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DIABETES AND OCCUPATIONAL THERAPY IMPLICATIONS

PRESENTER INFORMATION

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- 2008 Graduate from Louisiana State University in Baton Rouge with a Bachelor of Science in Kinesiology
- 2012 Graduate from Louisiana State University Health Sciences Center – Shreveport with a Master of Occupational Therapy
- Fieldwork experiences in inpatient rehab with TBI, outpatient rehab with orthopedics, and industrial occupational therapy
- Practicing occupational therapy in an industrial rehabilitation setting at the Center for Work Rehabilitation Inc.

Rebecca Roberts
- 2009 Graduate the University of Central Arkansas with a Bachelor of Science in Occupational Therapy
- 2012 Graduate from the University of Central Arkansas with a Master of Science in Occupational Therapy
- Fieldwork experiences in inpatient rehab, inpatient mental health, pediatrics in outpatient and school settings and industrial occupational therapy
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OBJECTIVES

- Be able to understand OT’s role in diabetes education
- Understand parameters of diabetes, what is high and low blood glucose
- How does exercise affect diabetes
- Be able to know what to do in a diabetic emergency
- Understand the 7 self-care behaviors of diabetic self-management

WHAT IS DIABETES

- Diabetes mellitus is characterize by high blood glucose
- High blood sugar occurs due to body’s decreased ability to store glucose into cells
  - Pancreas does not produce enough insulin
  - Cells do not respond to insulin produced
- 3 main types of Diabetes
  - Type-1 DM
  - Type-2 DM
  - Gestational Diabetes

TYPES

- Type 1
  - Beta cells in pancreas no longer produce insulin
  - The body does not produce insulin
  - Requires insulin shots
- Type 2
  - Fat, liver, and muscle cells not using insulin properly
  - More insulin produced to compensate
  - Pancreas loss ability to secrete insulin overtime
- Gestational
  - High blood glucose that develops during pregnancy
**BLOOD GLUCOSE CONCENTRATION**

- Why is it important to maintain a constant blood glucose concentration?
  + DM Type 1:
    - Utilization of fats increases cholesterol
    - Utilization of proteins decreases protein storage and results in rapid weight loss
  + DM Type 2:
    - Metabolic Syndrome
    - Increased risk for cardiovascular disease

**DIABETES IN AMERICA**

- 25.8 million children and adults (8.3%)
  + Diagnosed: 18.8 million people
  + Undiagnosed: 7 million people
- About 215,000 people < 20 years had diabetes type 1 or type 2 in the U.S.
- About 1.9 million people aged ≥ 20 years were newly diagnosed
- Among U.S. residents aged 65 years or older, 10.9 million were diagnosed in 2010
- DM Type 1 accounts for 5%
- DM Type 2 accounts for 95%

**DIABETES IN AMERICA**

- Diabetes is the leading cause of:
  + Kidney failure
  + Non-traumatic lower limb amputations
  + News cases of blindness in U.S.
- Diabetes is a major cause of heart disease and stroke
- Diabetes is the 7th leading cause of death in the U.S.
- Women who have had gestational diabetes have a 35% - 60% chance of developing diabetes type 2 in the next 10 - 20 years.

**DIABETES IN AMERICA**

- About 215,000 people < 20 years had diabetes type 1 or type 2 in the U.S.
- Weight
  - Overweight prior to pregnancy
  - Inactivity
  - Low vitamin D consumption
- DM Type 1:
  - Autoimmune disorder
  - Parent or sibling with type 1
  - Low vitamin D consumption
- DM Type 2:
  - Weight
  - Inactivity
  - Family history
  - Gestational diabetes
  - High levels of triglycerides
  - Low high density lipoprotein (HDL)
  - Gestational Diabetes
  - Females 25 years of age or older
  - Family history
  - Overweight prior to pregnancy
**SIGNs AND SYMPTOMS**

- High blood glucose
  - Blurry vision
  - Excess thirst
  - Fatigue
  - Hunger
  - Urinating often
  - Weight loss
  - Sensory changes in the hands or feet
  - Very dry skin
  - Slow healing wounds
  - Increased rate of infections

**NORMAL BLOOD GLUCOSE**

- The normal blood glucose range
  - Before meals: 70 – 130 mg/dL
  - 2 hours after meal: as high as 180 mg/dL

- Glycated Hemoglobin (HbA1C)
  - Measures glucose from past 2 – 3 months
  - Normal 7%
  - Check twice a year at minimum

**OCCUPATIONAL THERAPY’S ROLE**

- Educate persons at risk and those who have diabetes in lifestyle modifications to minimize the progression of the disease
- Develop self management goals and techniques for self-care behaviors
- Perform evaluations relevant to the diagnosis
- Analyze everyday functional activities and occupational requirements.

