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NUTRITION MANAGEMENT IN TYPE TWO

DIABETES MELLITUS

Submitted by

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Bachelor's thesis of the Degree Programme in Nursing

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ABSTRACT

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NUTRITION MANAGEMENT IN TYPE TWO DIABETES MELLITUS

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This bachelor's thesis deals with the nutrition role in type two diabetes mellitus (T2DM). The purpose of the thesis is to provide information about the effect of nutrition in the care of T2DM and to describe the nutrition counseling. The aims of the thesis are to find out the nurses and dietician role in nutrition counseling as well as how the patient experience nutrition significance in T2DM. This thesis mainly deals with two questions: What is the nurse's and dietician's role in implementation of nutrition counseling for T2DM patients? How do the patients experience the nutrition's significance in the management of T2DM?

The development of T2DM is not only decided by overweight or obesity, the failure on self-management in nutrition has the key influence on this problem. So the successful way of control in nutrition can produce the long-term benefit on the people who have T2DM which will enhance a better future life for them after onset.

This thesis is based on qualitative research method. Journals, books, articles and previous researches as well as academic database such as Ebsco, E books, Ebrary were used for theoretical framework. Data collection was done by theme interview. Two diabetes nurses, one dietician and two T2DM patients were selected for interview. Collected data was analyzed by content analysis method.

The result of this thesis verified that nutrition had a huge value in T2DM treatment because it helps to lower the blood sugar into the destined values; it also helps to control cholesterol, blood pressure and obesity. Both nurses and dietician cooperate with each other and provide counseling for proper amount and right kind of food. In conclusion nutrition has a great effect in the management of T2DM. Thus if the patients carry out what they are counseled to do then nutrition has proven effect in the treatment and prevention of T2DM.

CONTENT

1. INTRODUCTION	4
2. TYPE TWO DIABETES MELLITUS	5
2.1 T2DM as a disease	5
2.2 Development of T2DM.....	7
2.3 Blood glucose monitoring.....	8
3. NUTRITION GUIDELINES FOR T2DM PATIENTS.....	9
3.1 Carbohydrate.....	11
3.2 Protein.....	13
3.3 Fat	14
3.4 Vitamins and minerals	15
3.5 Meal planning and Nutrition counseling.....	16
3.6 Weight management	18
4. SELF MANAGEMENT	19
5. IMPLEMENTATION OF THE RESEARCH.....	20
5.1 Purpose and the aims of the research.....	20
5.2 Research method.....	21
5.3 Data collection	22
5.4 Data analysis	22
6. RESULT AND CONCLUSION OF THE RESERCH	23
6.1 Nurse's and dietician's roles in implementation of nutrition counseling for T2DM patients	23
6.2 Patients' and dieticians' opinions on significance of nutrition in the management of T2DM	25
6.3 Conclusion	26
7. RIGOUR AND TRUSTWORTHINESS	28
8. DISCUSSION	29
REFERENCES	31
APPENDICES	37

1. INTRODUCTION

This is a bachelor thesis in the nutritional management of the type 2 diabetes mellitus (T2DM). T2DM is a disease defined on the basis of abnormalities of glucose metabolism which develops in people who are genetically susceptible. It is a combination of defect in insulin secretion and insulin resistance at the site of insulin action in muscle, liver and adipose tissues. Research shows that the most common people with the T2DM are obese, and obesity itself cause some degree of insulin resistance. Insulin secretion improves with the weight loss but the hyperglycemia seldom returns to normal. Therefore lifestyle also plays a critical role in the development of T2DM. Thus, nutrition therapy is the fundament of the treatment; it plays a very important role in the management of the T2DM. Nutrition, exercise and weight loss can effectively control the metabolic abnormalities in the early stage of the disease process. There are many nutrition intervention that are effective including decreased calorie and fat intake, carbohydrate counting, insulin-carbohydrate ratio, healthy food choices and behavioral strategies. (Burant & Young 2012, 35, 39.)

The rate of T2DM patients with complications is increasing on a daily basis and globally it is ranked as a fourth leading cause of death. From the report of the World Health Organization (WHO), it is indicated that 347 million people worldwide have diabetes and estimated 3.4 million people have died from the consequences of high blood sugar. Above all, this figure will increase by two third between 2008 and 2030. However the rate of increasing shows no sign of slowing. In addition to that, in economic terms it was estimated that diabetes accounted for 12% of health expenditures in 2010. (WHO 2013, Access on 23.04.2013.) T2DM causes suffering and hardship for the approximately 60 million people in the European Region. And in Finland out of 5.4 million population, 40,000 people have type 1 diabetes and about 250 000 people have type 2 diabetes (Finnish Diabetes Association 2011, Access on 23.04.2013.) This increase is strongly associated with increasing trends towards overweight and obesity, unhealthy diets, and physical inactivity (WHO Europe 2013, Access on 08.05.2013). So

nutrition plays critical roles in the management of T2DM. It helps to manage glucose level and can provide patients with other long term benefits.

The purpose of our thesis is to provide information about the effect of nutrition in the care of T2DM and to describe the nutrition counseling. The aims of our thesis are to find out the nurses and dietician role in nutrition counseling and to find out how the patients experience the nutrition significance in T2DM management. And the goals are that nurses and nursing student as well as family members can utilize the results of this research. Our thesis mainly deals with two questions; what is the nurse's and dietician's role in implementation of nutrition counseling for T2DM patients? How do the patients experience the nutrition's significance in the management of T2DM?

2. TYPE TWO DIABETES MELLITUS

Diabetes is a group of metabolic disease with high level of glucose. There are three different type of diabetes. Type 1 diabetes mellitus (T1DM), also known as insulin dependent diabetes, is a condition where body doesn't produce insulin. People usually develop the T1DM before their 40th year, so it is also known as early onset diabetes. People with T1DM have to use the insulin rest of their life. Approximately 10% of diabetes cases are type 1. Rest of 90% of diabetes cases are T2DM. T2DM, also known as insulin resistance diabetes, is condition where body does not produce enough insulin for proper function, or the cells in the body do not react to insulin. And another one is gestational diabetes which is diagnosed during pregnancy through the prenatal screening rather than reported symptoms. (Nordqvist 2010. Access on 18.04.2013.)

2.1 T2DM as a disease

T2DM, which is related to the intake of food, as a global public health crisis comprising of the majority of people with diabetes around the world, nowadays also found to occur in children, adolescents and younger adults when it was previously found only

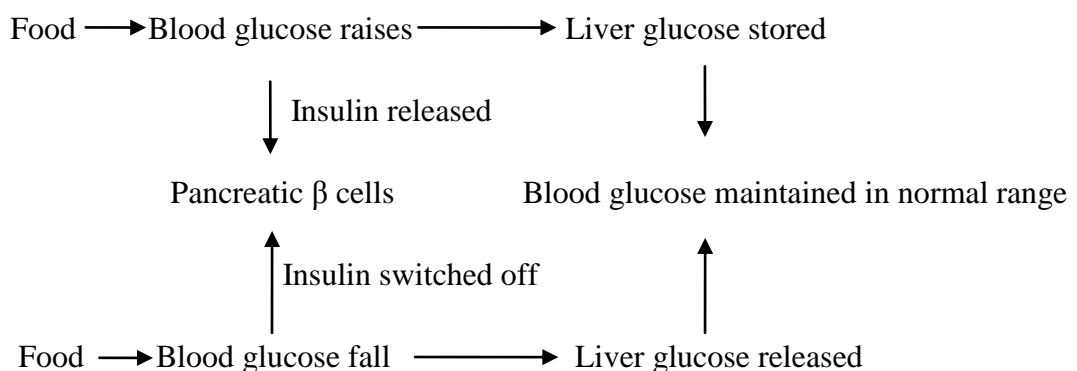
appearing in adults. This is especially evident in developing countries. In Asia, the proportion of people who suffer from T2DM has risen greatly in a much shorter time than in European countries. (Frank 2011, 1249.) Although the development of T2DM is not only decided by overweight or obesity, the failure on self-management in nutrition has the key influence on this problem. Among all, nutrition as the key element on type 2 diabetes, the successfully way of control it can produce the long-term benefit on the people who has T2DM which will enhance a better future life for them after onset. (Nordqvist 2010. Access on 18.04.2013)

