Prevention and Management of Type 2 Diabetes With Lifestyle Changes and Weight Control

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Prevention and Management of Type 2 Diabetes
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Abstract

Affecting 20.8 million Americans, 7% of the population, Type 2 diabetes (DM2) is currently considered a pandemic affecting people of all ages, sex, and race (National Diabetes Information Clearinghouse [NDIC], 2005).

**Purpose:** Explore the experience of overweight participants living with DM2.

**Demographics:** Interviews for this thesis were conducted with men and women, age 21-70, living with DM2, who were willing to share their personal accounts of living with these diagnoses. Volunteers were found via networking throughout Montana.

**Type of Study:** The phenomenological research method was used to explore the personal experiences of participants living with DM2.

**Data Collection:** Closed session with in-depth interviews

**Findings:** The themes of this study were: individualized and ongoing nursing care, lifestyle modification and nutrition therapy, routine follow-up appointments, and continued education as necessary components of treatment adherence.

**Nursing Implications:** The information in this study will increase nurses’ awareness and understanding related to recognizing the important risk factors, empathizing with those who are previously diagnosed, and being knowledgeable of how body weight and fat distribution influence DM2 prevention and its management. DM2 and obesity are detectable, controllable, and preventable for most participants.

**Generalization:** The findings cannot be generalized to all patients living with DM2 and obesity. More studies must be done on a larger scale to obtain more representative results.
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Dedication

To my family, friends, and my Carroll College Nursing Class of 2009.
Table of Contents

SIGNATURE PAGE............................................................................................................................. 2
ABSTRACT................................................................................................................................................ 3
ACKNOWLEDGEMENTS....................................................................................................................... 4
DEDICATION............................................................................................................................................. 5

CHAPTER I ............................................................................................................................................... 8

BACKGROUND......................................................................................................................................... 8
Prevalence................................................................................................................................................ 8
Risk Factors........................................................................................................................................... 9
Physical Complications......................................................................................................................... 9
Psychological Impacts............................................................................................................................ 9

CHAPTER II .......................................................................................................................................... 11

REVIEW OF RESEARCH....................................................................................................................... 11
Obesity and Type 2 Diabetes.................................................................................................................. 11
Relationship of obesity to Type 2 Diabetes........................................................................................... 11
Etiology and pathology............................................................................................................................ 11
Prevalence of overweight and diagnosed diabetes............................................................................... 12
Lifestyle intervention vs. metformin therapy......................................................................................... 13
Western diet........................................................................................................................................... 14
Dietary recommendations....................................................................................................................... 14
Dietary counseling................................................................................................................................. 16
Knowledge and Education..................................................................................................................... 16
Education................................................................................................................................................ 16
Self-monitoring blood glucose............................................................................................................... 17
Diabetes knowledge test......................................................................................................................... 17
Personal Perceptions and Understanding............................................................................................. 18
Clients' personal perceptions.................................................................................................................. 19
Acceptance and personal understanding of Type 2 Diabetes............................................................... 19
Familial impact...................................................................................................................................... 20
Other Factors Influencing Diabetes Prevention and Management..................................................... 21
Psychosocial support.............................................................................................................................. 21
Financial implications.............................................................................................................................. 21
Medications.......................................................................................................................................... 22
Diagnostic testing................................................................................................................................. 23
Ethical considerations............................................................................................................................ 24

CHAPTER III ......................................................................................................................................... 26

METHODOLOGY................................................................................................................................. 26
Design.................................................................................................................................................... 26
Phenomenological Method................................................................................................................... 26
Confidentiality.................................................................26
Avoiding bias...............................................................27
Procedure.................................................................27
Participants...............................................................27
Setting......................................................................27
Data analysis.............................................................27

CHAPTER IV.................................................................29

RESULTS.................................................................29
Changing lifestyle......................................................29
Dieting.................................................................30
Exercising..............................................................31
Individualizing education.......................................32
Needing Support.......................................................33

CHAPTER V.................................................................35

DISCUSSION..............................................................35
Treatment modalities..............................................35
Effects of exercise...................................................36
Individual diet and exercise counseling................37
Education...............................................................37

CONCLUSION..........................................................38

REFERENCES..........................................................40
Chapter 1

Background

Affecting 20.8 million Americans, 7% of the population, Type 2 diabetes (DM2) is currently considered a pandemic affecting people of all ages, sex, and race (National Diabetes Information Clearinghouse [NDIC], 2005). Paralleled with the rapid increase of DM2 are severe weight gain and obesity, both of which are serious health risks that are a major concern for the 142 million American men and women who are considered overweight or obese (National Center for Health Statistics [NCHS], 2006). Statistically, many studies have proven that in fact “over 85% of Type II diabetic patients are overweight or obese” (Pi-Sunyer, 2007, p. 101). In order to help control these increasing numbers, nurses must be able to recognize the important risk factors, empathize with those who are previously diagnosed, and understand how body weight and fat distribution influence DM2 prevention and its management. DM2 and obesity are detectable, controllable, and preventable for most participants. The purpose of this thesis is to explore the experience of living with DM2 and obesity.

Prevalence

In 2005, DM2 was the 6th leading cause of death among Americans (NCHS, 2006). As previously stated, both DM2 and obesity have a large prevalence in the United States today. “The prevalence of reported diabetes is 2.9 times higher in overweight than in non-overweight persons” (Pi-Sunyer, 2007, p. 101). Many of these deaths are heavily influenced by the health issues that arise and manifest related to being obese. In relation to a participant’s stature, “body mass index is one of the strongest indicators of diabetes.
Among clients diagnosed with diabetes, 68% have a BMI of at least 27 kg/m², and 46% have a BMI of at least 30 kg/m². (Ignatavicius & Workman, 2006, p. 1505).

