Comprehensive teaching packet for diabetic patients

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Senior Honor’s Project: Comprehensive Teaching Packet for Diabetic Patients

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COMPREHENSIVE TEACHING PACKET FOR DIABETIC PATIENTS

Beginnings

The seeds of this project were planted during the first week of my capstone rotation for University of Portland’s Nursing School. My capstone took place at Sea Mar Community Health Center in Vancouver, Washington. Sea Mar is a state-wide organization that intentionally serves low-income and vulnerable folks—roughly half of the patients seen at Sea Mar are at or below the Federal Poverty Line (according to the Sea Mar Annual Report for 2018). To qualify for the clinics, patients must be on Medicare or other state insurance policies. Around half of the patients seen at Vancouver Medical are English as a Second Language patients, with a first language in Spanish or Russian. As an interdisciplinary clinic, patients have access to primary care providers, dental, housing and education resources, as well as mental health services all within one organization. There are multiple specialist sites (such as cardiologists, sports medicine and women’s health) available for internal referrals.

This was a unique Capstone opportunity because Sea Mar is a primary care office, and not a typical site for BSN students. That meant I was able to create my own plan of action and design my experience. Each day I worked with different providers and collaborated with individual departments in the Sea Mar organization. One such shadowing experience with the Health Educator made me pause. In nursing school, they always tell us to look for the gap in the patient experience. This was the gap. The literature provided during Type 2 Diabetic education appointments was rigid, superficial and not at all individualized for the patient. Very little of the information was contextualized in the pathophysiology of the diabetic disease process. Also, the resources were in English only.

It was surprising to me that there was no existing standardized packet of information that newly diagnosed diabetic patients received. Each provider and health educators had their own
prioritized list of outside resources for patients. Sea Mar as a whole has over 13,000 diabetic patients (according to the February internal audit), over 700 of whom receive primary care at the Vancouver Medical clinic. Roughly 200 of those diabetic patients have dangerously high A1C values of greater than 9. A1C is a measure of the average glucose level in the blood. It is helpful for diagnosing and monitoring the severity of diabetes. Many folks throw around the term diabetes without really knowing anything about the intricacies of the disease process. The existing information that patients receive is dense, lack luster and scary rather than empowering.

I spoke to my preceptor about the style of information presented during health education appointments. She shared in my frustration. I asked why there was no existing packet of information explaining Type 2 Diabetes, despite its prevalence among Sea Mar patients. Janice said it was a project that the leader health educator (Lauren, at another site) had been working on for years but had minimal time to complete. The following day, Lauren and I met in her office to discuss possibilities.

**Planning**

As part of my meeting with Lauren, I sat in on a pre-diabetic patient education appointment. Needless to say, with a Masters degree in nutrition science, the information Lauren provided to the patient was quite different from that of the other health educators. She explained in depth the process of developing Type 2 Diabetes, accompanied by a hand drawn graphic, and the precipitating factors of the disease. She empowered the client to problem-solve by giving him resources in Spanish that matched his acuity and level of understanding. This included the graphic, a food plate, and a portion size chart. She discussed exercise and appropriate, manageable ways to incorporate it into his day.
Between the two of us, Lauren and I devised a plan for what patients need to know on a basic level. We prioritized appropriately labeled food plates (50% vegetables, 25% whole grains, 25% protein-dense foods, as desired fruits, with no mention of dairy products) and portioning/serving size for each food group (i.e. 3 tortillas is not 1 portion). A recent study published by the Public Library of Science showed that individuals who followed a vegan diet for 12 weeks demonstrated dramatically improved glycemic control when compared to those who followed a conventional diabetic diet (Lee, et al, 2016). Certainly a vegan diet is not feasible for all patients, but emphasizing the positive effects of a plant-based diet can empower patients to take steps to decrease the quantity of animal biproducts in the diet.