However for the T2DM, there are no visible symptoms in the early stage, only chronic fatigue, generalized weakness or malaise, which are easily ignored by patients. As a result, it may be diagnosed several years after onset, once complications have already arisen. In T2DM, long-term high blood sugar level may result in eyes damage, kidney damage, cardiac vascular disease, foot damage, skin damage, mental problems and neuropathy as the complications. It will cause chest pain, high blood pressure, numbness, tingling, kidney failure, blindness and bacterial or fungal infections. And some of those irreversible damages will give a deeply influences in the future life or death even more. In addition to that, a patient with T2DM may experience unexpected weight loss, lethargy, excessive thirst and urine production and increasing fluid intake as symptoms. (Fox & Klivert 2007, 217-218.)

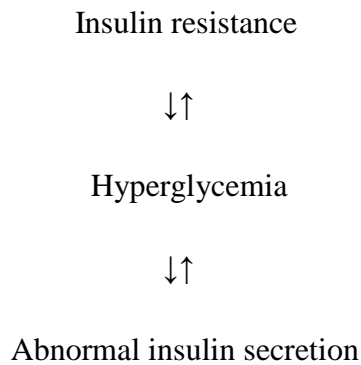
Although the causes of T2DM are unknown, there are some key risk factors which including a family history, age, metabolic syndrome and being overweight. And unfortunately, person who has diabetes can become resistant to insulin over time. However, it can be prevented by a healthy lifestyle which includes a healthy diet, regular physical activity, maintaining a normal body weight, avoiding tobacco use. In the study of Finnish Diabetes Prevention (DPS), it was pointed out that changing at lifestyle and improving physical activity levels will reduce their risk of type 2 diabetes by more than 50% .(Lindtröm & Louheranta & Mannelin & Rastas & Salminen & Eriksson & Uusitupa & Tuomilehto 2003, 3230) The exercise improves insulin sensitivity and peripheral glucose uptake. Long term moderate exercise leads to more efficient energy use. (Samy & McFarlane & John & Rundek & Bigger 2003, 236). In addition to that, the successfully of controlling blood glucose also lower the risk of diabetes.

2.2 Development of T2DM

T2DM, formerly called non-insulin dependent diabetes mellitus (NIDDM), is a disorder that is characterized by hyperglycemia caused by inadequate production of insulin by the body or insulin resistance, as opposed to T1DM, characterized by a total lack of insulin production by the body. (Tuch & Dunlop & Proietto 2000, 61.) Insulin is a type of hormone, only produced in the β cells of the islets of Langerhans which aid the ingestion of sugar into cells after eating (Tuch et al. 2000, 23). Normally, the food will be absorbed into the bloodstream as the form of glucose after eating, thus stimulating the pancreas to secrete insulin from β cells to support energy supply to the muscles and other tissues. As the blood sugar level in the bloodstream decreases, it will excite the production of more insulin so that the sugar which stored in the liver will be released to the bloodstream if one has not eaten. In type 2 diabetes, the pancreas cannot secrete enough insulin, so that without enough insulin the excess sugar cannot go into the cells effectively, which will lead to high blood sugar concentrations. (Figure 1) When glucose rises above a certain level, it spills into the urine through the kidneys (Fox et al. 2007, 3-4.) Also the long-term high blood sugar will restrain the production of insulin and it will take the vicious cycle as the final result (Figure 2) (Tuch et al. 2000, 65-66). Clinical, with a tolerance test, two hours after the oral dose a plasma glucose level $\geq 11.1\text{mmol/L}$ can be defined as diabetes. (Tuch et al. 2000, 6.)



(Figure 1) Insulin production system



(Figure 2) Insulin feedback loop

There are three main factors affecting the level of glucose in the blood. Including food (which puts it up), insulin (which brings it down) and the exercise (which also brings it down) (Fox et al. 2007, 5.)

2.3 Blood glucose monitoring

The metabolic control improved in people with type 2 diabetes who performed frequent blood glucose tests, and demonstrated a 51% lower risk of death and a 32% lower risk of micro and micro vascular complications (Dunning 2009, 53). Monitoring the blood sugar is an integral part of effective feedback of diabetes self-management. But testing is not the only risk for affect blood sugar.

Testing frequency should be individuated depending on glycemic control and health status in T2D but at least daily when insulin and/or OHAs are used. The blood glucose testing is performed to:

- Achieve blood glucose targets, which have a role in preventing or delaying the onset of diabetes-related complications and maintaining independence and quality of life.
- Monitor the effectiveness of diabetes therapy and guide adjustments to the food plan, OHAs/ insulin dose and exercise/activity. (Dunning 2009, 54.)

Usually, to achieve a blood sugar as close to normal as possible is the aim. Generally acceptable blood glucose targets are: premeal concentration $\leq 5.5\text{mmol/L}$ and two-hour postprandial concentration $< 7.8\text{mmol/L}$ (International Diabetes Federation 2007) (Dunning 2009, 55). Except for blood glucose, the glycosylated hemoglobin (HbA1c) can be measured and quantified to give an indication of the average blood glucose concentration over the preceding 3 months (normal 4-5.9%) and to predict the risk of long-term diabetes complications (Dunning 2009, 70).

However, Dunning (2009) points out HbA1c do not represent the blood glucose profile, but gives an average level. It is considered to be the “gold standard” for monitoring metabolic control.

3. NUTRITION GUIDELINES FOR T2DM PATIENTS

When providing guidelines to correct blood glucose and blood lipids levels for the patients with T2DM they get basic information about the food and role of nutrition in their daily life. There is traditional approach to medical management T2DM for example; a weight loss or no sugar diet and advice to get some exercise. Current recommendations are for patients to have targeted blood glucose levels, whereas, patients know and attempt to achieve their blood glucose level. This kind of therapy is made possible by feedback from daily self monitoring of blood glucose and routine evaluations. Ongoing training programs for educators of patients of T2DM essential (Lipkin 1999, 329).

Dietary guidelines are founded on evidence based principles and recommendation, as well as consensus and expert opinion. The role of health care professionals such as the dietician, diabetes nurse in the hospital ward and in the outpatient department are to assist patients for the appropriate dietary advice to control, manage and prevent T2DM with the nutrition therapy. Nutritional objectives should be determined in partnership with the patients and with the family members, taking into their individual needs and helping them to adopt and maintain a healthy life with the proper nutrition therapy (Wolfsdorf & Quinn & Warman 2008, access on 19.03.2013.)

