially higher homeostatic model evaluation insulin sensitivity score (Seet et al., 2012). When comparing males who smoke against non-smokers males, insulin-mediated glucose is higher by 10%–40% in men who smoked than non-smoking males compared with non-smoking males (Facchini et al., 1992). As a result, stopping smoking lessens the risk of diabetes by five years in women who do not smoke and over ten years for men who do not smoke (Mariola and Halina, 2017).

Furthermore, it was also found that aside from the smoking habit of patient A, she also has excess alcohol consumption per day and may be at risk of diabetes. According to the UK governmental

guidelines on Alcohol intake, the NICE guidelines advise males and females not to drink 14 units of alcohol weekly, and the 14 units should be drunk minimum within three days and not in one day (Diabetes UK, 2021). Therefore, Patients who take 3-6 units of alcohol may be at risk of diabetes type 2 (Zeratsky, 2020). Heavy drinking increases the chances of getting pancreatitis and persistent inflammation of the pancreas, and people who drink too much alcohol have a damaged pancreas compared to healthy non-alcoholic people (NIDDKD, 2017). This disease causes irreparable damage to the pancreas, including the loss of β -cells, which are responsible for the creation, storing, and secretion of insulin hormones (Kim et al., 2015). One of several side effects of pancreatitis is a decrease in the pancreas' capacity to produce insulin, which can progress to type 2 diabetes (Michael Kaliszewski, 2021).

Again, another risk factor of diabetes for Patient A is her poor diet and lack of exercise. According to the NHS, it is recommended that a woman have 2,000 intakes of calories while men intake should be 2,500 calories (NHS, 2019). A good diet also deals with maintaining a good weight, patient A has a BMI of 24.4, which is average body weight, and she is not suffering from obesity (Yvette, 2020). An underweight person has a BMI of less than 18.5, while an overweight person is considered to have a BMI between 25-26.6 (Yvette, 2020). patient A cannot be obese because she does not have a BMI above 30+, reducing her chances of getting diabetes. However, the poor diet and the lack of exercise tend to increase her risk of diabetes. Moreover, if this lifestyle continues for the long term, she may start to gain uncontrollable weight, increasing the risk of getting diabetes. In the production of insulin and postprandial glycaemia, Carbohydrates are the most important dietary factor which influences insulin production (Brand-miller, 2004), Which was found to be consumed a lot by the patient.

Higher glycaemic index and glycaemic load are linked to a higher risk of type 2 diabetes (Barclay et al., 2008). According to the World Health Organization, total fat consumption should not surpass 30% of the recommended calorie intake (Hooper, 2015). In addition, dietary cholesterol consumption is recommended to be less than 10% of total calories consumed, fatty food consumption is advised

to be less than 1% of total calories consumed, and high surgery foods consumption is also advised to be less than 10% of total energy consumption (Hooper et al., 2015) is part of a healthy diet. However, patient A consumes more than 10% of the sugary foods at night and does not exercise his body to sugar the calories from the body. To improve insulin action, burn calories, and reduce blood pressure, it is advised that a person exercise every day, or at least not exceeding two days without exercise between exercise sessions which lowers and prevent the risk of diabetes prolonged (Magkos et al., 2008), during insulin-independent processes, physical activity increases muscle glucose absorption by up to fivefold.

If exercise is extended, glucose absorption is increased via insulin-independent and insulin-dependent processes (Magkos et al., 2008), which is linked with muscle glycogen repletion (Wang et al., 2013). However, patient A only exercise once a month; therefore, he is unable to burn calories, the body is unable to use the sugar in level; this may be the cause of patient A having high blood pressure and can be at an increased risk of getting diabetes (Gillen et al., 2013).

4.0 Recommendation

Numerous investigations have proven that improved lifestyle is a way to eradicate early diabetes detection (Unick et al., 201; Amundson et al., 2009); the World Health Organization indicated that about 90 % of people with type 2 diabetes would be able to eradicate with diet changes, regular exercise, quitting smoking and reducing intake of alcohol (WHO, 2008). Therefore, to prevent diabetes, there should be tools and interventions that help people at high risk of diabetes through lifestyle improvements (Herman and Zimmet, 2012; Holme, 2006). Studies have identified an increase in the diabetes population because most people at risk lacked higher awareness of diet and weight management (Guess et al., 2015; Ferrer and Klein, 2015).