**WHAT CAN OT’S DO TO HELP?**

- Develop strategies for and provide education regarding:
  - Healthy eating
  - Being active
  - Monitoring blood glucose levels
  - Taking medications
  - Problem solving
  - Healthy coping
  - Reducing risks

**HEALTHY EATING HABITS AND EXERCISE**

- Educate on healthy food choices and food substitutions
- Educate the client on the importance of exercise as well as precautions and how exercise affects diabetes.
- Educate both the client and the family the importance of healthy food choices and exercise.

**ACTIVE LIFESTYLE**

- Improve blood glucose management
- Lower blood pressure
- Improve blood fats which will increase good cholesterol (HDL)
- Activity can lower blood glucose and weight
- Reduce risk for heart attack or stroke
- Increase energy
- Sleep better
- Reduce stress
- Build stronger bones and muscles
- Increase flexibility
**BLOOD GLUCOSE REACTION & EXERCISE**

- Important to understand your blood glucose response to exercise
  - Above 300 mg/dL before exercise physical activity can increase it for those with type 1 diabetes
  - Fasting blood glucose above 250 mg/dL best to avoid physical activity
- Low blood glucose can occur during and long after physical activity (4 – 10 hours)
- Hypoglycemia must be treated immediately
- Low blood glucose interfering with exercise:
  - Eat snack
  - 15 minute break
  - Re-check blood glucose (above 100 mg/dL)

**BEING ACTIVE**

- Type 1 Diabetes
  - Minimum of 3 days per week for at least 30 minutes
- Type 2 Diabetes
  - Structured exercise program of more than 150 minutes per week
  - Must be combined with dietary modifications
- Occupational therapist can help client’s learn how to modify activities to their disability
  - Keep track of physical activity
  - Realistic and specific goals
  - Preventive measures
  - Make these new habits apart of your daily routine because it may take months to before it becomes away of life

**OVERCOMING BARRIERS**

- Barrier: I don’t have time to exercise for 30 minutes per day
  - Solution: start 10 minutes a day and add little by little until you achieve your goal
  - Solution: make it apart of your day – walk or bike to work or to the store, family outings, take the stairs
- Barrier: I’ve never been active
  - Solution: its more than going to the gym, what about housekeeping, mowing the lawn

**HEALTHY EATING WITH DIABETES**

- No optimal diet can be prescribed
- Goals for prevention
  - Primary – identify at risk population
    - BMI greater than 25, obesity
  - Secondary - utilization of nutrition as therapeutic modality
  - Tertiary – nutrition as a tool to manage diabetic complications
- Low carbohydrate and low fat diets
  - Good for initial weight loss (short-term)
  - Approximately 1 year
  - Monitor lipid profile and renal function
  - Can decrease fasting glucose values by 21 – 28 mg/dL
- Mediterranean diet
  - Randomized trial with a 2 year follow up had more favorable fasting plasma glucose and insulin levels as compared to low-fat diets
MEDICATION AND MONITORING

- Develop strategies for patients to organize their medication to prevent missed dosages.
- Educate on the importance of glucose tracking as well as laws regarding reporting diabetic episodes when appropriate.

PREVENTING DIABETIC EMERGENCIES

- Educate patients at risk of developing diabetes on healthy lifestyle changes
- Identify behaviors or activities that could potentially lead to a diabetic incident.
- Educate patients on ways to prevent hypo or hyperglycemic events
- Educate patients on the difference between Hypoglycemia or Hyperglycemic crisis as well as how to treat either event.

SYMPTOMS OF HYPOGLYCEMIA

- Dizziness
- Weakness
- Tachycardia
- Pallor
- Vagueness
- Diaphoresis
- Seizures
- Coma

TREATMENT OF HYPOGLYCEMIA

SYMPTOMS OF HYPERGLYCEMIA

- Dehydration
- Weak pulse
- Acetone breath
- Stupor
- Thirst
- Polyuria
- Coma

TREATMENT FOR HYPERGLYCEMIA
**PROBLEM SOLVING**
- Develop adaptive techniques for administering or storing medications
- Assisting with modification of self care activities
- Develop strategies to compensate for diabetic neuropathy or low vision
- Adapt or teach compensatory strategies for participation in meaningful occupations