Glycemic Index (GI) describes the food stuff or food's ability to raise blood glucose compared to the same intake of carbohydrates in glucose. Foods are given a GI number according to their effect on blood glucose levels. Glucose is used as a standard reference (GI 100) and other foods are measured against this; a food portion (containing 50g of carbohydrate) effect on blood glucose levels over three hours is compared to the effect of 50g of glucose (Diabetes UK, 2013 access on 29.03.2013). People with diabetes have been advised to choose slowly absorbed carbohydrates. A low and prolonged glycaemic response helps these patients to improve their blood glucose control (Lenner & Asp & Axelsen & Bryngelsson & Haapa & Järvi & Karlström & Raben & Sohlström & Thorsdottir & Vessby 2004, access on 29.03.2013).

There is not sufficient information about Finnish food GI figures however, international table's data can only be regarded as indicative, since it is in Joined varieties (e.g. potato, and rice) and their preparation as well as foods designation has been different. Small GI foods may help T2DM patients to control their weight, choosing for breakfast or as a snack of whole wheat bread, whole meal flakes porridge made from fruits, berries or milk products such as cereals, candies, or sugar soft drink instead selected in the same lower GI products (Torssonen & Lyytinen 2008, access on 04.04.2013.)

Following table define glycemic control goals for the T2DM patients

Table 1. Glycemic Control for Type 2 Diabetes (Zimmerman, B. R. (ed.) 1998.)

Biochemical Index	Normal Value	Goal	Additional action suggested
Fasting/preprandial glucose	<110 mg/dL	80-120 mg/dL	<80 or >140mg/dL
Bedtime Glucose	<120 mg/dL	100-140mg/dL	<100 or >160mg/dL
Glycosylated hemoglobin	<6%	<7%	>8%

Table 1 Describe about the guideline for the control blood glucose, which is based on American Diabetes association, which shows about the normal value of the blood glucose, goal and suggested additional action according to different time. Following

value are the same in Finland also but the measuring scale is different for example, mg/dL replaced by the mmol.

To control glycemic level, the aim is to provide a diet that result in gradual changes in blood glucose overtime, so that the failing pancreas can cope with demand. Meal planning is important for the T2DM patients and they should be advised about the taking regular medium sized meals, spread evenly throughout the day, instead of small snacks and one large meal when they are hungry per day (Watkins & Amiel & Simon 2008, 56.)

3.1 Carbohydrate

A diabetic diet is rich in fiber, carbohydrate-containing foods. Carbohydrates are divided into different meals, and the quantity and quality of the selected so as to achieve as good blood glucose control is the long-time period. Carbohydrate assessment is often useful for an insulin using T2DM patients, it may also be necessary for a dietary management patients. People with diabetes whose blood levels of triglycerides are elevated, can benefit from the intake of refined carbohydrate. If the proportion of carbohydrates in the daily energy is reduced, the saturated fat and protein percentage easily grow. Long-term a reduced carbohydrate intake may be harmful. In children, the reduction of carbohydrates may lead to a deterioration of growth (Torssonen & Lyytinen 2008, access on 04.04.2013.)

Table 2. Carbohydrate intake recommendation (Torssonen & Lyytinen 2008, access on 04.04.2013.)

Need of energy	Recommended amount of carbohydrates
6.2 MJ (1500 kcal)	170 to 225g
7.5 MJ (1800 kcal)	200 to 270g
10 MJ (2400 kcal)	270 to 360g

Table 2 represents the daily carbohydrate intake and needed energy from the Finnish Diabetes Association. The amount of carbohydrate is increasing with the energy intake.

Carbohydrates are usually found four main groups of food such as; starches, fruit, fruit juice, milk, milk products and sweets and other carbohydrates. These foods affect blood glucose in the same manner (Mahaer 2011, 81).

According to the Watkins & Amiel & Howell (2008) about the eating of complex carbohydrates for example; bread, potatoes, pasta and rice in medium amounts with every meal should be encouraged to the T2DM patients. Complex carbohydrates cause a slower rise in blood glucose concentration than simple sugars which are very quickly absorbed, for example; sugar itself, non diet soft drink, jam, honey, cakes and sweet biscuits. Very high sugar items should be replaced by the low sugar alternatives as diet version of soft drinks and possible jams or eaten in small quantities in mixed meals are more reliable for the T2DM patients. The patient would do better to eat medium quantity of regular food in mixed meals, whereas other foods taken at the same time will slow the absorption of the glucose (Watkins et al. 2008, 56).

According to the University Maryland Medical Center research (2011) carbohydrates should provide 45 - 65% of total daily calories. The type and amount of carbohydrate are both important for the patients with the T2DM. Best choices are vegetables, fruits, beans, and whole grains. These foods are contains high in fiber. T2DM patients should monitor their carbohydrate intake through carbohydrate counting or meal planning exchange lists (University of Maryland Medical Center 2011, access on 05.04.2013.)

3.2 Protein

Protein content, both type and amount, of the diet in patients with T2DM has played a secondary role to carbohydrate and fat content. General concerns for dietary protein adequacy have been to maintain lean body mass and nitrogen balance whether people are suffering from diabetes or not. The current recommended amount of protein is 0.8 g/kg body weight, which is an equivalent as intake of about 11% of energy from protein. In United States, the estimated amount of protein received by the general population shows 15-20% of energy intake or 1.1-1.4g/kg bodyweight based on 2000kcal per day (Coulston & Rock & Monsen 2001, 442.)

Protein intake is in practice less than 20 percent of the energy. Type 1 and type 2 diabetes protein intake, ideally keeping 0.8-1g per kg body weight may be beneficial to microalbuminuria stage, and it is necessary to diabetic kidney disease. To avoid malnutrition daily protein intake must not be reduced to less than 0.6 grams per kilogram body weight ideal and essential amino acids (Torssonen & Lyytinen, access on 10.04.2013.)

According to the American Diabetes Association recommends 10– 20% of calories from protein, theoretically, ingestion of 100 g protein can yield 50– 80 g glucose depending on the amino acid composition of the protein. Patients with diabetes, the amount of glucose appearing in the circulation was even less than in normal subjects. Protein and glucose are equipotent in stimulating insulin secretion. After the ingestion of protein, the circulating insulin concentration is increased in both healthy subjects. When protein is ingested with glucose, healthy subjects have an additive insulin response, whereas obese subjects with T2DM exhibit a synergistic insulin response (Coluston et al. 2001, 442.)

Research from the University Maryland Medical Center (2011) shows protein should provide 12 - 20% of daily calories, although this may vary depending on a patient s

individual health requirements. Patients with kidney disease should limit protein intake to less than 10% of calories. Fish, soy and poultry are better protein choices than the red meat (University of Maryland Medical Center 2011, access on, 10.04.2013.)

3.3 Fat

30% of caloric intake should be from the fat and at least half of this should be polyunsaturated or monounsaturated fat. Monounsaturated from the olive, peanut, canola oils, avocados and nuts. Omega-3 polyunsaturated such as fish, flaxseed oil, and walnuts fats are the best types. There should be choice of non-fat or low-fat dairy instead of whole milk products. Amount of trans-fats such as hydrogenated fat found in snack foods, commercially baked goods and fried foods should be less than 1% of total calories (University of Maryland Medical Center 2011, access on 11.04.2013.)

Patients should be advised to avoid fried foods, to trim visible fat off meat and to replace red meats such as pork and beef with low fat- animal protein alternatives such as chicken, and fish or vegetable proteins (Watkins et al. 2008, 57). Rich in saturated and trans-fatty acids intake increases the risk of coronary heart disease (Torssonen & Lyytinen 2008, access on 11.04.2013.)