Risk Factors

Some of the defined risk factors for developing DM2 related to obesity are: body mass index (BMI) >27, prolonged lack of weight control leading to lifelong weight gain, excess fat distribution around the central and upper body, and a lack of physical activity at least three times a week (Pi-Sunyer, 2007).

Physical Complications

It is vital for nurses to realize their importance not only preventing and managing DM2 and obesity, but also being knowledgeable about the other serious health issues that are commonly detected before DM2 is diagnosed. Many obese individuals become aware they might have diabetes after they have already been diagnosed with other serious life-threatening health complications. A few of these related life-threatening problems are: heart disease, stroke, hypertension, blindness, kidney disease, nervous system damage, amputations, dental disease, and pregnancy complications (American Diabetes Association [ADA], n.d.). If nurses and health care providers become aware of the early signs and symptoms of these complications, DM2 can be diagnosed earlier and thus be more easily managed.

Psychological Impacts

A DM2 diagnosis for an individual who is overweight or obese can be psychologically devastating. Ongoing studies have shown that obesity itself without any other medical diagnosis is associated with negative psychosocial consequences such as depression, low self-esteem, disturbed body image, and increased suicide rate (Porth,
2007). After an obese participant is diagnosed with DM2, he or she has a higher risk for even more psychological impacts. Similar to obesity, a diagnosis of DM2 also increases the risk and prevalence of clinical depression and serious psychological diagnoses (Pouwer, Snoek, Ploeg, Ader, & Heine, 2001). Obesity and DM2 not only adversely affect the quality of life for an participant, but psychological diagnoses and mood can also affect treatment adherence and glycemic control (Pouwer et al., 2001). It is important for nurses to help overweight participants gain control of their lifestyles, promote weight loss, and reduce the overall incidence of DM2.
Chapter II

Review of Research

*Obesity and Type 2 Diabetes*

The prevalence of co-existing diabetes and obesity for individuals in the United States today is not an uncommon finding. The rates of both diseases are rising in epidemic proportions (NCHS, 2006). It is important for nurses to recognize the relationship between obesity and DM2, the prevalence, lifestyle interventions, and dietary recommendations and to help participants obtain proper healthcare and a reliable education. It is also vital to understand individuals' personal perceptions, and aid in identifying any other factors that can positively influence DM2 prevention and management.

*Relationship of obesity to DM2.* The use of weight loss in high-risk populations reduces the risk of DM2 diagnoses. According to a study conducted by Hart, Hole, Lawlor, and Smith (2007), obesity and overweight account for a major percentage of participants with DM2. Study participants included 6,927 men and 8,227 women who were ages 45-64, overweight and did not have reported DM2 at the start of the study. The researchers discovered, "[w]ith recent increases in the prevalence of overweight, the burden of disease related diabetes mellitus is likely to increase markedly" (Hart et al., 2007, p. 73).

*Etiology and pathology.* DM2 is defined as a progressive disorder in which the production of insulin by the pancreas decreases little by little over time (Ignatavicius & Workman, 2006). Most of the body's cells gradually begin to have a reduced ability to respond to the small amount of insulin that is produced, so as the body fails to respond to
it, the production of insulin continues to decrease over time. Although DM2 can be diagnosed genetically, research has proven that “in fact, over 85% of Type II diabetic patients are overweight or obese” (Pi-Sunyer, 2007, p. 101). Resistance to insulin occurs in three main parts of the human body: adipose (fat) tissue, liver, and the muscle. When participants are classified as obese, the amount of fat around the stomach and waist line area is extremely increased. With highly increased amounts of adipose tissue, the incidence of insulin resistance also increases. The summarized effect of being obese is “a requirement for an increased insulin secretion by the beta cells of the pancreas and higher prevailing insulin levels” (Pi-Sunyer, 2007, p. 102). Initially, individuals with DM2 who are obese are able to prevail with higher insulin levels related to the increased workload and secretion by the beta cells. This process only continues for a short period of time, however, before the beta cells can no longer sustain the workload that the individual requires. Eventually, “the beta cell secretion exhausts and carbohydrate tolerance becomes impaired” (Pi-Sunyer, 2007, p. 102). When carbohydrate tolerance becomes impaired and the beta cell secretion becomes exhausted, insulin insufficiency and DM2 take control.

*Prevalence of overweight and diagnosed diabetes.* Combined with healthy eating and physical exercise, weight management can reduce the risk of co-morbidities and death among those who already have diabetes and help reduce the number of individuals at risk for diabetes (Enberhardt & Engelgau, 2004). The prevalence of overweight and obesity in the US population without diagnosed diabetes is 30.5%, while the prevalence of overweight and obesity in participants who are also diagnosed with diabetes is 85.0% (Enberhardt & Engelgau, 2004). The National Health and Nutrition Examination and
Obesity and Type 2 Diabetes

Survey (NHANES) from 1999-2002 was utilized throughout the study for statistical information. The data were analyzed using two sample t-tests to analyze the variation in proportions and determine the statistical significance (p<0.05) of differences in results by age, racial/ethnic population, and survey period (Enberhardt & Engelgau, 2004). The researchers suggested that obesity-related DM2 statistical percentages would be higher if greater clinical watch was taken over the weight issues in the United States, because many more individuals would most likely be diagnosed with both obesity and DM2.

