POST-GRADUATE DIPLOMA IN DIABETES MANAGEMENT AND EDUCATION

DME 7102 Diabetes Self-Management Education in Psychosocial Context

Work-based Case Report Assignment

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Diabetes Self-management education within the Psychosocial context – A Case Report

Introduction

Diabetes education (DE) is the cornerstone of diabetes management and the goal of DE is to assist people to develop skills and strategies required to manage their diabetes working towards behavioral change and promoting self-management. The first 6 months to 4 years of diagnosis are crucial to the long-term management of the disease (1,2). Failure to maintain HbA1c levels less than 6.5% within the first one year of diagnosis, had a higher chance of developing microvascular and macrovascular complications, as well as an increase in mortality risk (3,1,4). Hence, it is important for patients to maintain glycemic control after being diagnosed. Proper education with support and early management can help to decrease complications. The following case study illustrate upon a young obese gentleman who are newly diagnosed with type 2 diabetes entering the initial diabetes self-management education (DSME) session to improve clinical outcome. The education session is individualized tailored to the patient's needs and goals within the psychosocial context.

Case presentation

Mr C, a 35-year-old Chinese man presented to the emergency department for acute gastritis associated with nausea and bloating. His blood pressure was 138/105 mm Hg; capillary blood glucose of 21.8 mmol/L; his height is 175cm tall and weight is 116.5kg with a body mass index (BMI) of 38.2 kg/m^2. He was admitted to the ward and an OGDS showed chronic active gastritis and ultrasound of abdomen and pelvis revealed of fatty changes of liver. His laboratory investigation reveals HbA1c 10.7%; venous blood glucose 28.8 mmol/L; total cholesterol 4.9 mmol/L; high-density lipoprotein cholesterol (HDL-C) 0.7 mmol/L; low-density lipoprotein cholesterol (LDL-C) 2.8 mmol/L; triglyserides 3.1 mmol/L; serum creatinine 85umol/L with the eGFR level more than 90 ml/min/1.73m^2. His urinalysis for albumin was negative. He had symptoms of frequent urination and thirst for the past 2 weeks. He was diagnosed with type 2 diabetes and was shocked when doctor

inform him of the diagnosis, Janumet 50/850 twice a day was commenced and referred for DE before discharge.

Assessment

Information gathered and documented include the demographic data, marital status, living arrangements, his educational level, occupation, weight, height, BMI, laboratory findings, blood pressure and language he preferred. He has no other comorbid condition (hypertension or dyslipidemia) except for his obesity.

He is married with 3 kids aged 6 to 9 years old. His wife who is a sales promoter is pregnant with the 4th child. He works as a manager in a palm oil plantation. His father has diabetes, pass away when he was young due to a motor vehicle accident. His mother has no diabetes, staying with him. He completed his education at the secondary school (Form 5) and able to converse in Mandarin language better than English. The relationship between his mother and wife was good where he could get support. Financially, he is manageable with his wife support. He is not sure whether he snore during sleep, but he has never heard of his wife complaining.

He has limited knowledge regarding diabetes and states that he does not understand why he has diabetes. He doesn't have knowledge about healthy eating, meal timing and body weight can affect his health and diabetes. He only knows that smoking and being obese is not good for health. He describes himself as obese since childhood, had attempted to lose weight for many years but unsuccessful. In the past, he took some herbal remedies for weight-loss and stopped it when he did not see any positive results. His previous experience for losing weight include swimming or playing badminton regularly. His weight gradually increased after married when he became more sedentary. During his working hours, walking is less as in the plantation he uses car to move about. He started brisk walking or jogging recently for about 30 minutes 1 or 3 times a week but he has been unable to lose more than 1kg. He smokes 20 cigarettes per day.

His diet history reveals excessive carbohydrate intake in the form of rice, noodles, fruits and his beverages contain sugar. His meals usually go with fried egg, chicken or fish with gravy. He eats out for breakfast and lunch, dinner will be at home with one to

two serving of fruits. He frequently took local sweet kuih and tea with sugar or fruit juices as mid-morning or afternoon snack at his working place. He will go for the fruit juices more often when the weather is hot readily available from the next-door fruit plantation. He also frequently go for fast food like 'KFC' and Mc Donald's. He drinks beer only during special occasion. His mother prepares meals at home.