Dietary plan

Dietary plans are lifestyle factors that may help reduce a patient's risk of getting diabetes (Diabetes UK, 2019). The dietary plan should not be written and given to the patient to follow; the dietician should help check that she follows the diet plan. When a diet plan is too complex, the patient is confused and has difficulty following it routinely after some years (Shobana et al., 2007). The diet

plan will be a way to manage obesity and overweight in Patient A (Diabetes UK, 2019). the diet plan of patient A should specify that the patients eat Fibre-rich whole grains (such as oatmeal, whole wheat, and corn), non-fried fish at least twice per week, significantly those high in omega-3 fatty acids, lean meat, fruits, and vegetables and limit the intake Sweets and added sugars such as honey, soda, fruit drinks, candy and cake (Diabetes UK, 2019). Dividing the meals into frequent small meals is also helpful by preventing severe escalations of postprandial blood sugar (Pai et al., 2005).

Physical exercise

NICE recommends that an average person be ideally advised to be physically active for at least thirty minutes a day, which helps the body burn about 5% -10% of the unwanted fat in the body (diabetes UK, 2019). This amount is equal to the person losing 10-20 pounds a week, which significantly reduces the risk of diabetes (diabetes UK, 2019). Therefore, if her GP advises patient A should undergo regular, it will. According to NICE guidelines, every healthy adult must exercise two and half minutes per week for moderate-intensity aerobic physical activity one and half minutes per week of vigorous-intensity aerobic activity (Diabetes UK, 2019). This can be jogging, swimming, walking, or skipping. In addition, patient A is advised to reduce the long time spent in daily sedentary behaviour (Colberg, 2017). Prolonged sitting increased the risk of diabetes, therefore when substituted with walking or leg stretches, keeping his blood pressure and weight in check (Colberg, 2017).

Stopping smoking

Giving awareness to Patient A on the damages of her smoking habits and how it can lead to diabetes if she does quit will help her understand the risk of smoking and support her quitting (American Diabetes Association, 2017). In addition, patient A should be advised not to use cigarettes, and she should be given smoking cessation counseling with her GP; this will motivate her to quit smoking (American Diabetes Association, 2017).

Reducing intake of alcohol

When alcohol is drunk in its proper amount, it causes less harm to long term blood glucose control in people at risk of diabetes; however, it becomes a problem when it is drunk in a large quantity it puts the non-diabetic person at a high risk of getting diabetes and gaining weight (Rossi et al., 2010). The NICE guidelines recommend that women not take more than 14 units of alcohol per week (NICE, 2016). The guideline also recommends that Patient A divide her alcohol intake over three days; that is, the 14 units should not be consumed in a day (NICE, 2016). This may help reduce the risk of diabetes and other health diseases. Furthermore, to help Patient A to reduce her alcohol consumption, the NICE guidelines advise the GP to give alcohol-free days a week for Patient A; this may avoid short-term risk (NICE, 2016). Patient A can be advised to substitute her desire for alcohol with drinking more water (NICE, 2016).

5.0 Conclusion

In conclusion, a health assessment report is essential for health care promotion. Assessment reports help healthcare professionals to understand the roots of a patient's diseases, the causes, and how to provide the proper support to the patient. Health assessment is a significant aspect in building up a plan to deliver the best patient care. Health assessments are vital parts of a nurse's role and responsibility. The assessment helps as a tool where nurses can learn about the needs of patients, their disease symptoms, and their overall health. This report has been able to cover the risks factors of the lifestyle of patient A, putting her at risk of diabetes. The essay also discussed the physiological aspects of the patient lifestyle, which put her at risk of diabetes. Lastly, recommendations were provided for Patient A based on lifestyle changes to help reduce her risk of diabetes.

6.0 REFERENCES

- Magkos, F., Tsekouras, Y., Kavouras, S.A., Mittendorfer, B. and Sidossis, L.S., 2008. Improved insulin sensitivity after a single bout of exercise is curvilinearly related to exercise energy expenditure. *Clinical Science*, 114(1), pp.59-64.
- Wang, X., Patterson, B.W., Smith, G.I., Kampelman, J., Reeds, D.N., Sullivan, S.A. and Mittendorfer, B., 2013. A~ 60-min brisk walk increases insulin-stimulated glucose disposal but has no effect on hepatic and adipose tissue insulin sensitivity in older women. *Journal of applied physiology*, 114(11), pp.1563-1568.
- Hooper L, Abdelhamid A, Bunn D, Brown T, Summerbell CD, Skeaff CM. Effects of total fat intake on body weight. *Cochrane Database System Rev.* 2015; (8):CD011834.
- Brand-Miller, J.C., 2004. Postprandial glycemia, glycaemic index, and the prevention of type 2 diabetes.
- Barclay, A.W., Petocz, P., McMillan-Price, J., Flood, V.M., Prvan, T., Mitchell, P. and Brand-Miller, J.C., 2008. Glycaemic index, glycaemic load, and chronic disease risk—a meta-analysis of observational studies. *The American journal of clinical nutrition*, 87(3), pp.627-637.
- Kim, J.Y., Lee, D.Y., Lee, Y.J., Park, K.J., Kim, K.H., Kim, J.W., & Kim, W.H. (2015). Chronic alcohol consumption potentiates the development of diabetes through pancreatic β -cell dysfunction. *World Journal of Biological Chemistry*, 6(1), 1-15.
- Pancreatitis. National Institute of Diabetes and Digestive and Kidney Diseases. [Online] Available at: < <https://www.niddk.nih.gov/health-information/digestive-diseases/pancreatitis>. > [Accessed 31 July 2021].
- Śliwińska-Mossoń M, Milnerowicz S, Nabzdyk S, et al. The effect of smoking on endothelin-1 in patients with chronic pancreatitis. *Appl Immunohistochem Mol Morphol* 2015; 23: 288–296
- Foy CG, Bell RA, Farmer DF, et al. smoking and incidence of diabetes among US adults: findings from the Insulin Resistance Atherosclerosis Study. *Diabetes Care* 2005; 28: 2501–2507.