Eating a diet low in saturated fat can reduce risk to get cardiovascular disease. Eating lean meats, non-fat dairy and foods are the best choice list. American Diabetes association also suggests stick to less than 7% of your calories as saturated fat (American Diabetes Association 2013, access on 11.04.2013.)

T2DM patients should pay attention to food choice; it is possible to keep the saturated fat content of the diet low without decreasing the intake of fat. The addition of unsaturated fatty acids to the diet in order to maintain energy needs appears to be the optimal approach to nutrition management, especially for T2DM patients with the typical dyslipidemia and insulin resistance (American Diabetes Association 2013, access on 12.04.2013.)

3.4 Vitamins and minerals

Vitamins and minerals play vital roles in our body. They are considered essential nutrients because acting in concert; they perform hundreds of roles in the body. They help shore up bones, heal wounds, and bolster your immune system. They also convert food into energy, and repair cellular damage. For the diabetes patients there are certain vitamins and minerals which play supporting role in nutrition therapy (Ashton 2011, access on 17.04.2013.)

Magnesium levels remain remarkably constant in people without diabetes, due to regulatory mechanisms. Magnesium found in foods such as green leafy vegetable, legumes, grains, seeds nuts, meat and dark chocolate. Low level of magnesium has been correlated with an increased chance of developing insulin resistance, and it is estimated that between 25 and 38 percent of T2DM patients are low in. Adequate intake of magnesium containing food helps to increase magnesium level. According to Diabetes UK (2013), supplementing with magnesium might help to regulate blood glucose level and to treat diabetes complications for example; nerve disease, foot ulcers (Diabetes UK 2013, access on 19.04.2013.)

Chromium is a natural mineral which is found in whole grains, broccoli, egg yolks, brewer's yeast and nuts. Chromium is a crucial nutrient in the body fight against diabetes (Diabetes UK 2013, access on 20.04.2013.) Chromium supplementation can be recommended, double-blind crossover studies of the effect of chromium supplementation in people with diabetes with known dietary intake of chromium need to be conducted. Until proven otherwise, it is assumed that chromium functions as a nutrient, not as a therapeutic agent, and that it benefits only individuals with marginal glucose intolerance whose signs and symptoms are due to marginal or overt chromium deficiency (Coulston et al. 2001, 447.)

Vitamin B7 referred as biotin which has synergistic effect on insulin. B7 also increase levels of a substance called glucokinase, which require for the metabolism of glucose; that level are often lower in diabetes. B7 found in liver fruits and meats which helps

with the synthesis of fats, glycogen and amino acids. C Vitamin Usually found in citrus food, berries, broccoli and peppers. Vitamin C is beneficial for the T2DM patients because it is thought to improve glucose tolerance. The recommended therapeutic dose is between 1 and 3 gram daily. Vitamin E can oxygenate the blood, it also fight toxins and improve the activity of insulin within the body. When the body has an insufficient amount of vitamin E, internal structures can be damaged by enhanced free-radical damage, the antioxidant nature of vitamin E may reduce the risk of diabetic complications (Diabetes UK 2013, access on 25.04.2013.)

3.5 Meal planning and Nutrition counseling

Patients with the T2DM have goals to maintain target blood glucose level, weight loss and to prevent further complications related to the diabetes. The way of meal planning should be understandable to the family. The aim of the meal planning is to balance daily intake of the carbohydrate, protein and fat intake to control blood sugar level (Mahaer 2011, 83).

Diabetes team member plays the leading role to provide nutrition counseling, the diabetes team member include physician, diabetic nurse and dietician. The nutrition counseling begins with a nutrition history, ethnic, religious and economic factors. Family eating patterns, meal preparation methods and nutrition beliefs should be identified before the counseling. The dietician and diabetes nurse have important task in evaluating the patients and family's understanding of basic principles and then providing sufficient knowledge to help clients to implement their individualized meal plan. Health care professionals (dietician, nurse, doctor) should communicate nutrition recommendations in practical terms and teach them how to minimize the daily burden of food calculations, maintain pleasure of eating and enjoy the wide variety of food choices whose use is scientific evidence. A successful meal planning and counseling is effective only when it enables patients to achieve their healthcare goals (Wolfsdorf et al. 2008, access on 20.04.2013.)

Adult T2DM should take at least three times meals and for the growing needs at least five meal intakes to ensure adequate nutrition. Furthermore, regular meals help to

control post meal blood glucose control and management of the weight control (Torssonen & Lyytinen 2008, access on 22.04.2013.)

Following diagram shows an example of diabetic daily meal plan that is about 1,600 calories and 220 grams of carbohydrates.

Diagram 1. Daily meal plan (Nazario 2011, access on 24.04.2013.)

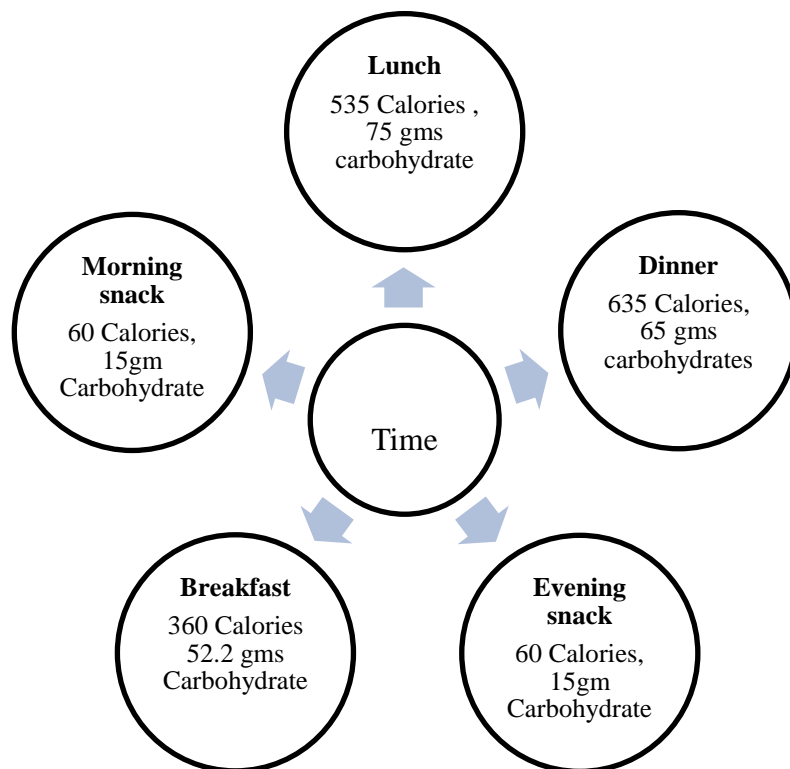


Diagram shows the schedule of the meal for the T2DM patients where the amount of calories and carbohydrates are divided into different meal timing. Balanced meal plan is useful for the long term nutrition therapy however; short time nutrition therapy also has the same amount intake for the T2DM.

(Recommendation of daily food has been done also by Finnish Diabetes Association; see appendix 3)

Meal planning is based on the nutrition recommendation; each T2DM patients are given an individualized diet plan according to his or her specific taste and the lifestyle. If the diet is meant to be long term, such a team approach should be used in which the patients, physicians, nurse and dietician discuss the diet plan, along with, when possible, relevant family member. The team approach should be evident in a detailed initial phase of the education of the patient and family. Frequent follow up also should be maintained with the patients and the family members (Wolever & Jenkins 1990, 106).