*Lifestyle intervention vs. metformin therapy.* Lifestyle intervention therapy is significantly more effective in treating DM2 than metformin medication treatment (Diabetes Prevention Program [DPP], 2002). The study involved 3,234 participants who had been diagnosed as pre-diabetic individuals, with an elevated fasting and post-load blood glucose. The participants were separated into three groups including metformin therapy, intensive lifestyle intervention, and a placebo group.

The goal of lifestyle intervention was to have a decrease of “at least 7 percent of initial body weight through a healthy low calorie, low-fat diet and to engage in physical activity of moderate intensity, such as brisk walking, for at least 150 minutes per week” (DPP, 2002, p. 394). In order to maximize the effectiveness of the program, a 16-lesson class schedule was provided which covered the effectiveness of diet, exercise, and behavior modification (DPP, 2002). The class was individualized, culturally sensitive and schedule flexible for each participant and conducted on a one-on-one basis. The total incidence of diagnosed diabetes after completion of the study was less in the metformin and lifestyle intervention groups than the placebo group. When compared with placebo, “the incidence of diabetes was reduced by 58 percent with the lifestyle intervention and
by 31 percent with metformin” (DPP, 2002, p. 398). This study reveals not only that weight loss increases the prevention of DM2, but also that treatment of DM2 with medications such as metformin, is not always the most effective way to manage a diagnosis.

*Western diet.* Currently, American culture foods high in calories, sugars and fats, like those found in fast food restaurants. A recent study conducted by researchers at Harvard University concluded that avoiding a regular “Western” dietary pattern can drastically reduce the risk of DM2 in men. During this study, data were analyzed from 4,504 male healthcare professionals ages 40-75 who were not diagnosed with diabetes, cardiovascular disease, or cancer at baseline. In order to analyze each participant’s regular dietary routine, each person received multiple food-frequency questionnaires, and then the researchers divided them into two groups labeled the “prudent” and the “Western” diets. The “prudent” diet consisted of higher consumption of fruits, vegetables, fish, poultry, and whole grains. In contrast the “Western” diet consisted of a higher consumption of red meats, fried foods, processed meats, refined grains, sweets, desserts, and high-fat dairy products. The participants were followed and constantly re-evaluated for 12 consecutive years. After 12 years the study found that 1,321 participants had been diagnosed with DM2. The low-carbohydrate, low-fat or “prudent” diet was associated with a modestly lower risk for type 2 diabetes; in contrast, “the Western dietary pattern score was associated with a 60% increased risk of type 2 diabetes” (Van Dam, Rimm, Willett, Stampfer, & Hu, 2004, p. 206).

*Dietary recommendations.* Controlling blood glucose levels with diet is an important intervention for participants with DM2. As recommended by the ADA, “a diet
that includes carbohydrates from fruits, vegetables, whole grains, legumes, and low-fat milk is encouraged for good health” (ADA, 2007, p. 58). Although many DM2 complications and related illnesses, including obesity, are related to increased glucose levels, it is not recommended to restrict carbohydrate intake to fewer than 130g per day. Instead, carbohydrate counting coupled with self-monitoring of blood glucose is an effective way in achieving glycemic control (ADA, 2007). Sugar alcohols, or non-nutritive sweeteners, are safe when consumed within the daily intake levels recommended by the FDA. Individuals with diabetes, specifically those with obesity, are suggested to reduce saturated fat intake to <7% of total calories and dietary cholesterol intake <200 mg/day. At this time, there is no sufficient evidence that usual protein intake of 15-20% of calories should be modified. It is strongly recommended that individuals who are overweight and have DM2 do not utilize high-protein intake weight loss solutions such as the Atkins diet. It is proven that “the long-term effects of protein intake >20% of calories on diabetes management and its complications are unknown...[A]lthough such diets may produce short-term weight loss and improved glycemic, it has not been established that these benefits are maintained long term” (ADA, 2007, p. 53). Alcoholic beverages for individuals with DM2 should be limited to a moderate amount, such as one drink per day or fewer for women and two drinks per day for men. It is suggested that to reduce the risk of hypoglycemia during the night, alcoholic beverages should be consumed with meals (ADA, 2007). It is strongly recommended by the ADA and Food and Drug Administration (FDA) that diabetic individuals follow the major nutrition recommendations and interventions for diabetes care: “monitoring of metabolic parameters, including glucose, A1C, lipids, blood
pressure, body weight, and renal function is essential to assess the need for changes in therapy and to ensure successful outcomes” (ADA, 2007, p. 61).

*Dietary counseling.* Dietary counseling-based weight loss programs improve overall weight loss by two BMI units (6%) when compared with usual overweight care interventions (Dansinger, Tatsioni, Wong, Chung, & Balk, 2007). A meta-analysis was recently conducted to determine the actual effect of dietary counseling and support on body mass index compared with usual education without guidance from a dietary consultant. The meta-analysis analyzed 46 trials of dietary counseling using a random-effects model. For purposes of this study, usual care was defined as “general verbal or written advice given at baseline” (Dansigner et al., 2007, p. 42). The description of basic dietary counseling included repeated support groups, personal diet recommendations and menus, and individualized exercise regimens. It is proven that these dietary counseling resources benefit weight loss; thus, it is important for healthcare providers to promote these services to help individuals lose weight and gain control of their diagnoses.

*Knowledge and Education*

Broadly, education is an important component of effective healthcare. Specifically, it is crucial for treatment of DM2. It is the responsibility of the nurse to ensure each individual understands their diagnoses, has access to continued education sources, is instructed on the use of self-monitoring blood glucose, and passes a basic diabetes knowledge test with an acceptable score.