**PERIPHERAL NEUROPATHY**
- Damage to a single nerve or nerve group which frequently occurs as a result of chronically elevated blood glucose levels and causes a variety of symptoms:
  - Loss of sensation, pain or burning in the affected extremities, as well as muscle or organ dysfunction.
- Develop routine checks of extremities to detect wounds
- Educate on the importance of early attention to wounds management to prevent amputations
- Teach pain management strategies

**DIABETIC EYE DISEASE**
- A group of eye problems caused by complications with diabetes.
  + Diabetic neuropathy - damage to the blood vessels in the retina
  + Cataracts - clouding of the eye's lens. Cataracts develop at an earlier age in people with diabetes
  + Glaucoma - increase in fluid pressure inside the eye that leads to optic nerve damage and loss of vision. A person with diabetes is nearly twice as likely to get glaucoma as other adults.
- Educate on the use of adaptive devices for low vision
- Develop safety strategies to prevent falls and injuries

**READJUSTMENT TO LIFESTYLE**
- Teach healthy coping strategies
  + Psychological and emotional support
  + Physical adaptation
  + Safety assessments
- Improve safety awareness associated with loss of vision or sensation
  + Fall prevention
  + Skin protection

**DIABETES IN THE WORKPLACE**
- Any person with diabetes should be eligible for any employment for which he / she is otherwise qualified
  + Questions arise about the safety and effectiveness of individuals with diabetes
  + Individual assessments may be indicated to determine their ability to perform certain duties
  + Accommodations may be necessary to allow for management of diabetes

**EVALUATION**
- Employment decisions should not be based on generalizations or stereotypes.
- Proper and lawful evaluation should occur.
  + Health care professionals familiar with diabetes.
  + Individualized assessment
  + Independent medical examination may be necessary
- Individuals who can safely and effectively perform should be employable regardless of medical diagnoses.
**POST OFFER ASSESSMENTS**

- Employers may not ask about health status until a job offer has been made.
- Medical examinations following a job offer may be required.
  - conditional job offers pending medical evaluation
  - Medical evolution following a problem which arises on the job
    - Only the individual's current capacity to perform the job should be collected.
    - Information about diabetes management, job duties, and work environment are relevant.

**SAFETY RISKS**

- Does an individual's diagnosis of diabetes put themselves, coworkers, or the public at risk for injury?
- Disorientation or incapacitation due to a sudden changes in blood glucose levels.
  - A single episode of hypoglycemia should not disqualify a person from employment however reoccurring episodes may indicate the client cannot safely perform the job.
  - Chronic hyperglycemic may adversely effect the individual in the workplace

**ACCOMMODATIONS**

- Federal and State laws require employers to make “reasonable accommodations” to help an employee perform the essential functions of the job.
  - Breaks for testing blood glucose or administering insulin
  - Access to food and drink
  - Leave to attend to medical needs
  - Modified work schedules

**US DEPARTMENT OF TRANSPORTATION**

**THE IMPACT ON EMPLOYMENT**

- Estimated productivity in the loss: $40 Billion
- Estimated associated medical cost: $90 Billion
- Probability of working: 4.4% less for women with diabetes and 7.1% less for men with diabetes than those with out diabetes.
- Work-loss days per year: 2 more days
- Work limitations: women with diabetes 5.4%, men with diabetes 6%.

**US DEPARTMENT OF TRANSPORTATION**

- Safety and Medical screening
  - Individuals newly diagnosed with Type 1 diabetes must provide evidence of insulin use and control of DM for a minimum of 60 days
  - Individuals with Type 2 diabetes who are converting to insulin use must provide evidence of insulin use and control of diabetes for a minimum 30 days.
  - No recurrent (2 or more) hypoglycemic reactions requiring the assistance of another person, resulting in a loss of consciousness, cognitive impairment, or seizures in the past 5 years.
  - Submit signed statements from examining optometrist or ophthalmologist stating that no significant vision loss or retinopathy.
  - Submit evidence of continuation of care provided by a board certified endocrinologist.

**US DEPARTMENT OF TRANSPORTATION**

- Monitoring and Accountability
  - Daily test glucose levels with a device with device equipped with a memory.
  - A current measure of A1C
  - Daily record of drive time and blood glucose levels measured every 2-4 hours.
  - Stop driving if blood glucose is not within the 100 to 400 mg/dl level.
  - Report all severe complications, hypoglycemic episodes, or inability to manage diabetes.
  - Report any involvement in an accident whether related to hypoglycemia or not.
SUMMARY

* Diabetes is something we all deal with as occupational therapist
* Challenge yourself to learn more about diabetes and the resulting complications

REFERENCES


REFERENCES CONTINUED


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QUESTIONS?