Pradhan AD, Manson JE, Rifai N, et al. C-reactive protein, interleukin 6, and risk of developing type 2 diabetes mellitus. JAMA 2001; 286: 327–334.

Seet RCS, Loke WM, Khoo CM, et al. Acute effects of cigarette smoking on insulin resistance and arterial stiffness in young adults. Atherosclerosis 2012; 224: 195–200.

Attvall S, Fowelin J, Lager I, et al. Smoking induces insulin resistance – a potential link with the insulin resistance syndrome. J Intern Med 1993; 233: 327–332.

Facchini FS, Hollenbeck CB, Jeppesen J, et al. Insulin resistance and cigarette smoking. Lancet 1992; 339: 1128–1130.

Unick JL, Beavers D, Jakicic JM, Kitabchi AE, Knowler WC, Wadden TA, et al. Effectiveness of Lifestyle Interventions for Individuals With Severe Obesity and Type 2 Diabetes: Results from the Look AHEAD trial. Diabetes Care. 2011;34(10):2152–7

World Health Organization, 2009. *2008-2013 action plan for the global strategy for the prevention and control of noncommunicable diseases: prevent and control cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes*. [Pdf] available at: <
https://apps.who.int/iris/bitstream/handle/10665/44009/9789241597418_jpn.pdf > [Accessed 8 July 2021]

Holme I, Sjøgaard AJ, Lund-Larsen PG, Tonstad S, Håheim LL. Is a healthy lifestyle worthwhile? Tidsskr Nor Lægeforen. 2006;126(17):2246–9

Herman WH, Zimmet P. Type 2 diabetes: an epidemic requiring global attention and urgent action. Diabetes Care. 2012;35(5):943–4.

Amundson HA, Butcher MK, Gohdes D, Hall TO, Harwell TS, Helgersson SD, et al. Montana Cardiovascular Disease and Diabetes Prevention Program Workgroup. Translating the diabetes prevention program into practice in the general community: findings from the Montana Cardiovascular Disease and Diabetes Prevention Program. Diabetes Educ. 2009;35(2):209–10. 13–4, 16–20.

Guess ND, Caengprasath N, Dornhorst A, Frost GS. Adherence to NICE guidelines on diabetes prevention in the UK: Effect on patient knowledge and perceived risk. *Prim Care Diabetes*. 2015;9(6):407–11.

Ferrer R, Klein WM. Risk perceptions and health behavior. *Curr Opin Psychol*. 2015;1(5):85–9

Zeratsky, K., 2020. *Diabetes: Does alcohol and tobacco use increase my risk?* [Online] Available at: <<https://www.mayoclinic.org/diseases-conditions/type-2-diabetes/expert-answers/diabetes/faq-20058540>> [Accessed 8 July 2021]

diabetes UK, 2019. *Lifestyle Changes for Type 2 Diabetes*. [Online] Available at: <<https://www.diabetes.co.uk/lifestyle-changes-for-type2-diabetes.html>> [Accessed 8 July 2021]

World Health Organisation, 2021. *Diabetes*. [Online] Available at: <<https://www.who.int/news-room/fact-sheets/detail/diabetes>> [Accessed 8 July 2021]

International Diabetes Federation, 2020. *Diabetes facts & figures*. [Online] Available at: <<https://www.idf.org/aboutdiabetes/what-is-diabetes/facts-figures.html>> [Accessed 8 July 2021]

American Diabetes Association, 2017. Lifestyle Management. *Diabetes Care*, 40(Supplement 1), pp.S33-S43.