3.6 Weight management

People with T2DM are overweight (approximately 80-90%). Exercise and restriction of energy intake can improve coronary risk factors in many patients with established T2DM, especially those who are hyperinsulinemic and insulin resistant. Physical activity will support weight management. Weight loss occurs when there is balance between daily energy consumption and exercise. The daily energy intake reduce of 2.1 to 4.2 MJ (500-1000 kcal), which leads to lose 0.5-1 kilograms of weight per week which comes under the adequate nutrition therapy. Weight management is the important task to manage diabetes; patients should avoid intake of high fat and high sugar containing foods (Torssonen & Lyytinen 2008, access on 25.04.2013.)

The qualitative result comes out when there is adequate energy intake by maintained meal plan. In this case, a diabetic person needs depth guidance on adequate energy intake. For example, T2DM patients required meals per day (total 1800 kcal) has recommendation by the Finnish Diabetes Associations. According to the study example; an hour of brisk walking or other moderate physical activity a day and proper meal plan will help to lose weight (Torssonen & Lyytinen 2008, access on 25.04.2013.)

For the permanently weight loss it requires permanent changes in food habit and physical activity simultaneously. This changing process requires long time and balance between patients own physical activity and proper meal planning. In addition, they need frequent support and encouragement from the family members, dietician, even after the goal has been achieved (Coulston et al. 2001, 442).

4. SELF MANAGEMENT

Self-management means people taking care of themselves and being actively involved in their health care. It is the ability of the client to deal with all that a chronic disease entails, including symptoms, treatment, physical and social consequences, and lifestyle changes. It is described as the client working in partnership with their health care provider to know their condition and various treatment options, to negotiate a plan of care and to engage in activities that protect and promote health. (State government of Victoria 2007. 9, 11.)

Diabetes is a complex disease which requires daily self-management. For the self-care there are different aspects: making healthy food choices, staying physically active, monitoring blood sugar and taking medications as prescribed by doctor. Self management focuses on regulating carbohydrate and caloric intake and increasing physical activity. Successful self-management will help to feel better and can reduce chance of developing complications including heart disease, eye disorders, kidney disease, and nerve damage. So to prevent the T2DM and its complication it is important for the patient to follow the healthy lifestyle through the self care. Self care requires the patient to make many dietary and lifestyle changes and patient should be advice to follow self care behavior for e.g. healthy eating, being active, monitoring, and taking medicine in the time. (American association of diabetes educators 2013. Access on 23.04.2013)

So to improve client's knowledge, skills and to promote and to manage their health, self management education is very much important. Self-management education is provided for those who are newly diagnosed or for those who are living with disease for several years. To provide the self management education effectively and deeply, patients need knowledgeable, supportive and accessible professional health care team. Health care teams include physician, nurse, dietician, mental health professional and exercise physiologist. Each member of this team is teacher and they have to teach, reinforce and evaluate the effect of teaching with the patient. (Wolfsdorf 2012. 31.)

5. IMPLEMENTATION OF THE RESEARCH

This research was carried out to describe the importance of nutrition in the management of type two diabetes mellitus. The main causes of T2DM are obesity and overweight, through this research we focused how to manage T2DM with the nutrition therapy. Moreover, if there is good balance between amount of calories, carbohydrate and fat intake on the daily basis it also help to lose weight.

5.1 Purpose and the aims of the research

The purpose of our research was to provide information about the effect of nutrition and describe the nutrition management of the T2DM. The aim of our research was to find out the nurses and dieticians role in nutrition therapy with the T2DM patients and to find out how the patients experience the nutrition significance in T2DM management. Ours goals are to provide basic nutrition guideline for the nurses and nursing student, T2DM patients and their family members which are the based on the Finland.

The research questions were:

1. What is the nurse's and dietician's role in implementation of nutrition counseling for T2DM patients?
2. How do the patients experience the nutrition's significance in the management of T2DM?

Interview questions were created to guide the participants through naturalistic conversation and theme interview was taken with the diabetic nurses, dietician and the T2DM patients from the Central Hospital of Kemi. (See Appendix 1)

5.2 Research method

The thesis has been conducted through qualitative method. The qualitative research approaches to questions around the life experience, beliefs, motivations, actions and perceptions of the patients and staffs. The focus of the qualitative research is generally on views, experiences and perceptions of the participants. (Moule & Goodman 2009, 205-206.) To get actual information about participant's point of view their experiences and cooperation concerning about the nutrition therapy, we set the open ended questions. Open ended questions are used where the researcher wants to explore the participant's views, allowing the collection of textual data that might be written or recorded by the researcher in structured interview (Moule et al. 2009, 302). We were conscious to avoid emotionally and morally charged questions, that's why we made the questions to be simple and clear and not too formal or informal. We used theme interview technique for the data collection. It refers to formulation of research question, research purpose and theoretical clarification of the theme investigated. (Kvale 2007, 37).

5.3 Data collection

In order to measure, observe or record data, the open ended questions were used to collect the data. The selection of appropriate data collection tools is therefore a key part of the research process. The interview as one kind of procedure often occurs in a fact-to-face context. Also we need to consider the most appropriate environment for data collection that will enable the participant to relax and facilitate engagement with the interview (Moule et al. 2009, 289.)

Thus, all the raw data from our interview was taken from diabetes nurses in wards, diabetes nurse from the day polyclinic, dietician and two patients simultaneously in a proper environment by recording or encompass text to explore and produce statements. Two diabetes nurses, two patients (one female and one male) and one dietician participated in our interview by answering open-ended questions in voluntary way. To avoid the language barrier and to get the actual information from the participants, we conducted interview with the help from Finnish colleague Juho Taskila. He translated those questionnaires in Finnish language and took interview with the T2DM patients in the presence of us.

5.4 Data analysis

As the Goodman's book (2009) points out, the qualitative researcher in nursing will engage in data analysis as soon as the first data are collected. Thus, we analyzed all the data immediately after collecting, using the content analysis method. In addition to that, content analysis is the simplest form of data processing which involves labeling the data for retrieval. Organization and management as a part of analysis data is the way of retrieval. We took interviews for two diabetes nurses, two patients and one dietitian from whom we got the number of pages of textual data. The interview data was analyzed by initially reading through the transcripts and identifying key words to reflect their individual interpretations of the data (Moule & Albarran & Bessant & Pollock & Brownfield 2008, 427). Expect for that all the data was be organized into categories and

themes from different target. Using each key word or sentence to describe the content which will gives a clearly understanding for reader and researchers. (See Appendix 2)

6. RESULT AND CONCLUSION OF THE RESERCH

6.1 Nurse's and dietician's roles in implementation of nutrition counseling for T2DM patients

We interviewed two diabetes nurse and one dietician in Central Hospital of Kemi (see appendix 2). According to the information from the interviews, the roles of the diabetes nurse/dietician in nutrition counseling for T2DM patients in the Central Hospital of Kemi was summed up into a figure (see figure 3).

Both of the nurses thought that diabetes nurses play important role in guiding the diabetes patients to keep a suitable diet. The nurses provide counseling about the amount of daily food intake, which helps to lose weight and maintain blood glucose level and also provide counselling about exercise.

“Patients are counseled about food which they can eat and which they can't. They are advice to avoid sugar and fat. And they are also advised to do exercise.”

“I provide counseling about quantities of food because in T2DM proper diet is important for weight loss.”

The dietician works together with the doctors, nurses and patients; makes individual meal plan for the patients; instructs diabetes nurses in designing the nutrition plan for patients.

“The role of dietician is to train nurses and to create nutrition guidelines. I train medical staff in nutrition constantly.”

The dietician also does nutritional material ordering, preparation, and updating.

