The Treatment of Type 2 Diabetes

A 42-year-old man named John has been diagnosed with Type 2 Diabetes. He has gained weight over the past few years and has a BMI of 30 with a daily calorie intake of 2600. He is inactive and spends more time travelling however, his work is about to change, and he will be spending more time in the office based in Chester.

Risk Factors and Complications

Type 2 diabetes is a condition where the body produces less insulin and hence increases the sugar level. Insulin is important for our body functions as it helps glucose enter the cells and fuel the body (What is Type 2 diabetes?, n.d.). It has become the most common form of diabetes (Symptoms & Causes of Diabetes, 2016). It is a lifelong disease which can affect a person's everyday lifestyle (What is type 2 diabetes?, 2017). Type 2 diabetes leads to multiple complications and risk factors which, include both chronic and acute complications. Chronic complications include retinopathy, foot problem, heart problems and stroke, kidney problems, nerve damage and cancer. Acute complications include Hyperosmolar Hyperglycaemic State which is a life-threatening problem caused by high blood sugar level and dehydration (Complications of diabetes, n.d.) Studies suggest that there is a close link between Type 2 Diabetes and cardiovascular diseases. CVD has become a widespread cause of morbidity and mortality in diabetic patients. Other Cardiovascular risk factors or complications involves obesity, hypertension and dyslipidaemia which are also seen in patients with diabetes and increase the risk of cardiac events (Leon & Maddox, 2015).

Obesity and Weight Gain

John has a BMI of 30kg/m2 also as mentioned above his daily calorie intake is high and he is inactive and does not involve himself in any physical activity which is responsible for his weight gain and obesity. According to (Healthy Weight, 2018) people with BMI of 30 are obese. Multiple studies and research programs suggest that Type 2 diabetes is linked to obesity and weight gain (Mokdad, Ford, & Bowman, 2003). Studies suggest that about 80-85% of obese or overweight people are more prone to be diabetic than the normal population (Diabetes and Obesity, 2018).

Different Health Models

Health coaching and professional support can highly benefit the treatment. It focuses on self-efficacy and skills like realising the problem, setting goals, taking measures to treat it and managing barriers. (Wong-Reiger & Reiger, 2013). Different kinds of health models can be used to treat a patient like the Transtheoretical mode, health belief model, Decisional balance and self-efficacy. Transtheoretical model has five stages which are precontemplation, contemplation, preparation, action and maintenance. John is at the second stage that is contemplation which suggests self-revaluation. John has identified and accepted his condition and is ready to make changes in his lifestyle and diet. He can start his treatment from the third stage that is preparation which will make him believe in himself and motivate him to take required measures

(The Transtheoretical Model, 2018). Health Belief Model is based on four constructs that is perceived susceptibility, perceived severity, perceived barriers and perceived benefits. It can help John understand his disease bet-ter and seriousness of his condition. Health belief model helps a person to undertake the required preventive measures. Negative health conditions can be avoided, in John's case the negative health condition is obesity (Tuzova, 2009). Decisional balance leads to a healthy behaviour. Decisions are made in terms of their gains and losses. It can make him realise the pros and cons of the treatment and interven-tions (Decisional Balance, n.d.).

Diet

As John has a BMI of 30, he can focus on achieving a BMI of 18.5-25 by a proper diet and exercise. Weight loss program should be planned according to the degree of obesity. Reduction in the calorie intake and increase in energy expenditure is suggested. A 1,500 to 1,800 calorie diet is suggested for people with type 2 diabetes which helps in weight loss. The calorie intake is divided into different percentage for different nutrients. Balance of macro-nutrients is necessary in a diet as it help to maintain the sugar level in blood (Oberg, Stoppler, & Cunha, 2015).

About, 50% of calorie intake should be consumed by carbohydrates. Carbohydrates increases the sugar level in blood (Norman, 2018). Therefore, with the quantity, the quality of carbohydrates also affects the blood glucose level (Mann & Truswell, 2017). To have a better glycaemic control intake of Vegetables, fruits, whole grains, legumes and dairy products is suggested to obtain the carbohydrate requirement which, will also promote weight loss. Replacing low-glycaemic load food for high-glycaemic load food can slightly benefit the glycaemic control (Evert, et al., 2013). Starchy and highly processed food has a high glycaemic index and so carbohydrate intake from starchy food should be avoided. There are two different types of carbo-hydrates that is, complex carbohydrate and simple carbohydrate.