*Education.* Client education is crucial in the management and the treatment of DM2. Fortunately, many different types of education are available for diagnosed individuals. A study conducted by Zabaleta and Forbes (2006) researched the
effectiveness of structured group-based education for DM2 in primary care. Results of the study proved that one type of education does not work for all individuals. It is important for nurses to help individualize educational information for each person that is diagnosed with DM2. Zabaleta and Forbes stated that it is crucial for medical professionals to be able to utilize different teaching media, because the more individualized the information is, the more controlled the individual's blood sugars will be (Zabaleta & Forbes, 2006, p. 158). Although DM2 is a medical diagnosis, nurses must treat each individual according to their personal needs and recognize the way that each person is able to understand information effectively.

*Self-monitoring blood glucose.* Many macrovascular and microvascular co-morbidities can be caused by uncontrolled DM2 and abnormal blood glucose levels. According to a meta-analysis done by Welschen et al., self-monitoring of blood glucose for those who are not using insulin is an effective way to prevent diabetic co-morbidities. A review of 97 studies was included in this research using the HbA1c values as the primary comparable statistic. The results of the meta-analysis prove that individuals with DM2 who self-monitor their blood glucose levels at home have a lower HbA1c and thus less chance of being diagnosed with a diabetic co-morbidity. For diabetic individuals who do not use insulin to control their glucose, self-monitoring can be an effective alternative method. It is the nurse’s responsibility to demonstrate the correct use of the glucometer, explain to participants when to analyze their blood sugar, and talk to them personally about what they can do at home if their blood sugar levels are outside therapeutic parameters (Welschen, et al., 2005).
Diabetes knowledge test. In order for knowledge about DM2 to be obtained by diagnosed individuals, the information given must be easy to use, valid and reliable. Unfortunately, it has been proven that this type of information is rarely published and thus very hard for many participants outside of healthcare professionals to obtain. To help close this gap, Fitzgerald et al., developed a brief diabetes knowledge test consisting of 23 items that required approximately 15 minutes to complete. In order to determine if this test would benefit diabetic individuals and their healthcare, the research team conducted a study to review the reliability and validity of their new instrument.

In the study, two separate populations were used. In one set, participants received diabetes care in their local communities from a variety of different providers, while the other set received diabetes care from the local health department. After the tests were conducted, the results indicated that it is reliable. The validity of the test was approved because it shows that for each sample, scores increase as the years of formal education completed increase. Participants who received higher quality education scored higher than patients who did not receive formal diabetes education.

The results of the reliability and validity tests for this instrument confirm that it is appropriate for use in different settings and populations. It is a beneficial test to use for diabetic participants in order to assess their level of knowledge because it is fast, inexpensive, easily interpreted, and can be scored directly by the care provider at the moment they are finished.
Personal Perceptions and Understanding

Individual understanding of an illness has a large effect on the effectiveness of treatment. It is important for nurses to ensure individuals diagnosed with DM2 have an understanding of what is happening with their body and what they can do to control it.

Clients' personal perceptions. Clarity of diagnoses, layout of treatment plans, and scheduled regular appointments are three of the largest issues affecting individuals with diabetes. To correctly explain, treat and inform newly diagnosed diabetics about their illness, it is important to understand the effect of individuals’ personal perceptions. Perry, Peel, Douglas, and Lawton (2004) conducted a qualitative study to “examine how a diagnosis is perceived by a sample of newly diagnosed type 2 diabetes patients” (Perry, Peel, Douglas, & Lawton, 2004, p. 131). Clinicians recruited 40 people, ages 21-70, who were diagnosed with DM2 within the previous 6 months.

The participants described that after leaving their general practitioner’s office, they often had no idea what to do or in whom to confide. Many participants felt as if they needed a second opinion or that a diagnosis from a hospital physician would be more reliable than a clinic physician (Perry et al., 2004, p. 131). Study participants also stated that it was more comforting and proven to enforce better blood glucose control when they had regularly scheduled visits with their doctor. They felt that these regular visits were important to ask questions, gain knowledge and to check up on how they were doing in treating their DM2 at home. Many people who were told by their physician to lose weight, felt increased success and self-esteem when their healthcare team continually encouraged and helped enforce their weight control and lifestyle change (Perry et al., 2004, p. 132). It is an important aspect of the nurse’s role to make sure each individual
understands the diagnosis, is provided with information and important facts, and is positively encouraged to continue their efforts in controlling DM2.

*Acceptance and personal understanding of DM2.* Acceptance of a DM2 diagnosis, personalized education, and self-education are important aspects in an individual’s ability to manage the disease correctly and responsibly. A study conducted by Hornsten, Sandstrom, and Lundman (2004) aimed to evaluate the effects of personal understanding of an individual’s DM2 diagnosis and subsequent levels of management and care. The qualitative study included 44 participants, ages 47-80, who were diagnosed with DM2 within the last two years. Results of the study showed that “patient’s personal understanding of diabetes in their everyday lives are considered to be an important shared source of information for planning meaningful care” (Hornsten et al., 2004, p. 174). In order for each individual to effectively manage DM2, it is important to take control over their own situation. Hornsten and researchers found that often medical professionals and patients understand a DM2 experience from totally different worlds. These differences often account for many participants’ misunderstanding of proper care, and subsequent poor management of their DM2 and health. Personalized care and education are vital for the prevention and management of DM2 for all individuals.