“I made written nutrition plan and counsel patient to take fiber rich diet, proper amount of proteins and sugar, little amount of salt.”

“I treat and prevent T2DM by treating patient’s obesity.”

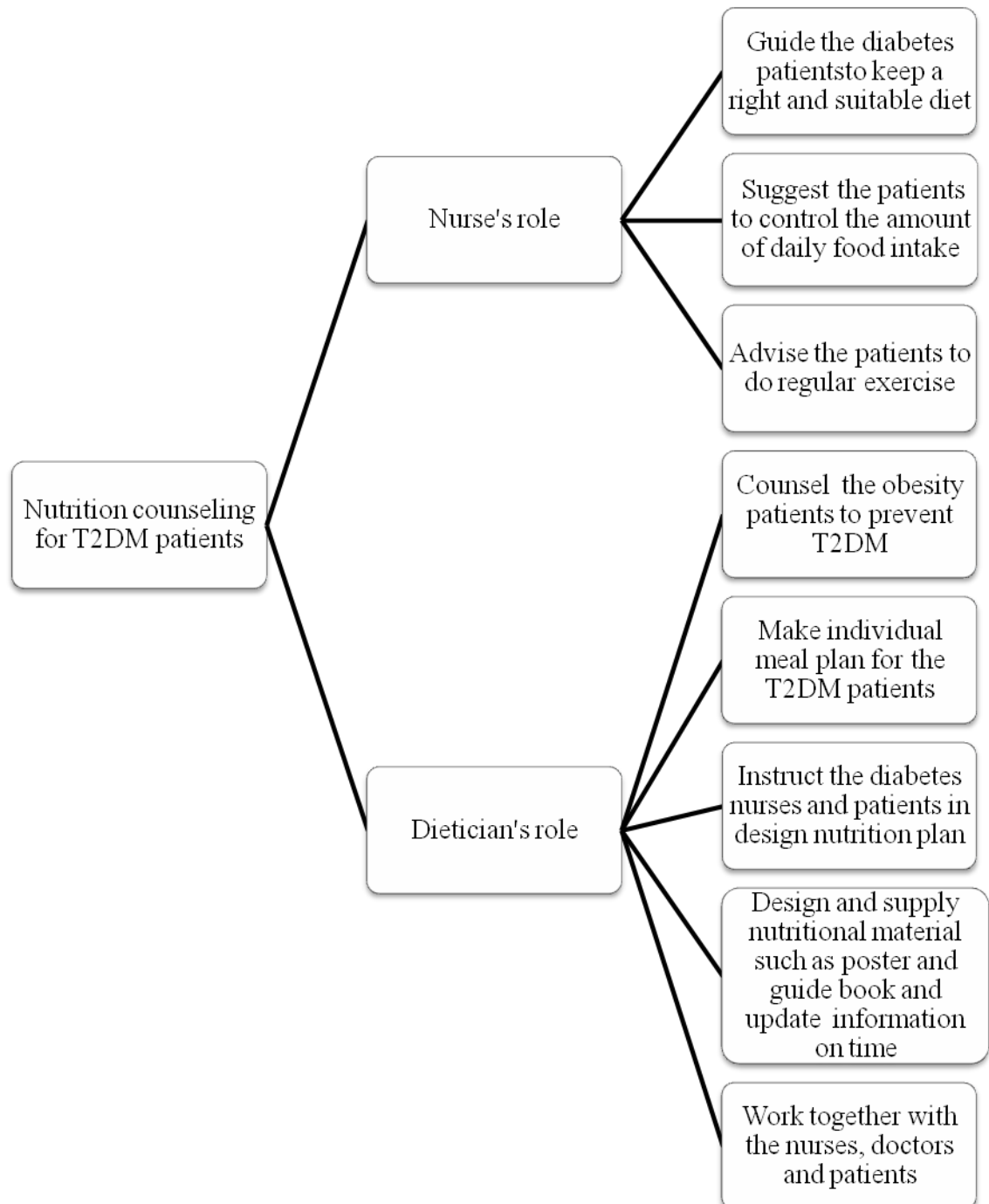


Figure 3: The roles of the diabetes nurse/dietician in nutrition counseling for T2DM patients

6.2 Patients' and dieticians' opinions on significance of nutrition in the management of T2DM

The patients' and dietician's point of view on significance of nutrition in the management of T2DM was summed up as a figure (see figure 4).

One of the patient said the nutrition is very important for his diabetes.

“Due to intake of nutrition I am maintaining diabetes level. I haven't let it go to the worse condition. I don't need to take any insulin because I am maintaining my diabetes level by proper nutrition.”

However, another patient thought it in a different way:

“I don't think it is important. Sometimes it can be disobeyed.”

According to the dietician, nutrition has a huge value in T2DM treatment.

“It is a part of basic treatment and it is supporting other forms of treatment. Sometimes it can be the only treatment. Other forms of treatment will succeed rarely if the nutritional treatment fails. It has a proved effect in the treatment and prevention of T2DM.”).

She said the nutrition guideline will lower the blood sugar level into targeted value while control the blood pressure, cholesterol and obesity.

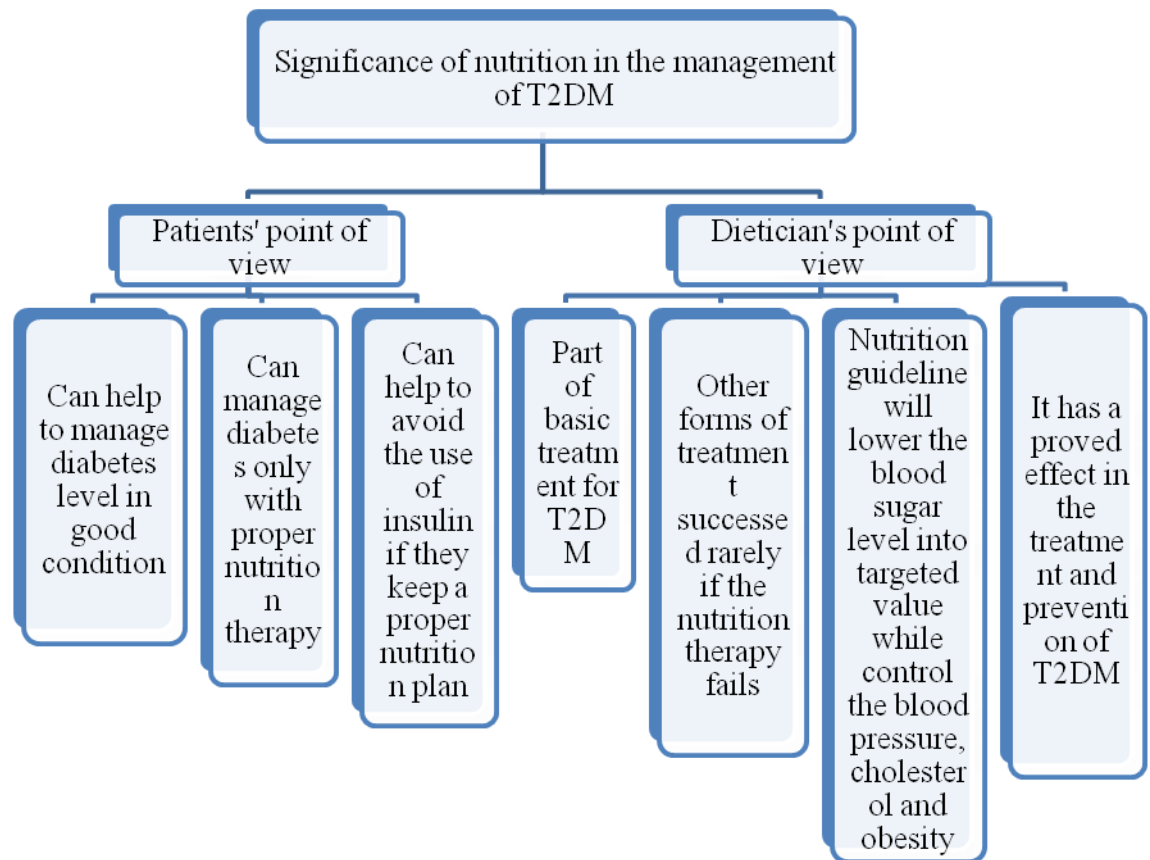


Figure 4: patients' and dietician's opinion on significance of nutrition in the management of T2DM