Based on all the assessment data, his health risk identified include obesity (BMI 38.2 kg/m2 – obese class II (5,6), dyslipidaemia, limited exercise, high carbohydrate and fat intake, lack of understanding of diabetes and self-care management and smoking. He also has no idea about self-monitoring of blood glucose (SMBG).

Intervention

Discussion the basic pathophysiology of diabetes and complications using pictorial flip chart to ease his understanding so that he could grasp the rationale for self-care. Showing him the treatment target values of glucose, lipid and blood pressure based on the Malaysian Clinical Practice Guideline Management of Type 2 Diabetes (5) as shown below with the aim of preventing diabetes complications.

Parameters		Levels
Glycaemic control*	Fasting or pre-prandial	4.4–7.0 mmol/L
	Post-prandial**	4.4–8.5 mmol/L
	A1c++	≤6.5%
Lipids	Triglycerides	≤1.7 mmol/L
	HDL-cholesterol	>1.0 mmol/L (male) >1.2 mmol/L (female)
	LDL-cholesterol	≤2.6 mmol/L#
Blood pressure [41-43 (Level I)]		≤135/75 mm Hg§
Exercise		150 minutes/week
Body weight [44,45 (Level I)]	If overweight or obese, aim for 5-10% weight loss in 6 months	

Informing him that diabetes is a lifelong disease and need to self-managed as he is the most important individuals in managing the illnesses. Diabetes can be managed through diet and exercise, oral medication or insulin. Explaining to him the different treatment options available and there is rarely one perfect way to treat so that he could

understand and able to look at the personal cost and benefits of each treatment choice. Smoking increase the risk of cardiovascular disease, peripheral vascular disease and neuropathy (5,7,8,9). This was address to him and he feels motivated to quit smoking for the sake of his children.

He expressed his greatest concern and worries were his immediate family members when being asked. If he encounters a stroke, his health and financial situation would be compromise as he is the breadwinner of the family. He began to realise the impact on the people he loves and himself. Acknowledging his fear and concern makes him feel better. He began to ask questions about how can he improve his condition. We began to list out his health risks and he would prioritise his goal to lose 10% of his weight by making changes to his lifestyle and stop smoking in the time frame of 6 months.

We discussed on the concept of healthy eating, energy balance, food groups, sources and types of carbohydrates using the plate model and carbohydrate exchange list. Emphasis on consistent carbohydrate intake for each meal, limit carbohydrate from sugar sweetened drinks to reduce the risk of weight gain and can substitute with non-nutritive sweeteners were explained. He recognized that his glucose level was affected by large portions of rice, noodles, fruits and his beverages contain sugar and the frequency of snacks that he consumed. He also realised that his diet contains high fat from the fried stuff and the fast food and little vegetables intake. Issues on alcohol consumption also was discussed for caloric restriction and his fatty liver condition.

After seeing the carbohydrate exchange list in photo form, he had a better understanding of the portion size and agreed to modify his diet. Discussion on food choices for healthy snack and how to read food labels when shopping for his groceries were included. He was encouraged to keep a food diary to help him identify the different types of food impact on his blood sugar. He claims that it would be difficult for him to write when he is outside but he can take pictures of his meals for reference. We also discussed the recommendation of exercise based on the guidelines and the action of his oral antihyperglycemic drugs and the possible side effect was explained to him and advised

to take it immediately after food to prevent gastric side effect and to notify doctor if symptoms appear.

He also shown interest on reading materials that addressed the prevention of diabetes complications. He was given those materials in Mandarin language. At the conclusion of the visit, he finds that his fear has reduced, understands the disease can be controlled and complications can be prevented. He agreed to meet again in 3 months' time meanwhile reporting his blood sugar progress weekly through Whatsapp.

Outcomes

After discharge, he has been diligently reporting his blood sugar and food record weekly via WhatsApp. Surprisingly he tests more frequent as what has been agreed when his numbers reach the target range. He only took 3 main meals, avoid snacking and fruit juices. He tests pre-and-post meal reading and relates to his carbohydrate intakes, making adjustment to his diet, not only carbohydrate but also on fat intake. He will bring his family for grilled western food instead of fried food. He also avoiding sugar in his beverages. Whenever he took something special he will send a photo of the meal and we discussed it over the WhatsApp chat.

He noticed the changes of blood sugar when he exercises. This has motivated him to do exercise regularly especially every morning before he goes to work. He never missed his medication and took it regularly on time. His weekly weight monitoring shows a drop of 1.3kg after one month. He feels very motivated and continued with the current changes that he had made and reporting his feelings, blood sugar and weight status.