*Familial impact.* DM2 has a large impact not only on diagnosed individuals but also on their family, friends and acquaintances. In order to successfully control DM2, individuals must be conscious of their daily carbohydrate intake and blood glucose levels. It is important for the family to help the participant prepare meals that are carbohydrate, fat and sugar appropriate (Joslin Diabetes Center, 2005). Often, not only will the low sugar and carbohydrate diet benefit the diagnosed individual, but it can also help other
Obesity and Type 2 Diabetes

members of the family lose weight and lower their chances of being diagnosed with DM2. It is important for the family and loved ones to provide not only physical support through diet and exercise but also emotional support to help prevent a psychological diagnosis related to DM2. DM2 is not a disease that can be fought alone; a family or loved one can drastically increase the mood and self-esteem of the individual and thus increase glycemic control and treatment adherence.

Other Factors Influencing DM2 Prevention and Management

Psychosocial support. Psychosocial and emotional support from a caregiver or loved one is a necessity for the improved health and daily living of participants with DM2. Beverly, Penrod, and Wray (2007) conducted a qualitative study of 60 participants who were married or lived with a significant other. According to results of the research, “effective management of diabetes is a process for a couple. Treatment is influenced by spouses’ beliefs about diabetes, their ability to adhere to behavior and lifestyle recommendations, and whether they possess the skills to overcome problems” (Beverly et al., 2007, p. 31). This study confirms that DM2 is difficult to manage even for an individual who has a dependent, involved loved one who is willing to help at home. Nevertheless, the involvement in a loving relationship for a diagnosed participant appears to be beneficial both physically and psychologically. Beverly and researchers also stated that it is important for nurses to step back and take a broader look at each individual’s situation when he or she is diagnosed with DM2. DM2 is not just a physical diagnosis— it has psychological and psychosocial impacts as well.

Financial implications. Taking the lives of over 220,000 Americans each year, DM2 is making a large impact on our nation and its healthcare system (ADA, n.d.).
According to research done by the American Diabetes Association and the Congressional Diabetes Caucus, DM2 currently costs the United States an astonishing $174 billion a year (ADA, n.d.). However, many people diagnosed with DM2 are not able to pay these costs, and insurance companies are becoming reluctant to pay in full for an illness that can arguably be controlled with diet and exercise. According to the ADA, people with diagnosed diabetes have to confront average expenditures of $11,744 per year, of which $6,649 is attributed to diabetes. On average, those participants diagnosed with DM2 have yearly medical bills that are two-three times higher than those Americans who do not have DM2 (ADA, n.d.). With the prevention and management of DM2 utilizing lifestyle changes and weight control, participants would be able to not only improve the quality of life for themselves and their family, but also reduce personal and national medical expenditures related to DM2 and its complications.

Medications. DM2 is a disease that can require many different types of medications to treat and control it. When DM2 is caused or influenced by obesity or an increased BMI, there are medications to help participants lose weight. It is proven that weight loss will also lower baseline blood glucose which can drastically improve an individual’s health status and lifestyle.

The four most commonly used drugs to help an individual lose weight are Orlistat, Adipex, Meridia, and Attenuate (Micromedex, 2007). Orlistat is taken three times a day after meals and is classified as a dietary fat absorption inhibitor. This means that approximately 30% of caloric fat intake is inhibited from being absorbed into the system and thus helps individuals lose weight by decreasing their total body fat (Kelley et al., 2002). The main side effects of this drug are steatorrhea, stomach cramping, and
defecation urgency (Micromedex, 2007). Orlistat is also prescribed to control DM2 blood glucose levels, although the FDA has yet to approve this treatment. If the FDA is able to prove that this medication is effective in controlling DM2 and obesity, it would help cut down on medication costs for overweight-diabetic individuals and also help increase their quality of life. The other three commonly used medications listed above are appetite suppressants that help the participant lose weight by decreasing hunger and thus caloric intake (Micromedex, 2007).

Nurses can consult with the physician to determine if a weight-loss medication would help an individual who is struggling to lose weight and manage DM2. Weight loss is important because it is proven that “weight management, through healthy eating and physical activity, can help reduce the number of persons at risk for diabetes and reduce the risk for complications and premature mortality among those who already have diabetes” (Enberhardt & Engelgau, 2004, ¶6).

Diagnostic testing. An important factor in the effectiveness of preventing and treating DM2 is an early diagnosis. Research has proven that glucose levels above normal that are not high enough to be considered diabetes are still very harmful to the body and can be very indicative of a DM2 diagnosis in the near future (American Diabetes Association, 2002). Nevertheless, it is also proven that if the high glucose levels are recognized earlier, “individuals at high risk of developing diabetes can be identified easily” (ADA, 2002).

Fasting blood glucose (FBG) and hemoglobin A1C (HbA1c) are the two key tests that are mainly used to determine a DM2 diagnosis. In the HbA1c test, goals are set for participants, and “in adults, the goal of glycemic control in general is an A1c level of less
than 7%. The goal for an individual patient is an A1c level as close to normal (less than 6%) as possible without significant hypoglycemia” (ADA, 2008). It is recommended HbA1c levels be taken initially to determine the need of glycemic control, then every three months for ongoing evaluation of metabolic control. Management of HbA1c is important in treatment of DM2 because “lowering A1C has been associated with a reduction of microvascular and neuropathic complications of diabetes and possibly macrovascular disease” (ADA, 2008). Fasting plasma glucose is a measurement of glucose in the blood after at least an eight-hour period of no caloric intake. Fasting plasma glucose levels of 126 mg/dL or greater indicate DM2. According to research, “because of its ease of use, acceptability to patients, and lower cost, the fasting plasma glucose (FPG) is the recommended initial screening test to detect pre-diabetes or type 2 diabetes in high-risk, asymptomatic, undiagnosed adults and children” (ADA, 2008, ¶ 2). FPG should be monitored regularly to test the efficacy of an individual’s current treatment regimen. Normal levels for adults are considered between 75-115 mg/dL, but any decrease for an individual with DM2 should be reinforced as important and successful.