6.3 Conclusion

The main task of this thesis was to find out the; diabetes nurse's and dietician's role in nutrition counseling and to find out the significance of nutrition in the management of T2DM. According to interview and the answers provided by the interviewees it can conclude that nurse and dietician have different role in the nutrition counseling. Dieticians mainly train the diabetes nurses for nutrition counseling because the nurses are the ones who deal with patients in the ward and also the dieticians make the written

nutrition plans for the patients. As well as this, they counsel the patient to intake a fiber rich diet, proper amounts of proteins and sugar, and little amount of salt. Nurses, provide counseling about quantities and right kind of food because in T2DM proper diet is important for weight loss, food which patient can eat and which they can't. They advice to patients avoid high sugar, fats containing food and also to do exercise. Although nurses and dietician support the patient and provide proper nutritional counseling, patients feel it's too modern and unrealistic and it's not necessary to follow all the time what they were counseled. Both of our interviewees were elderly people with T2DM may be that's why they think that provided counseling can be disobeyed, as well as dietician also said that specially young people came for meal planning and nutritional counseling. So if we had got chance to take interview with some other group people maybe our result of research can be different.

Even though interviewed patients weren't giving enough importance toward provided nutritional counseling, they think that nutrition is very much important for the management of T2DM. They think that due to the intake of proper nutrition, their diabetes level hadn't gone to worse level. Dietician also feels that nutrition had a huge value in T2DM treatment. It is a part of basic treatment and it is supporting other forms of treatment. Sometimes it can be the only treatment. Other forms of treatment will succeed rarely if the nutritional treatment fails. Even nutritional guidance will lower the blood sugar into the destined values; also cholesterol, blood pressure and obesity can be controlled with this treatment.

Entirely nutrition has a great effect in the management of T2DM. Thus, if the patients carry out what they are counseled to do, then nutrition has proven effect in the treatment and prevention of T2DM although nutrition along with exercise is the main treatment method for T2DM.

7. RIGOUR AND TRUSTWORTHINESS

Data collection in qualitative research can involve the research participants as part of co-enquiry methods and the researcher is often involved with participants rather than remaining detached. In qualitative research data is collected by using number of methods that are neither standardized nor necessary structured. But it is supposed to present the truth and emic view in the qualitative research and therefore many alternative approaches are used to support rigour in the research. For a numbers of years the research community has been challenged to find a way to meet these demands. Later four key components were developed to figure out the rigour and trustworthiness of qualitative study and they were: credibility, dependability, confirmability, and transferability. The data presented in any qualitative research report has to be credible such that the readers believe that the data presented is a `true` representation of the participants view, experience or belief. Dependability in research refers to the ability of the research to stand the test of time. Qualitative data cannot be seen as credible unless its dependability is known. Confirmability is a measure of the objectivity of the data, the extent to which data and interpretations reflect the phenomena of study. An audit trail of the research may assist in establishing the dependability and confirmability. Transferability refers to the extent to which the research findings can be transferred from one context to another by providing a 'thick description' of the data, as well as identifying sampling and design details. (Moule et al. 2009, 188-190, 395.)

In this research we spend a prolonged engagement and the data was collected from nurses, dietician and patients about nutrition roles in T2DM by interviewing. And later the data were analyzed to see the conclusion. Thus, credibility was supported by these things. Our research topic was certified by our supervisor before proceeding and continuous audit are done on it until the final stage to make sure it is close to perfection. And this examination supported us to maintain measure of dependability and conformability.

8. DISCUSSION

It was founded that nowadays, there were a large number of diabetes patients in hospital while we were doing practice in the hospital. Meanwhile, diabetes patients in the hospital have different meals from others were founded. However the amount of food and the kind of food was decided by others. While the diabetes patients have at least a basic understanding of meal for themselves, however, it was realized that some of the patients might not really know how to do nutrition management for themselves, especially for those who were newly diagnosed. They might have little knowledge in nutrition management. This is the important aspect they should know how to carry out while they are at home alone.

Thus, in order to find out comprehensive knowledge for patients, nurses and dieticians, this deeply research plan was done by us. It was named 'Nutrition management in type 2 diabetes mellitus' in December 2012. In spring 2013, the interviews for this research which were easily to collect data, from which we have derived a clear result were prepared. The interviews were carried out during April 2013 in the wards 4A (SYKE/ cardiac ward), 1B (children ward) and TEHO (ICU) in Central Hospital of Kemi where all the question papers were collected in the same day the interviews were carried out. In addition, one Finnish nursing student helped for doing interviews in 4A and ICU to making sure the veracity of it. Finally, this thesis was completed in May, 2013.

On the other hand, Moule and Goodman's book *Nursing Research* points out that ethical issues arise at all stages in the research process. They start at the very beginning with decisions about whether or not the research should be conducted. Thus, the basic principles of research ethics were followed in every interview of this research. Obtained permission from the head nurse in each ward and school teachers, to ensure the data were collected in a strictly legal manner. Except for that, the safety of participants and researcher should be given priority at all times, and health and safety regulations must be strictly observed. Similarly, the dignity, right and well-being of participants are paramount in any research project (Moule et al. 2009, 45). It was be noted that the participation of the nurses and patients involved in this study was carried

out on a purely voluntary basis, with all collected data being handled with strict confidentiality, thus insuring the privacy of all involved.

In our thesis, the result of how the nurses cooperated with dietitians, how the dietitian guide patients in nutrition management and how deeply the patients understand the importance of nutrition management in diabetes was founded. However, all the interviews were only done in Central Hospital of Kemi, and all the participants were Finnish. In another words, all the results are based on Finnish people's opinion. If part of this research were to include some other areas except for people in Kemi or even other nationalities, there might be a different result. Except for this, there was another difficult problem came out during the period of doing research. The pervious data about Finland in this area are insufficiency. Thus, most of the data come from UK or USA which also have the influence on the results.

For us, this was not only a research plan, but also a learning process. During the period of doing this research plan, we learned how to cooperate with each other, nurses and patients in a different aspect. We were confused when preparing interview questions originally. We felt it was stressful in doing research in such a limited time. But finally, our thesis was completed successfully. Certainly, without the supports from supervisors, nurses and patients, those difficulties could not be overcome and produced this work. We are genuinely thankful for those whom helped us.

This research found out the role of nurses and dieticians in nutrition counseling and how the patients experience the nutrition in T2DM management. The information from our research may give a new and comprehensive understanding for patients, nurses and family members. In addition to this, the findings of this research can be utilized in hospital and health centers that can help the patients cooperate with each other better, and hopefully the patients will have a quality future life after onset.