In addition to the food recommendations, I decided it was important to empower clients to make lifestyle choices. We want to acknowledge the experiences of patients and recognize that not everyone has time to set aside for meal preparation from scratch or an hour of exercise by themselves—many work multiple jobs or have large families to care for. In researching, I found a study specifically about diabetic patients and the effect of involving loved ones in their recovery/management process (Wooldridge & Ranby, 2018). Their research showed that patients whose partners were included in the conversation reported higher scores for “self-efficacy and self-management” (Wooldridge & Ranby, 2018). That is to say, when families are involved, people are more effective at managing their health.

It was also important to us that we include danger signs of diabetes (hyper- and hypoglycemia), the rationale for eye and foot checks, and an explanation of the mechanism of action of diabetes. Lauren provided me with the resources she frequently offers to clients and the corrections she would make. Thus, began my project of condensing the resources and information available to patients into one cohesive packet.
Condensing Information

With such wide-ranging information about diabetes and its management, I began my literature review with the authoritative health sources: the Center for Disease Control and Mayo Clinic. Their diabetes information web pages are concise and based on research and national standards. They carry the weight of authority for the public as well, so attaching their name to our documents enhances our credibility. The Santa Barbara Diabetes Initiative (Sansum Diabetes Research Institution) is an organization that specializes in prevention of and education about diabetes. Their handouts are available to the public for education purposes. They emphasize increased fiber in the diet because it cleans the digestive tract and can help reverse the progression of diabetes.

The number one priority for patients is safety. So, in addition to the complications and lifestyle recommendations, it was essential to include danger signs. Hypo and hyperglycemia are among the more common acute complications. The warning signs are relatively easy to recognize: sweaty and shaky for hypoglycemia, nausea and frequent urination/thirst for hyperglycemia. I included graphics to help visualize symptoms for our patients with limited literacy. Another safety concern is the complication of capillary damage. Including a reminder to patients to check their feet and pay attention to body changes helps us to stay ahead of severe complications. Many patients do not understand the reasons for 3-month follow-up appointments, why we do eye screenings, or why we check their feet. There are serious consequences for individuals who ignore warning signs and screenings.

It was important to me that I include an explanation of the development of diabetes. Nursing school dedicates a large amount of class time to diabetes education, yet it is still confusing to me. Put simply, when we consume large quantities of fatty foods, the fat
interrupts/inhibits the action of insulin. Insulin is the chemical produced by the pancreas that permits sugar in the blood to be absorbed by cells. When insulin is interrupted, blood sugar (blood glucose) remains elevated. Excessive sugar in the blood leads to damaged capillaries; capillaries that feed essential, fragile structures in the body (like nerves, retinas and kidneys). Thankfully, this deterioration can be slowed (if not reversed) with lifestyle modifications: diet and exercise. Realistically, folks are not going to jump outside and start training for marathons because of a diabetes diagnosis; my goal in recommending lifestyle adjustments is to make them reasonable and palatable to the everyday person. The CDC states that 20 to 25 minutes of exercise each day can make an enormous difference ("Get Active! | Living with Diabetes | Diabetes | CDC", 2018). Exercising increases the body’s sensitivity to insulin, which decreases the effects of diabetes.

Recommendations

First off, diet recommendations. Recent data has found that vegetarian and vegan diets have positive effects on the long-term indicators of glycemic control (A1C) (Lee, et al, 2016). Popular diet tools like My Plate do a better job of emphasizing fruits and vegetables than visual tools in the past. The heavy influence in the meat and dairy industry on nutrition recommendations has lasting effects on the resources we provide to patients and learn ourselves (Marion, 2013). In reality, nutrition science highlights the importance of plants and whole foods in the diet. The macronutrients necessary for healthy development can be acquired through plant-based diets, if we pay close enough attention. Realistically, that is not what most folks will do. The new-and-improved Sea Mar plate is 50% vegetables, 25% whole grains, 25% protein source and as many fruits as desired. Sweets and processed foods ought to be limited as much as possible. Whole foods- like raw/fresh fruits and vegetables- take longer to digest and therefore
raise and lower blood glucose more slowly. A high-fiber diet (predominantly plants) acts against the diabetic process. The fiber cleans the intestines and helps to remove fat from the insulin-gate on cells (Mogos, Dondoi & Iacobini, 2017).