**Ethical.** Should everyone receive equal treatment in the healthcare setting? This ethical question is constantly asked about obesity-related DM2. The cost of treating diabetes, as mentioned earlier, is thousands of dollars each year. Many people are not able to afford these costs; thus, their diabetes is uncontrolled, putting them at risk for other serious health issues. Another ethical issue is whether insurance companies are going to stop paying for treatment of DM2 because of the successful prevention and management using lifestyle changes and weight-control programs. If major insurance
companies are able to conduct more studies and prove that DM2 is preventable and treatable with diet and exercise, they will be able to either significantly decrease the amount of money they are willing to pay or they will stop paying for treatment completely.
Chapter III

Methodology

Design

DM2 and obesity have recently become two of the most prevalent diseases affecting people of all ages, race, and gender. The phenomenological research method was used to explore the personal experiences of individuals living with DM2. Phenomenology is “a philosophy and research method that explores and describes everyday experience as it appears to human consciousness in order to generate and enhance the understanding of what it means to be human” (Fain, 2004, p. 220).

Phenomenology is used to study specific human experiences and to analyze how different situations present to us through these experiences (Sokolowski, 1999). It is both a philosophy and a research method that allows the interpretation and studying of the world of everyday life. There are many objectives to phenomenology, but the main goals are to “develop rich, full, insightful descriptions of the lived experience” (Fain, 2004, p. 224). Specifically, phenomenology focuses on the question “what is this experience like?” (Fain, 2004, p. 224). Phenomenology allows healthcare workers to have a complete understanding of the disease and its personal effects on everyday life.

Confidentiality

Confidentiality was strictly followed. The researcher obtained Institutional Review Board approval before any information was obtained. The name of each person did not appear anywhere in research materials; a pseudonym was provided for each participant in the study. Informed consent was obtained prior to the conduction of interviews through an informative and detailed consent form. All information was kept in
a secure and safe location when not in the possession of the researcher. The researcher has been certified by the National Cancer Institutes training for the protection of human subjects.

Avoiding Bias

When using phenomenology, it is very important to avoid any personal biases or preconceived notions about the topic or individuals being addressed. In order for this to happen, it is always necessary for bracketing to occur. Bracketing is defined as the “identification of any previous knowledge, ideas, or beliefs about the phenomenon under investigation” (Fain, 2004, p. 219). To avoid bias in this research study, bracketing was used before any contact was made with interviewees. All interviews were conducted in a manner that was free from any researcher judgment or bias.

Procedure

Participants. Interviews were conducted with men and women, age 21-70, living with DM2, who were willing to share their personal accounts of living with these diagnoses. Volunteers were found via networking in Southwest Montana.

Setting. The interviews were conducted in a mutually agreed upon private location. Interviews lasted up to an hour. The researcher obtained IRB review before any information was obtained.

Data Analysis. Colaizzi’s Method of phenomenological research was utilized for the study. Colaizzi’s Method required lengthy and repeated interviews with two-ten persons who have lived with the experience that the research topic is studying. The method provided a framework for collecting and extracting significant data in order to clarify, group, and verify end results.
Colaizzi’s Method (Fain, 2004, p. 230)

1. Descriptions of the lived experiences

2. Aggregate significant meanings and findings into clusters and important themes

3. Write an exhaustive description

4. Return interviews with the participants for validation

5. Incorporate new data into a final, exhaustive description
Chapter IV

Results

The purpose of this thesis is to gain an understanding of the experience of overweight individuals living with DM2. By exploring these individuals’ stories and experiences, nurses can develop awareness about what a DM2 diagnosis actually means to an overweight individual as well as help develop knowledge about what we can do to help. The interviews that were conducted asked each participant to “tell me about your experience living with DM2.” Although each participant described a unique experience with DM2, the analysis revealed several common themes including: changing lifestyle, individualizing education, and providing a support system.

Changing Lifestyle

Participants knew that when they were diagnosed DM2 they would need to make a major life alteration. Not only would they need to start monitoring their blood glucose levels, but also they would be asked to lose weight, change their diet and begin to become more knowledgeable about what a DM2 diagnosis really means. All participants recalled being initially diagnosed with DM2, and how much of a life altering experience it was for them. As one participant stated:

I was first diagnosed last year, spring of 2007, and I felt absolutely shocked. I had no signs or symptoms; I thought this couldn’t be happening to me. I made the physician retest me several times in order to confirm the diagnosis. I felt completely sure that the diagnosis was wrong. I knew I was at risk because my mom had diabetes, but I was still in complete denial and very surprised (Personal communication, September 2008).
Participants recognized a period of transitioning from denying their DM2 diagnosis to the overwhelming feeling of needing to actively treat their newly diagnosed condition. For some this period was three to four days, while for others it was a few weeks to a month. Many factors influenced this time period, including age at time of diagnosis, family support, overall physical health and individualized education to name a few.

