LITERATURE REVIEW

TYPE 2 DIABETES

Definition of type 2 diabetes

Type 2 diabetes is caused by the decreased insulin production by the beta

cells of the pancreas and an increased insulin resistance by the peripheral

tissues. This causes hyperglycemia, or high blood glucose levels in the body.

Since type 2 diabetics still retain the ability to produce some insulin, they do not

experience ketoacidosis. Therefore they are not insulin dependent but may

require some exogenous form of insulin to help maintain normal blood glucose

levels. Insulin is needed by the peripheral tissues to use the glucose in the body

for energy. Without insulin the body is unable to use glucose causing body cells

to starve and may result in complications in other parts of the body (emedicine

(a,b), 2005).

Diagnosis

Diabetes is diagnosed if fasting blood glucose levels are higher than

126mg/dL on more than one occasion, if a random blood glucose level is higher

than 200mg/dL along with symptoms, or if an oral glucose tolerance test

indicates blood glucose levels are higher than 200mg/dL after two hours (Medline

Plus, 2005).

<u>Prevalence</u>

Type 2 diabetes is the most common form of type 2 diabetes accounting for around 90% of all diabetics. Approximately 18.2 million people in the United States have diabetes, or about 6.3% of the population. An exact number is not available due to many people that are undiagnosed and living with type 2 diabetes. Approximately 13 million people are diagnosed with diabetes and approximately 5.2 million people are undiagnosed (American Diabetes Association (d), 2005).

<u>Risk Factors</u>

There is not one single risk factor that causes an individual to develop type 2 diabetes, but it is having multiple risk factors that put an individual at risk. The risk factors for developing type 2 diabetes are:

- Being overweight or obese.

- Having a history of type 2 diabetes in your family.

- Being African American, Latino, Native American, Asian American, or a Pacific Islander.

- Being an older adult.

- Having high triglyceride levels, or low levels of HDL cholesterol (the "good" cholesterol).

- Having a history of gestational diabetes or the first recognition of diabetes during pregnancy.

(About, 2005)

Complications

Having type 2 diabetes not only causes high blood glucose levels but also it can cause complications in other parts of the body if not controlled. Complications of diabetes include:

- Retinopathy- disease of the retina in the eye, leading to blindness.
- Nephropathy- disease of the nephron of the kidney, leading to renal, or kidney, failure.
- Neuropathy- disease of the nerves.
- Hypertension- high blood pressure.
- Coronary artery disease- narrowing of the artery that supplies the heart.
- Peripheral vascular disease- narrowing of large blood vessels.
- Cerebrovasular disease- narrowing of the artery that supplies the brain.
- Hyperlipidemia- high lipid, or fat, levels in the blood.

(U.S. Food and Drug Administration, 2005)

Signs/Symptoms

There are many signs or symptoms that one may have to indicate the presence of type 2 diabetes. Signs/symptoms of type 2 diabetes are:

- Polydipsia, or increased thirst.
- Polyphagia, or increased hunger.
- Hyperglycemia.

- Polyuria, or increased urination.

- Weight loss.

(Mahan, 2004)

LATINO DIET

Common foods

       There are many common foods that Latinos eat on a day-to-day basis, which plays an important risk factor for the development of type 2 diabetes. Common foods are often high in fat, calories, or sodium and include; wheat, corn, beans, tortillas, high-fat organ meats, rice, sugar, lard, sausage, dried codfish, starchy tubers, salt, poultry, beef, and dairy (Lang, 1992). It's not only the food that Latinos are eating that is relatively unhealthy but it's also how they cook it. Mexicans traditionally fry their food, which adds many calories to the meal.

Nutrient content of diets

       The nutrient content of Mexican's diet tends to be high in saturated fat, calories, and sodium. The nutrients that are most likely to be inadequate in are calcium, iron, vitamin A, folic acid, and vitamin C. The diet appears to be adequate in protein due to the high content of beans, eggs, fish, beef, poultry, and pork in their diet (Ohio State University (a), 2005). The strengths of the Mexican diet are that it is rich in complex carbohydrates, cereals, and grains, and is mainly vegetarian (Lang, 1992).

The Puerto Rican diet is high in calcium and complex carbohydrates. Their diet is also high in incomplete proteins, such as, rice and beans. The younger generation in Puerto Rico has become more susceptible to the Americanization of their diet. The Puerto Rican diet has become Americanized since many foods are imported from the United States. This has let to their diet being high in pizza, hot dogs, fast foods, and processed foods (Ohio State University (b), 2005).

Recipe Modification

Recipe modification in a typical Latino meal is necessary to facilitate compliance with a type 2 diabetic's diet. Easiest modifications include incorporating more fruits and vegetables, lowering the consumption of egg yolks and full-fat cheeses, increasing fiber, and substituting polyunsaturated fats for lard and other saturated fats. To decrease the sodium content, other spices, garlic, and onions may be used (Hernandez, 1998).

Assimilation of diet

As the Latino population has migrated from other countries to the United States they have brought with them their own traditions for cooking and have also started using the traditions of those in the Unites States.

As Mexicans have assimilated into the Western culture they are continuing to frying many meals and eating high-organ meats frequently but also adding the poor food habits of the Westerns to their diet. The poor food habits of the

Americans include eating too many calories and eating snacks between meals. Snacks often include high-fat chips, processed foods, high-fat luncheon meats, and eating at fast-food restaurants (Lang, 1992). Latinos end up consuming a higher percentage of fat than many Americans, which is around 37-40 percent of their calories coming from fat (Lang, 1992).