Rossi, M.C., Nicolucci, A., Di Bartolo, P., Bruttomesso, D., Girelli, A., Ampudia, F.J., Kerr, D., Ceriello, A., Mayor, C.D.L.Q., Pellegrini, F. and Horwitz, D., 2010. Diabetes Interactive Diary: a new telemedicine system enabling flexible diet and insulin therapy while improving quality of life: an open-label, international, multicenter, randomized study. *Diabetes care*, 33(1), pp.109-115.

NICE, 2016. New recommended drinking guidelines welcomed by NICE: NICE has welcomed proposed new guidelines on alcohol which aim to limit the health risks that result from drinking. [Online] Available at: <<https://www.nice.org.uk/news/article/new-recommended-drinking-guidelines-welcomed-by-nice>> [Accessed 8 July 2021]

Weilitz, P. B., and Potter, P. A. 2007. *Pocket guide for health assessment* (6th ed.).Missouri: Mosby Elsevier.

Pai, S., Ghugre, P.S. and Udipi, S.A., 2005. Satiety from rice-based, wheat-based and rice–pulse combination preparations. *Appetite*, 44(3), pp.263-271.

Shobana, S., Usha Kumari, S.R., Malleshi, N.G. and Ali, S.Z., 2007. Glycemic response of rice, wheat, and finger millet based diabetic food formulations in normoglycemic subjects. *International journal of food sciences and nutrition*, 58(5), pp.363-372.

Colberg, S.R., 2017. Key points from the updated guidelines on exercise and diabetes. *Frontiers in Endocrinology*, 8, p.33.

7.0 APPENDIX

EXERCISE Healthy exercise usually involves activity that lasts for at least 20 minutes, raises your pulse and produces hard breathing. In younger people this might be running, cycling or sport; or brisk walking for older people.

Do you take this type of exercise – daily ☐ ☒

3 times weekly ☐ ☒

once weekly ☐ ☒

once monthly ☐ ☒

seldom ☐ ☒

I cannot take exercise because of disability ☐ ☒

DIET, Please tick the one category which is closest to your usual eating pattern:

I eat no meat, fish or dairy produce ☐ ☒

I eat no meat ☐ ☒

I eat a mixture including daily fruit and vegetables ☐ ☒

I eat a mixture including regular chips and food ☐ ☒ (And sugary things like chocolate or sweets)

I eat frozen meals (eg TV dinners) 5 or 4 times/week ☐ ☒

I eat mainly snacks ☐ ☒

I eat a special medical diet ☐ (Please specify _____)

ALCOHOL

Please tick the statement which most closely describes your usual average alcohol intake

(1 unit is 1 glass wine, ½ pint beer or a single measure of spirit)

I never drink alcohol ☐ ☒

I drink less than 1 unit per day ☐ ☒

I drink between 1 and 2 units a day ☐ ☒

I drink between 2 and 5 units a day ☐ ☒ (Drinks 3 to 4 glasses of beer a day)

I drink between 7 and 9 units a day ☐ ☒

I drink more than 9 units a day on average ☐ ☒

- * She has no disabilities.

Practice User Only Health Education
Alcohol []
Alcohol Brief Intervention []

04:58

LIFESTYLE QUESTIONNAIRE

LIFESTYLE QUESTIONNAIRE

Introduction: In order to help us focus our Health Promotion activities in the practice, we would be grateful if you could fill in this short questionnaire. If you have already completed one on a previous visit, please return this questionnaire if the questionnaire.

Name: Patient A Date of Birth: 1st January 1976

Do you smoke? ☒ Yes ☐ No ☐

If Yes, do you – smoke less than 1 cigarette/day ☐

5-9 cigarettes/day ☐

10-19 cigarettes/day ☐

20-39 cigarettes/day ☐

more than 40 cigarettes/day ☐

smoke a pipe ☐

smoke cigars ☐

If No, have you – never ever smoked ☐

given up smoking in the last year ☐

not smoked for more than 1 year ☐

Do you have high blood pressure? Yes ☐ No ☒

Have you ever had a heart attack or suffered from angina? Yes ☐ No ☒

Have you ever had a stroke, "shock" or any weakness down one side? Yes ☐ No ☒

Have any of the following – mother, father, brothers or sisters had – a heart attack below the age of 60 Yes ☐ No ☒

a heart attack above the age of 60 Yes ☐ No ☒

a stroke Yes ☐ No ☒

trouble with very high cholesterol Yes ☐ No ☐ (Other state)

(hyperlipidaemia)

_____ Practice Use Only

Health Education Smoking _____

BP: 140 / 90

Height 175

Weight 70