The other piece of the lifestyle puzzle is exercise. The CDC recommends at least 20 minutes of exercise (specified as elevated heart rate) each day, for at least 10 minutes at a time ("Get Active! | Living with Diabetes | Diabetes | CDC", 2018). For many folks, accountability and consistency are issues. By providing a month-long calendar with exercise recommendations, clients can be honest with themselves about the regularity of their exercise by simply checking off the days when they reach the 20 minute recommendation. Because we know that many of our patients do not have an abundance of free time, I combined the meal preparation recommendations with those of exercise. Turn on the rice cooker, throw chopped vegetables in the oven and go dance with your kids for 20 minutes while it cooks. Parking on the far side of the parking lot counts as exercise if you are walking quickly enough. Walking the dog twice a day for 15 minutes each achieves the exercise goal. Involve the kids in community Zumba classes, or follow along with YouTube videos at home.

Conclusions

This health packet is not intended to be a lecturing, shaming or belittling document. Rather, the purpose is to provide cohesive, scientifically supported, non-pharmacological recommendations for patients with diabetes. This diagnosis can be frightening, especially when family history of Type 2 Diabetes is involved. We strove to prioritize safety information and to correct misinformation. The recommendations made in this discharge packet are geared towards aiding patients in regaining control of their lives in a safe and realistic manner. In 2015, the CDC reported that “30.3 million Americans- 9.4% of the US population- have diabetes… 84.1 million
have prediabetes… [which] often leads to type 2 diabetes within five years” (“CDC Press Releases”, 2017). Diabetes is a widespread and life-altering disease. For organizations that intentionally serve communities that are at higher risk for chronic illnesses, it is important to standardize the information that patients receive.

This packet is the starting point for Sea Mar Community Health Centers standardization of information for patients with Type 2 Diabetes. As an exceptionally busy organization with a high volume of patients, there is little time for Health Educators to dedicate to this auxiliary work. As a public health nurse, this would be one of my primary roles: to survey the population and create an intervention or policy to address the identified issues. Utilizing current evidence from the literature to support the assertions we make during health education appointments is essential to keeping our recommendations up to date. Nutrition science is constantly changing as the research community invests more and more time into unbiased inquiry. Our patients are bombarded by health myths, misinformation and careless marketing by food industries. It is our responsibility to educate the public on methods to maximize their health and wellness.
References


WHAT IS DIABETES?

Diabetes comes in three forms, but they all interfere with the body’s ability to process fuels/sugars from the food we eat. If we have too much or too little sugar in our body, it can be very dangerous and have lifelong consequences.

MANAGEMENT

Your doctor has probably prescribed medication to help manage your diabetes. Most medications help the body absorb sugar so that our cells can use it to fuel our systems. Check your blood sugar regularly to make sure that you are staying in the target, safe range.

Look at your feet everyday! The tiny blood vessels in your toes can get damaged and the tissue can die. If you notice any black spots or changes in feeling, call your provider right away.

DANGER SIGNS

High blood sugar: frequent urination, increased thirst, dry mouth, blurred vision, fatigue and nausea. This can happen if you eat too much, get sick, or don’t take enough medication.

*You may need to adjust your meal plan or medication.

Low blood sugar: sweating, shakiness, weakness, hunger, dizziness, headache, heart palpitations, irritability, slurred speech, drowsiness, confusion, fainting and seizures. This can happen if you workout or skip a meal.

*Drink some juice or have a glucose tablet.

COMPLICATIONS

Cardiovascular disease: Diabetes increases your risk of developing cardiovascular disease like coronary artery disease, chest pain (angina), narrowing of blood vessels (atherosclerosis) which can lead to stroke or heart attack.

Nerve damage (neuropathy): Extra sugar in the small blood vessels (capillaries) that feed nerves can cause tingling, pain, numbness that usually begins in the toes and legs. This can eventually lead to damaged, dying tissue and possibly amputation.

Eye damage (retinopathy): Similarly to in your toes, the small blood vessels in your eye can be damaged by the extra sugar in your blood. This can lead to blindness and other vision complications.