A type 2 diabetes patient like John should include complex carbohydrates such as vegetables, fruits, beans, brown rice, lentils, whole wheat, quinoa and oatmeal. Simple carbohydrates such as pasta, white bread, pastries, flour, processed food and sugar is to be avoid-ed. Nutrients like fibre, vitamins and small amount of proteins and fats are a part of complex carbohydrates and these extra nutrients slow down he absorption of sug-ar/glucose and maintain the blood glucose level (Oberg, Stoppler, & Cunha, 2015). Few systematic reviews and studies suggest that rapidly digested carbohydrate rich food, white rice and fibre-rich whole grains are protective. Studies suggest that fibre improves the glycaemic index (Evert, et al., 2013).

According to (Evert, et al., 2013), fibre intake should be about 50g/day for type 2 diabetes patients. Food that occur naturally in dietary fibre and is half soluble is encouraged. Food which is carbohydrate rich and has a low-glycaemic-index and fulfils the fibre requirement is suitable (Mann, et al., 2004). Requirement for fibre intake can be achieved by at least five servings of fibre rich vegetables and fruits and four servings of legumes per week (Mann & Truswell, 2017). Whole grain cereals are a good source of fibre (Mann, et al., 2004). Some other sources of fibre recommended for type 2 diabetes are nuts and seeds, peas, beans, pulses, whole wheat bread and oats, vegetables such as carrots, spinach, broccoli (Dietary fibre, 2018).

It is believed that, people who have type 2 diabetes may have a high requirement of protein as

they are on a weight loss nutrition therapy. Half of the protein is converted into glucose which enters the bloodstream. It is unclear as how much protein should a type 2 diabetes patient should consume although, protein should comprise around 20% of the total calorie intake. Protein usually slow the absorption of carbohydrate so, always add a protein while consuming a fast-acting carbohydrate for example, fruit or sweet. Highly processed meat which is a source of protein should be avoided (Franz, 2000).

For a type 2 diabetes patient dietary fat affect the blood glucose level directly, but certain types of fats are necessary as they slow down the absorption of carbohy-drates (Oberg, Stoppler, & Cunha, 2015). Intake of saturated and trans-unsaturated fatty acids is restricted to less than 10% of the total energy as it may lead to diseases related to heart. Monounsaturated fatty acids should comprise around 10-20% of the total energy intake. Polyunsaturated fatty acids help reduce the LDL cholesterol level so an intake of 10% of total energy intake suggested. A total amount of 35% of dietary fats can be consumed by nuts, oily fish, canola or soybean oil, green leafy vegetables (Mann, et al., 2004). Healthy fats can work as an alternative for carbohy-drates cravings for example avocado on a whole grain toast is a healthy and satisfy-ing option than white bread and jam (Oberg, Stoppler, & Cunha, 2015).

For an appropriate vitamins and antioxidant nutrients intake, it is suggested to have food rich in carotenoids, tocopherols, vitamin C, flavonoids and other vitamins (Mann, et al., 2004). This can be achieved by having fruits, vegetables and whole grains. Some fruits are rich in vitamins but may also have a high glycaemic index and rise the glucose level for example, mango, pineapple, cherries, grapes, bana-nas (Mooradian, Failla, Hoogwerf, Marynuik, & Wylie-Rosett, 1994). Salt intake should be restricted to less than 6g/day. (Mann, et al., 2004).

It is unclear whether John has a habit of drinking or even consume alcohol but, for a type 2 diabetic patient a moderate amount of alcohol consumption is suggested as high intake of alcohol might increase the risk of cardiovascular diseases. Limited amount of alcohol is recommended to people who are obese or overweight which is up to or less than 20g/day for men (Alcohol and Diabetes, n.d.). Intake of not more than 50g/day of free sugars and less than 10% of total energy is recommended.