3 months later during clinic visit, systolic blood pressure has reduced from 130 to 120 mmHg, weight has reduced 3.5kg from baseline, HbA1c has reduce from 10% to 5.2%. He was happy with the achievement. He shared that his wife and mother were very supportive and had change their ways of cooking also. He managed to stop smoking with their encouragement. His physician has changed his Janumet to

Metformin XR once daily thus reducing his cost and referred him for eyes and cardiac assessment.

Discussion

The diagnosis of diabetes is often over whelming and difficult for patients to do what they don't understand. The first step in equipping patients to take on a more active role in their health care is to educate them about their diseases. Too often we only teach what we think the patient should learn and forget about what the patient wants to learn. When education was tailored to individual interest, needs and goal with good communication skills, the outcome is good (10).

Assessment in the education process is the foundation upon which a respectful, trusting relationship and an effective teaching plan can be built. Using the preferred language of communication will enhance building a trusting relationship. The assessment provides information on what diabetes means to the person, what resources are available to them and what next steps they would like to take in managing their health. Thus, psychosocial factors such as burdens of diabetes and its treatment, worries about adverse consequences, lack of social and economic resources, depression, anxiety, eating disorders, cognitive, impairment, as well as health literacy and numeracy (10) should be incorporated in the assessment and monitored in an ongoing process. Knowing patient's existing knowledge, their perception and notion of what should or should not eat, as well as understanding about the timing of meals and snacks or their previous diabetes education session will assist in determination of the individual's base knowledge especially when working together with a newly diagnosed diabetes who are new to carbohydrate counting to determine their learning needs and values.

Based on the transtheoretical model (TTM) stages of change, patient at the action stage, will believes he have the ability to change his behaviour, strong willpower and committed to change. This is the shortest of all the stages and generally last about 6 months (11). For instance, this patient has initiated his physical activity but it was fairly sporadic and weather-dependent. He realized that his exercise was not consistent and

planned to increased his jogging activity to 30 minutes per day, minimum 5 days per week and would like to go to the gym for the resistance exercise with his friend 2 times per week that he thinks he can achieve. He can wake up early and went for the jogging and go to the gym after work. He also has been recording his weight weekly for reference and progression.

The role of the diabetes educator is not merely providing knowledge and tools for diabetes self-management but also to include support to people with diabetes simultaneously, so that they learn to manage their disease (3.6,7,8). Research shown mobile applications, especially text messaging used as educational tools improved outcome among people with type 2 diabetes (11,12). The use of WhatsApp phone follow-up has keep the patient feel empowered and motivated with the continuous support and capability of adjusting his food and activity in a safe manner.

An additional consideration in overweight and obese patient is the impact of pharmacological therapies on weight. Weight neutral agents or those associated with weight loss would appear more preferable. The drug that the doctor prescribed for him was Janumet (DPP-4/Metformin) which is both promoting weight loss and weight neutral. No single oral agent would be expected to lower HbA1c sufficiently. DPP-4 lowers A1c by 0.5–0.8% and Metformin reduces about 1.5% (6). However, his A1c levels dropped from 10 to 5% in 3 months were required further investigation of any possible uses of complementary and alternative medicine.

Although Self-monitoring of blood glucose (SMBG) was not recommended for people using oral glucose lowering drugs (with the exception of sulphonylureas) or non-intensive treatment, performing self-monitoring two or three times per week (e.g., fasting, before/after meals) may be helpful, as increased frequency of test is associated with meeting A1C targets (9,14,15) and allows patients to evaluate their individual response to their self-management decision in the area of diet, exercise and medication. Only if integrating SMBG results into diabetes management, it can be a useful tool for guiding medical nutrition therapy and physical activity (9,14). This was explained to him and he

finds that financially he can cope with monitoring for the purpose of guiding his food intake and exercise, he opted to commence SMBG.

Conclusion

Diabetes educators (DE) roles are the combination of the clinical, educational and psychological aspects of diabetes care and providing support. Their role is changing from that of the 'expert' to one of a 'facilitator' and working towards patient-centered care. Applying behavioral science in the education promote behavior change and better outcome. Advances in technology with the used of mobile apps to deliver individually tailored, text message based diabetes self-management support intervention also shown positive outcome. The combination of clinical skills and expertise in teaching and counseling enhances the delivery of care in a manner that is both cost-reducing and effective. This partnering of nurse with patient not only improves care but strengthens the patient's role as self-manager.

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