Kidney damage (nephropathy): The kidneys are also full of tiny blood vessels. This means that they are at high risk for damage with diabetes, as well. Some people need transplants or dialysis to manage their kidney function.

- One way to keep groceries cheap is to buy in bulk, not the packaged stuff.
- Try to avoid canned foods or packaging that says “Sugar Free” or “Lite”. Usually this means there is artificial sugar.
WHAT IS DIABETES?

Diabetes is caused by the food that we eat. Luckily, we can also reverse the effects of diabetes by changing what we eat and how we eat it.

When we eat food, it is processed in our stomach where the basic nutrients are broken down and absorbed into our bloodstream so that our cells can use it. Carbohydrates are broken down into sugars that our cells consume for fuel. When there are many sugars in the blood, an organ called the pancreas releases a chemical called “insulin”. Think of insulin as the key to unlocking the doors on our cells to let sugar inside. Without insulin, our cells can’t absorb sugars (also called glucose). If cells don’t absorb sugar, then it stays in our blood and creates high blood sugar.

When we eat foods high in saturated fat, like cheese, meat and most processed foods, our bloodstream gets flooded with fat, and not the good kind. Saturated fats clog the door to cells and limit the effects of insulin. This means that fat, sugar and sometimes blood, gets stuck in arteries. Our blood sugar stays high because cells don’t remove it from the blood. Without the fuel they need, cells get sick and stop functioning well.

When we eat foods with lots of fiber, like vegetables and fruits, it takes the stomach a long time to digest. This means that the blood sugar rises slowly, and decreases slowly. Fiber also cleans out the stomach and helps to clear the fats blocking insulin.

When we eat processed foods and food that are high in pure sugar, like white bread and sweets, our blood is flooded with glucose (sugar). This causes our blood sugar levels to skyrocket and then plummet.

Fruits and vegetables are free foods-- aim for fresh or frozen, not canned or juice. They should comprise about half of your food each day. Try to limit foods like meat, dairy and eggs. Try for a few meals a week that are totally meat and dairy free, use beans or tofu instead.

Quick tip!
- If there is a farmer’s market near your house, go towards the end of the market. Farmer’s often give awesome deals on produce they haven’t sold.
DIABETES
FOODS TO EAT AND HOW TO EAT THEM

Vegetables:
5-7 portions

Whole grains, beans, starches:
6-10 portions

Fruit:
2-4 portions

Sweets & Fats:
Limit as much as possible. Consume good fats.

Water:
8 glasses/day

Lean Meat/foods rich in protein:
2-3 portions
"caution with eggs and meat, they contain saturated fat

Portioning:
- Grains: Check the label!
  1 tortilla, 1 slice of bread, 1/3 cup of pasta/rice

- Vegetables: 1/2 cup, frozen is okay!

- Fruits: 1 small fruit, 1/2 cup berries, frozen is okay!

- Proteins: 3-4 oz of meat or tofu, 1 egg, 2 tbsp peanut butter, 1 cup mushrooms, 1/2 cup beans
  *the size of a deck of cards

Meal Suggestions:

-Breakfast:
Smoothie: 1 Banana, 3/4 cup frozen berries, 1/2 cup spinach, 2 tbsp peanut butter, option to add steel cut oats for more protein

Overnight Oats: 1/4 cup steel cut oats, 2 tsp flax or chia seed, 1/2 cup sliced apple or berries, 1/2 cup almond/soy milk

Scrambled Eggs: 1-2 eggs, 1 cup diced veggies (spinach, peppers, cauliflower)

-Lunch/Dinner:
Stir Fry: 1 cup brown rice, 2 cups veggies (peppers, onion, potato, celery, peas, carrots, mushrooms), olive oil (not butter), 1/2 cup shredded chicken

Chili: 1 onion chopped, 1 cup beans (kidney, lentils or black), tomato sauce (reduced sodium), veggies as wanted! (zucchini, potato, celery, sweet potato), season to taste (avoid using more salt by adding a squeeze of lemon!)-- simmer all together for 20 minutes

Burrito: 1/3 cup scrambled tofu (season with chili powder, garlic, pepper, option to marinate overnight), roasted veggies (carrot, bell pepper, potato, squash, broccoli, mushroom), 1 whole grain tortilla, 1 pinch shredded cheese, 1/2 avocado sliced

This article has helpful suggestions for inexpensive foods!
https://www.aarp.org/money/budgeting-saving/info-11-2009/foods_under_a_dollar_per_pound.html
Diabetes
APRENDA DEL DIAGNÓSTICO Y COMO CONTROLAR LA DIABETES.