There are certain types of food which John should consume for a better effect on his type 2 diabetes, these types of food are the diabetes superfood. Superfoods are generally rich in certain nutrients that are beneficial for type 2 diabetes patient. Chia seed is rich in fibre, omega-3 fatty acids and protein and help decrease the glycaemic load and control sugar level. Wild salmon is a source of anti-inflammatory omega-3 fatty acids. White balsamic vinegar helps to slow down the release of glucose in the blood and increase satiety which avoids overeating. Cinnamon if consumed 1 teaspoon/day can reduce serum glucose in type 2 diabetes patients. Lentils are rich in B vitamins like folate, protein, fibre, iron and few more minerals (Oberg, Stoppler, & Cunha, 2015). Other food that is a good choice for John is nuts and seeds, fat-free dairy products, small portions of fruits and healthy fats (Theobald, 2017). Food or food items that should be avoided includes refined sugars like donuts, sweets, candy and cakes; processed carbs like white bread, pasta, chips; trans fats like butter and mayonnaise; high-dairy products like whole milk, cheese, ice-cream; high-fat animal products like bacon, sausage, red meat (Oberg, Stoppler, & Cunha, 2015).

Physical Exercise

Physical activity and exercise are considered one of the most important aspect in type 2 diabetes management along with nutrition therapy and medication. Few studies suggest that, along with diet induced weight loss of 6-8%, physical activity of at least 150min/week can decrease type 2 diabetes by 58%. A cluster-randomized study suggests that nutrition therapy, physical activity and nutrition therapy combined with physical activity are similarly effective in type 2 diabetes. A cohort study suggest that increase in the level of physical activity such as aerobic fitness can reduce the risk of cardiovascular diseases and not only the glucose level in the blood (Sigal, Kenny, Wasserman, Castaneda-Sceppa, & White, 2006).

Along with aerobic/cardio exercise, resistance exercise can also benefit a type 2 diabetes patient, so it is recommended to do both types of physical activity. At least 5 sessions of exercise are recommended out of which 2 sessions should of resistance exercise is suggested. Even though the recommended sessions cannot be possible due to a specific lifestyle or schedule, small amount of physical activity can still benefit a type 2 diabetes patient (Sigal, Kenny, Wasserman, Castaneda-Sceppa, & White, 2006).

Several strategies can be used to motivate a person to increase the level of physical activity, for example, setting goals, working according to the convenience of the per-son, including different tools and instruments, generating a family program which will help the person overcome the barriers.People who have type 2 diabetes can have supervised exercise plans based on individualization which can help them improve the glycaemic control, heart rate, decrease cholesterol and reduce weight by a certain percentage. As John had a sedentary job, he spends most of his time travelling in car however, he is going to have a more stable job now but, he might spend time sitting at one place. Sitting at the same place for a long time can in-crease the risk of cardiovascular diseases and accumulate fat in the abdomen re-gion. Prolonged sitting can be avoided by getting up every 20-30 mins and relaxing your muscles (Sigal, et al., 2018).

Aerobic or cardio exercise includes Walking, jogging, swimming, cycling. When having a work out session in the gym, using treadmill, spin bike, stair mill rowing machine can be included in aerobic exercise (Types of Aerobic Exercise, n.d.). Swimming is one of the best aerobic exercise. To complete the 150min/week re-quirement John can go swimming with his family. Along with aerobic exercise, re-sistance exercise which involves working with weights and weight machines can be beneficial in losing weight. Although, as John spends most of his time in the of-fice and is looking forward to spends some time with his wife and children he can focus more on aerobic exercise like going on a walk with his wife after dinner, tak-ing his children out in the play area (Sigal, et al., 2018).

Conclusion

In conclusion to the above essay John can treat his type 2 diabetes with lifestyle in-terventions which includes all the necessary health models, dietary modifications and physical activity. Lifestyle intervention can not only be changed by an individual, but it is only effective when its importance and process is understood by the family and are of potential benefit to them. Treating his obesity or overweight by nutrition therapy will not only cure his type 2 diabetes, but also reduce his risk of other type 2 diabetes complications (Lindstorm, et al., 2006). The other aspect of lifestyle intervention is physical activity which according to (Global Strategy on Diet, Physi-cal Activity and Health, 2018) can be practiced at a moderate level for 30min/day.