_Dieting_. Changing diets and losing weight were some of the biggest lifestyle changes according to the participants that I interviewed. All participants mentioned that initially they had been told about the need to lose weight, but only one participant was able to verify that she was satisfied with the motivation and nursing care related to this issue. This participant stated:

They told me what to stay away from and what not to eat, they told me to watch what I eat like to avoid pop and stuff like that. They told me that this is how much insulin you need to take if you eat this and then they just threw me out there. They set me up with a diabetic educator once when I was 17, but never someone who was able to really help me with losing weight and maintaining a good diet (Personal communication, October 2008).

The participants described partially understanding what they needed to do to control their diets, but often feeling a lack of motivation to do so. One of the younger participants stated, “Often times I just eat whatever I want and then just take my insulin. I know that isn’t what I should be doing, but when everyone else around me is eating poorly then sometimes I just do the same” (Personal communication, October 2008). The
same participant stated the difficulties of being in college and trying to manage a healthy DM2 diet with such a low budget and limited medical support.

I try to check my blood sugars 2-3 times a day. Now it is fine because I am going to college and I have a student insurance, but I can imagine without insurance after I graduate college that it will affect me quite a bit more because like a bottle of insulin is $60.00 and all the lab tests that you have to get when you go to the doctor. Also being in college, it is typical to live off of Top Ramen and processed foods which I know isn’t good for me either (Personal communication, October 2008).

*Exercising.* Participants knew they needed to be more active physically. Most of them even stated that they knew this before they had been diagnosed with DM2. The battle to exercise and to find an appropriate regimen was explained by one participant:

It would be nice if someone was able to sit down with me and explain how to start a successful exercise program. When I was first diagnosed, I was so scared that I thought I would go out exercising right away and try to cure myself. After the first day of trying to run multiple miles while being completely out of shape, I just got turned off and never really tried anything else (Personal communication, November, 2008).

One of the participants whom I interviewed had successfully lost 25 pounds in the first six months after her diagnosis. She stated she can probably attribute this to previously being very knowledgeable about what to do because she is a Registered Nurse. When talking about how she was able to lose weight and keep it off she stated:
My doctors and nurses really encouraged me to exercise. It was imperative for me because of the insulin resistance. The diet helps but it is the exercise that actually stops the resistance of the insulin. It was really to start with 30 minutes walking three times a week and then increase it as I could. It was definitely not throwing me into an intense workout, it was very gradual and that helps. Exercise is very important in my treatment (Personal communication, October 2008).

**Individualizing Education**

Each one of the participants received a form of education directly after they were diagnosed with DM2. The initial education provided varied from person to person. The majority said they had received most of the information from their primary care provider; one participant stated that she had voluntarily attended a group diabetes class where she was provided with general information on how diabetes affects the body. Although the participants were provided information about controlling glucose, losing weight, and living the life of a diabetic, not one of the participants stated they felt their education catered specifically to their needs. One stated,

> When I was diagnosed over 20 years ago they handed me a few pieces of paper that had some information about diabetes on it and sent me on my way. The nurse I remember gave me a few tips but I can tell you it sure wasn’t much because I can’t remember it now (Personal communication, November 2008).

Most participants also explained how it was easier to comply with the education and rules of being a diabetic when it was fresh in their minds. One participant stated,

> I was diagnosed when I was 17 years old. They set me up with a diabetes educator, which helped me out at first. But the bad thing about it is I have been
living with diabetes for five years now and I haven’t had another education session since (Personal communication, October 2008).

All participants expressed that they would like to have routine annual education from their primary care providers about new diabetes discoveries, medications and even a refresher on the basics of DM2.

All participants expressed the desire to have much more individualized DM2 medical care. One participant stated, "I feel like my doctors and nurses tell me everything that they tell everyone else who has diabetes. I would like them to sit down and go over all of my specific needs, not what most diabetics need" (Personal communication, November 2008).

_Needing Support_

Each of the participants that were actively treating their DM2 diagnosis expressed the need for a strong support system. The type of support systems varied among the participants, but they all had someone to help them become motivated, healthy and to actively fight their diagnosis. In relation to successful diet and exercise one participant stated,

My husband does eat the same diet, he changed just like I had to which I thought was real helpful. I think it would be real hard for people if they didn’t adopt things like that. He is probably better than I am, but, yes, he adopted the diet and we do portions together, which is great (Personal communication, September 2008).

Another participant stated, “My wife helps me remember to check my sugars which is good for me although I know she would like me to do a lot more for myself”
Obesity and Type 2 Diabetes

(Personal communication, November 2008). The presence of a support system, whether the participant was actively and successfully treating their DM2 or not, was obviously an important psychological factor in living with DM2. Many participants felt that it would be easier for them to successfully treat their DM2 if their nurses and medical providers were more of a support system. One participant stated,

When I was diagnosed over 20 years ago they handed me a few pieces of paper that had some information about diabetes on it and sent me on my way. The nurse I remember gave me a few tips but I can tell you it sure wasn’t much because I can’t remember it now (Personal communication, November 2008).