Puerto Ricans are also adapting to the Western lifestyle by incorporating many processed foods, high-sodium, high-fat snacks, and more beef, poultry, and dairy foods (Lang, 1992). Puerto Ricans haven't dramatically altered their diet to fit by coming to the United States, "they already suffer, like many Americans, from too large a proportion of their calories coming from fat" (Lang, 1992, 5).

There is a difference between whether Latinos are born in the United States and if they were foreign-born and have migrated to the United States. 6 in 10 Hispanics who are foreign-born tend to be focused more on nutrition and their food ingredients, while Hispanics born in the United States tend to worry more about lifestyle factors, such as, smoking and stress (Hispanics', 2004).

LATINOS AND TYPE 2 DIABETES

Incidence of diabetes in the Latino population

Two million or 8.2% of all Latinos have type 2 diabetes. The prevalence of type 2 diabetes is 1.5 times higher in Latinos than non-Latino whites. Approximately 24% of Mexican Americans and 26% of Puerto Ricans in the United States between the ages of 45-74 have diabetes. Nearly 16% of Cuban

Americans in the United States between the ages 45-74 have diabetes

(American Diabetes Association (a), 2005).

Risk Factors of Latinos for developing diabetes

Latinos have many risk factors, which put them at risk for the development

of type 2 diabetes. The Latino diet being high in fat, sodium, and calories puts

them at risk for being overweight or obese and therefore at a much greater risk

for developing an insulin resistance, or type 2 diabetes. They are also typically at

a lower socioeconomic status, which limits the availability of food and exercise.

Latinos being in a minority population also puts them at risk. Latinos have a

300% greater risk of developing diabetes than the general population (Perrin,

1991). Other risk factors include lack of physical exercise, lifestyles, and their

attitudes.

> "While many Hispanic immigrants deem smoking (69%), stress (57%), and poor
>
> weight control (52%) as harmful in any amount, these factors emerge as even
>
> more important among U.S. born Hispanics (84%, 67%, and 59%) as well as
>
> among Americans in general (78%, 52%, and 52%) in comparison to health and
>
> diet fears…Nearly half of foreign-born Hispanics view fat (46%), cholesterol
>
> (46%), and salt (42%) as harmful in any amount, only a third of their U.S.- born
>
> counterparts (30%, 38%, 28%) share this view (Hispanics', 2004, 329)."

<u>Importance in management</u>

        There are many serious complications of type 2 diabetes if the blood glucose levels are not controlled. These complications include heart disease, renal failure, blindness, elevated cholesterol levels, circulatory problems, and neuropathy (Perrin, 1991).

TREATMENT

<u>Exercise</u>

        Exercise is anything physical that gets your body moving. Physical activity can lower blood glucose levels, blood pressure, cholesterol, and weight. Physical activity also helps the peripheral tissues to recognize insulin; therefore decreasing insulin resistance and causing the insulin to work better (American Diabetes Association (f), 2005).

        There are different types of exercise including aerobic and anaerobic. Aerobic exercise increases your heart and breathing rate, and works the muscles and is often done over a period of time. Examples of aerobic exercise include running, walking, swimming, dancing, or riding a bike (American Diabetes Association (e), 2005). Anaerobic exercise includes releasing short bursts of energy and then is followed by a period of rest. Examples of anaerobic exercise include push-ups, pull-ups, and lifting weights (Kids Health, 2005).

Nutrition

Nutrition is a key component in maintaining near normal blood glucose levels. Limiting calories and fat to achieve a 5-10% weight loss, consuming less salt and watching how many carbohydrates are eaten are all important in the nutritional management of type 2 diabetes (Mahan, 2004). It is important to control portion sizes, eat nutrient dense foods, and include a variety of foods that are unprocessed. Eating a variety of foods including fruits, vegetables, complex carbohydrates, non-fat dairy, lean meats, beans, poultry, and fish are all important in a healthy diet (American Diabetes Association (c), 2005).

Tools

There are many tools or suggestions that one can use when trying to maintain normal blood glucose levels. One tool is the "Rate Your Plate", which is a great tool to use when you are trying to control portion sizes. One-forth of the plate should be filled with whole grains, one-forth should be protein, and half of the plate should be non-starchy vegetables. Other tools also include carbohydrate counters or exchange lists, which is when you count the carbohydrates or exchanges in each meal (American Diabetes Association (c), 2005). If exogenous insulin is required, it may be taken when according to the exchanges eaten at each meal. This helps achieve better control.

Suggestions for maintaining blood glucose and losing weight include activities count and reading food labels. Any activity that is done counts towards improving nutrition, health, and maintaining normal blood glucose levels.

Examples include parking farther away, walking at the mall, taking the stairs

versus the elevator, doing exercises in front of the television, or even walking

around the house. Reading food labels is important because it will tell you what

is in the product, how much is a serving size, and how many nutrients are in the

product (American Diabetes Association (b), 2005). This way you will be aware

what and how much is going in your body so you have more control.

Culturally competent methods

When considering treatment options for Latinos it is very important to

make sure the treatment methods are culturally competent for that individual.

Methods must be culturally sensitive to meet the needs of those in a minority

situation. It is important to understand their food choices, lifestyle, family life,

economic situation, attitudes, and accessibility to exercise, fruits, and vegetables.

One survey found that Latinos relay more on family when they have to make

decisions on health much more so than Caucasians do (Awareness, 2003).