QUÉ CAUSA LA DIABETES
El diabetes es causado por disfunción de las células y el proceso de absorber el azúcar en la sangre. Es muy importante prestar atención a los niveles de azúcar en la sangre, chequee varias veces al día, como describe el doctor.

La diabetes es producida por años y años de comer comida grasosa. Esta grasa interrumpe los procesos de las células y causa cambios descontrolados de la glucosa (azúcar). Los niveles muy altos o muy bajos de glucosa pueden causar complicaciones graves de salud por destruir los vasos sanguíneos pequeños.

CÓMO CONTROLARLA
Lo bueno de la diabetes es que, normalmente, podemos revertir el proceso con una dieta saludable y un régimen de ejercicio. La mayoría de gente usa medicamentos (como insulina) para ayudar a las células a absorber el azúcar.

CUÁNDO PREOCUPARSE Y SIGNOS PELIGROSOS
Llame al doctor o vaya a la sala de emergencia si siente los síntomas que no cambien después de seguir las sugerencias (*). Los síntomas vienen de repente.

Azúcar alta: orinar con frecuencia, mucha sed, boca seca, visión borrosa, fatiga, estómago revuelto
*Es posible que necesite cambios en el plan de comidas o medicamento (con el médico)
Azúcar baja: sudor, temblor, debilidad, hambre, mareo, palpitations, sentirse irritable, cambios en el habla, somnolencia, confusión, desmayo o convulsiones. Este puede pasar si hace ejercicio o se salta comidas.
* Tome poco de jugo o una tableta de glucosa.
Diabetes

COMPLICACIONES DE LA DIABETES

PROCESO DE DAÑO
Cuando tenemos niveles de glucosa bastante altos y bastante grasa en la sangre, las arterias se obstruyen por grasa. Este proceso disminuye el flujo de sangre a las arterias pequeñas que se llaman capilares. Los sitios más frágiles son las capilares en los ojos, dedos del pie, nervios, y riñones.

COMPLICACIONES
Afección cardiovascular: Con la acumulación de grasa, los vasos sanguíneos se estrechan. Esto puede causar arteriopatía coronario, dolor de pecho, crecimiento de placa en los vasos sanguíneos (aterosclerosis) que pueden causar un ataque de corazón (infarto).

Daño a los nervios (neuropatía): Azúcar excesiva en los vasos sanguíneos (capilares) que alimentan los nervios puede causar sentir hormigueo, dolor, y entumecimiento. Normalmente empieza en los dedos del pie y en las piernas. A la larga, puede causar tejido dañado, muerto o posible amputación.

Daño a los ojos (retinopatía): Así como los nervios, los ojos tienen capilares frágiles. El azúcar extra hace daño a los vasos sanguíneos. Esto puede causar ceguera y otras complicaciones de la visión.

Daño a los riñones (nefropatía): Los riñones también están llenos de estos pequeños vasos sanguíneos. Significa que hay mucho riesgo de que los individuos con diabetes desarrollen problemas renales. Algunas personas requieren transplante de órganos o diálisis.

CÓMO PROTEGERSE
Lo bueno del diabetes es que, normalmente, podemos revertir el proceso con una dieta saludable y un régimen de ejercicio. Una dieta estricta y un régimen de ejercicio diario (como 30 minutos), pueden cambiar el avance de la afección.
Como decimos arriba, la diabetes es causada por la comida, y los efectos en las células. Cuando comemos, el estómago procesa la comida para separarla en nutrientes básicos. Desde allí, los nutrientes se absorben en la sangre donde las células pueden comerlos. Los carbohidratos hacen azucares que les encantan a las células. Cuando hay muchos azucares en la sangre, un órgano (llamado el pancreas) produce una sustancia química, insulina. La insulina actúa como una llave para la puerta de las células y permite entrar al azúcar. Sin la insulina, las células no pueden absorber el azúcar. Si no absorben el azúcar, se queda en la sangre y causa niveles altos de azúcar en la sangre.