Another participant stated the positive effects she was able to receive from having a very supportive nurse and medical provider. She said,

The doctor was very good, performed several tests to make sure. Once it was decided that I did have DM2, the first thing was that I was set up with a nurse practitioner who was a nutritionist which I thought was very valuable. I was able to spend 2 hours with the APRN going over diet, monitoring and how I was going to be able to do it. I went back to doctor after about 3 months to start medication. I thought that my initial care was very good and that they did an excellent job (Personal communication, September 2008).
Chapter V

Discussion

Treatment Modalities

It is necessary to utilize a multi-faceted approach in the treatment of DM2 and obesity. A study written by Hainer, Toplak and Mitrakou (2008) discussed the importance of physical activity, appropriate dieting, psychological factors and behaviors, genetics and comprehensive multilevel management. One of the most important goals of DM2 and obesity treatment is the reduction of abdominal fat, which is known to increase the rate of insulin resistance in individuals with DM2. The researchers in this study found that “treatment should be individually tailored and the age, sex, degree of obesity, individual health risks, metabolic and psychobehavioral characteristics, and outcome of previous weight loss attempts should be taken into account” (Hainer et al., 2008, p. 269).

In order for an individual to maintain a positive attitude and high self esteem regarding their healthcare and treatment, it is necessary to set realistic goals before treatment starts. The individuals must realize that they will not necessarily see immediate weight loss and increased overall health (Hainer et al., 2008). Research states, “both physician, nurse and the patient should know that a weight loss of 5-15% reduces obesity-related health risks significantly” (Hainer et al., 2008, p. 269).

It is very important for nurses and the entire healthcare team to realize that unrealistic expectations concerning weight loss frequently are a cause of burn out and health management failure. Specifically, it is necessary for nurses to emphasize that any kind of regular physical activity represents an important factor that contributes to long term maintained weight loss. Research has identified that individuals often are
discouraged because they are under the impression that vigorous activity is required when this is realistically not the case.

Effects of Exercise

Exercise training is beneficial for glycemic control and weight loss in individuals with DM2. In this study the researchers conducted a meta-analysis of fourteen controlled trials that involved a total of 504 participants who had previously been diagnosed with DM2. Any individuals who were utilizing drug co-interventions were excluded. Boule, Haddad and Kenny (2001) stated the purpose of their study was to “systematically review the effect of exercise interventions on glycemic control as represented by HbA1c and body mass, measured as body weight in kilograms or body mass index” (Boule, Haddad & Kenny, 2001, p. 1219). The majority of the participants knew that exercise could help their health, but had no idea the great effect it could have on the treatment of their DM2. Boule et al., (2001) stated participants were very surprised to discover that the low cost non-pharmacological nature of physical activity could be effective and successful when they were currently spending thousands of dollars per year in medical costs for treatment of their DM2.

Through the meta-analytical study, the researchers were able to identify that HbA1c were significantly reduced in the exercise groups compared with the control groups (Boule et al., 2001). Individuals in the exercise groups were able to have a significant reduction in both abdominal subcutaneous adipose tissue and visceral adipose tissue while no significant change was found in the control group (Boule et al., 2001). In conclusion the researchers stated, “exercise training reduces HbA1c by approximately 0.66%, an amount that would be expected to reduce the risk of diabetic complications
significantly” (Boule et al., 2001, p. 1226). By increasing awareness of these significant findings, nurses could have a large impact on individual DM2 care as well as helping prevent many new DM2 diagnoses and complications.

*Individual Diet and Exercise Counseling*

A lack of motivation appeared to be an issue for participants who knew they needed to make a major lifestyle change. This study utilized motivational interviewing, which is defined as “a brief intervention approach demonstrated to promote better long-term outcomes for a wide range of health outcomes with preliminary support adjunct to behavioral obesity treatment” (West, DiLillo, Bursae & Gore, 2007, p. 1081). The idea behind this type of intervention reflects participants’ concerns about having limited access to healthcare providers and feeling abandoned in relation to personalized healthcare. The researchers discussed the financial impact of obesity on DM2, including “with every unit increase in BMI, direct medical costs associated with DM2 significantly increase (West et al., 2007, p. 1081).

The study involved 217 overweight women who received individual program management through weekly meetings for the initial six months, biweekly for the second six months, and then monthly for the final six months. In some circumstances individuals who were receiving motivational interviewing were able to lose 15-20 pounds more than those who were given the standard DM2 care. The study found that motivational interviewing, used as a brief adjunctive intervention, was able to significantly enhance both weight loss and glycemic control among overweight women with DM2 (West et al., 2001).
Education

Patient education has a large effect on the knowledge, self management and overall care of an individual with DM2. This study involved 80 diabetic individuals who were tested to measure overall DM2 knowledge using a written questionnaire format. The questionnaire analyzed previous knowledge, self-reported self-management behaviors and diabetes self-efficacy. The individuals were given the test before and after a planned DM2 educational intervention. Regarding weight loss and glycemic control, after the educational intervention, 93% of the individuals reported weighing themselves daily in attempt to lose weight and gain control of their diagnosis. Atak, Gurkan and Kose (2004), also discovered that dietary factors were not well known by these individuals, so regulation of blood glucose levels and obesity caused problems that participants had to cope with. In order to encourage compliance and successful DM2 treatment, an individual must feel like they have an appropriate knowledge of their diagnosis as well as feel they are an active participant in their plan of care.

Conclusion

The purpose of this study was to increase knowledge and understanding of the lived experiences of individuals who are diagnosed with DM2 and are overweight. The experiences of these individuals discussed three main themes: changing lifestyle, individualizing education, and needing support. Nurses must consider the lived experience of individuals with DM2 to fully address prevention and current treatment issues. The experience of individuals with DM2 explored in this study can be utilized to understand the connection between DM2 and obesity in today’s society, to recognize the
importance of individualized care, and to improve future health outcomes for all of those individuals diagnosed with DM2.
References


Smith, J. Personal Interview. 15 November 2008.

Smith, M. Personal Interview. 11 October 2008.