Cuando comemos alimentos con mucha grasa, como queso, carne y comidas procesadas, la sangre se inunda con la grasa, y no del tipo bueno. La grasa saturada se pega a la "puerta" de las células y limita los efectos de la insulina. Eso significa que la grasa, el azúcar y a veces la sangre quedan atrapadas en las arterias. El nivel de azúcar sube porque las células no lo llevan de la sangre. Sin el alimento, las células se enferman y dejan de funcionar bien.

Cuando comemos alimentos llenos de fibra, como verduras y frutas, limpiamos el estómago de la grasa. Las frutas y las verduras son más duras de digerir y toman más tiempo en absorber. Significa que el nivel de azúcar sube y baja lentamente.

En las comidas procesadas con muchísima azúcar pura, como pan blanco y dulces, la sangre recibe mucha azúcar en poco tiempo. El nivel crece y cae rápidamente.
COMO PREPARAR COMIDA SALUDABLE PARA EVITAR LA DIABETES

PORCIONES
- Granos enteros: Lea la etiqueta!
  1 tortilla, 1 rebanada de pan de grano entero, 1/3 taza de pasta o arroz
- Verduras: 1/2 taza (congeladas está bien)
- Frutas: 1 fruta pequeña, 1/2 taza de bayas/moras (congelado está bien)
- Proteína: 3-4 onzas de carne o tofu, 1 huevo, 2 cucharas de crema de cacahuete, 1 taza de champiñones, 1/2 taza de frijoles

Ahorre dinero al:
- Ir al mercado de granjeros al fin de sus horas de venta. Normalmente, los granjeros hacen descuentos en los productos agrícolas que quedan al final del día.
- Comprar al por mayor. Cuesta menos y se ahorra embalaje.
- Evitar frutas y verduras enlatadas y productos con etiquetas de "sin azúcar" o "lite". Típicamente, incluyen azúcares artificiales.
**RECURSOS**

**http://www.diabetes.org/**
-- Información general de la diabetes desde la Asociación de Diabetes de América. Disponible en inglés y español.

**https://www.cdc.gov/diabetes/basics/diabetes.html**
-- Información médica del Centro de Control de Afección. Guías nacionales de la salud, dieta y ejercicio.

**https://nutritionfacts.org/es**
-- Información en español sobre la diabetes. Videos con subtítulos en español que explican la diabetes.

**SUGERENCIAS PARA COMIDAS**

Desayuno:
*Batido* - 1 plátano, 3/4 taza bayas congeladas, 1/2 taza de espinaca, 2 cucharadas de crema de cacahuete, opción añadir copos de avena por más proteína

*Avena de remojo por toda la noche* - 1/4 taza de avena, 2 cucharadas pequeñas de linaza o semillas de chía, 1/2 taza de manzanas picadas o bayas, 1/2 taza de leche de almendra o soya

*Huevos revueltos* - 1-2 huevos, 1 taza de verduras picadas (espinaca, pimiento, coliflor)

Almuerzo/Cena
*Salteado de Verduras* - 1 taza de arroz integral, 2 tazas de verduras (pimiento, cebolla, apio, papa, arveja, zanahoria, champiñón), aceite de oliva (no mantequilla), 1/2 taza de pollo

*Chili* - 1 cebolla picada, 1 taza de frijoles (varios tipos), salsa de tomate (sal reducido), verduras como quiere (calabacín, papa, apio, batata), sazonar a gusto (¡evitar la sal por añadir un poco de jugo de limón!)-- cocinar todo junto por 20 minutos

*Burrito* - 1/3 taza de tofu revuelto (sazone con polvo de chile, ajo, pimienta- se puede marinar por toda la noche), verduras asadas (zanahoria, pimentón, papa, champiñón, brécol), 1 tortilla de grano entero, 1 pizca de queso, 1/2 aguacate