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APPENDICES

Appendix 1

Interview questions for dietician

1. What is the job description of dietician? What is the role of dietician in nutrition counseling for T2DM patients?
2. How do you make the meal plan for T2DM patients?
 - 2.1 Which age group mainly comes for their meal planning?
 - 2.2 What is the most difficult for the patients to learn?
 - 2.3 Do patients need to change their meal plan often?
3. What is the good diet for diabetic patient?
 - 3.1 How much carbohydrate can someone with diabetes have per meal? What about per day?
4. How do you cooperate with other professionals?

Interview question for nurses

1. What are the nurse's roles in nutrition counseling?
2. How do you cooperate with dietician?

Interview question for patients

1. Gender?

2. How old are you?

- ☐ Under 45 years
- ☐ 45–54 years
- ☐ 55–64 years
- ☐ Over 64 years

3. At what age has your diabetes been diagnosed?

- ☐ Under 25 years
- ☐ 25-35 years
- ☐ 35-50 years
- ☐ Over 50 years

4. Have any of your family members or other relatives been diagnosed with diabetes?
(Type 1 or type 2)

- ☐ Yes; who?
- ☐ No

5. Who has made your meal plan?

- ☐ Myself
- ☐ Dietician

- ☐ Family members
- ☐ Other, who?
- ☐ I do not have meal plan

6. Who has given you nutrition counseling?

Dietician

Nurse

Doctor

Other; who?

6.1 What kind of counseling?

7. What food planning method do you use/ has been counseled to use?

8. Are you able to follow this method?

- ☐ always
- ☐ most of the time
- ☐ sometimes
- ☐ not at all; why not?

9. What diet restriction have you been told to follow?

- ☐ Low calorie
- ☐ Low sugar
- ☐ Low alcohol

- ☐ Low cholesterol
- ☐ Low salt
- ☐ Low protein
- ☐ Low fat
- ☐ Other; what?
- ☐ no restrictions

10. Describe your daily meal schedule.

11. How often you take the following substances?

-Daily -weekly -monthly -not at all

- ☐ Alcohol
- ☐ fruits
- ☐ sweets
- ☐ vitamins

12. What you think about the significance of nutrition in the management of T2D?
Give reasons to your opinions.

13. Evaluate the given nutrition counseling

CONTENT ANALYSIS

Unit Meaning	Condensed Meaning	Codes	Categories	Theme
<p>“The role of dietician is to train diabetes nurses and to create nutrition guidelines. I train medical staff in nutrition constantly.”</p> <p>”I do nutritional material ordering, preparation, and updating. I treat and prevent T2DM by treating patient’s obesity. I made written nutrition plan and counsel patient to take fiber rich diet, proper amount of proteins and sugar, little amount of salt.”</p>	<p>To train medical staff, patient with morbid obesity and to create nutrition guidelines.</p>	<p>Dietician’s role in nutrition counseling.</p>	<p>What is the role of a dietician in nutrition counseling for T2DM patients?</p>	<p>Dietician’s and nurse’s role in Nutrition counseling.</p>

<p>“Diabetes nurse guide the diabetes patient for the right and proper kind of diet because right kind of diet is one of the cornerstones of treatment.”</p> <p>“I provide counseling about quantities of food because in T2DM proper diet is important for weight loss.”</p> <p>”Patients are counseled about food which they can eat and which they can’t. They are advice to avoid sugar and fat. And they are also advised to do exercise.”</p>	<p>Diabetes nurse provide counseling for the proper and right diet for the patient as well as right quantities of the food for the weight management.</p>	<p>Nurse’s role in nutrition counseling.</p>	<p>What is the role of a nurse in nutrition counseling for T2DM patients?</p>	
<p>“It was too modern and unrealistic. I didn’t learn anything from the dietitian. Internet</p>	<p>It is difficult to make to elderly people understand for because of this modern technology</p>		<p>How patients evaluate the given counseling?</p>	

<p>is full of useful information so I need to know anything I can check in the internet.”</p> <p>“When I received nutrition counseling I obeyed for a while but I don’t feel it’s important to follow all the time what dietician and nurse had told.”</p>	<p>Elderly patient think it isn’t necessary to follow all the time what they are told to follow.</p>	<p>Patient’s evaluation about given counseling.</p>		
<p>”I think nutrition is very much important in the management of T2DM. Due to intake of nutrition I am maintaining diabetes level. I haven’t let it go to the worse condition. I don’t need to take any insulin because I</p>	<p>Nutrition is very much important in the management of T2DM. It helps to maintain diabetes level.</p>	<p>Importance of nutrition from patient point of view</p>	<p>What patients think about the significance of nutrition in the management of T2DM?</p>	<p>What is the significance of nutrition’s in the management of T2DM?</p>

am maintaining my diabetes level by proper nutrition.”				
<p>“Nutrition has a huge value in T2DM treatment. It is a part of basic treatment and it is supporting other forms of treatment. Sometimes it can be the only treatment. Other forms of treatment will succeed rarely if the nutritional treatment fails.”</p> <p>“Nutritional guidance will lower the blood sugar into the destined values, also cholesterol, blood pressure and obesity can be controlled with this treatment. Dysfunctional</p>	<p>Nutrition has a huge value in T2DM treatment. Others form of treatment succeed rarely in the nutritional treatment fails. It has proved effect in the treatment and prevention of T2DM.</p>	Importance of nutrition from dietician point of view	What dietician thinks about the significance of nutrition in the management of T2DM?	

kidney disease that is usual for the diabetics can be slowed down or even stopped by nutritional treatment. It has a proved effect in the treatment and prevention of T2DM.”				
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Recommendation of daily food has been done also by Finnish Diabetes Association

Finnish Diabetes Association, they categorized in to different sector recommended daily food choice and reasoning respectively. This food table is design for the diabetic patients.

Recommended daily food choices	Reason to intake
<p>Vegetables, fruits and berries (half a kilogram per day):</p> <ul style="list-style-type: none"> -Preferably with every meal and snack -Portion of the cooked vegetables: lettuce, grated or in pieces -Juice instead prefer fruits and berries legumes (beans, lentils, peas) can be replaced by meat vegetables can be used in sausages with the bread 	<p>Preparations of vegetables, fruits and berries provide dietary fiber, vitamins (e.g. folate, and vitamin C), minerals, and antioxidants, but only a little bit of energy.</p>
<p>Supper fully liaise with potatoes, pasta or rice:</p> <ul style="list-style-type: none"> -Food product which without the fat and salt -Dark pasta or brown rice are alternatives 	<p>Potato contains a lot of water and energy, and less carbohydrate than rice or pasta</p>
<p>Whole-grain products in every meal:</p> <p>Daily intake use selected bread, porridge for, cereals, and whole grain as much as possible</p>	<p>Grain products are important in carbohydrate and protein sources. Whole grain cereal products, especially bread and whole-grain</p>

Low -salt containing products (bread, salt \leq 0.7%, porridges, cereals, muesli, or salt \leq 1.0%)	Porridge, rich in fiber, B vitamins as well as minerals.
<p>Non-fat milk or sour milk food drink, and water:</p> <p>fat-free or low-fat (\leq 1% fat) liquid about half a liter of milk per day</p> <p>Flavored yoghurts and chilled low-sugar and low-fat containing drink</p> <p>Selected cheeses like goat cheese which contain low salt and low-fat($<17\%$fat,$<1.2\%$salt)</p>	<p>Dairy products are the sources of the protein, calcium, iodine and phosphorus and vitamin B.</p> <p>Adult is gets sufficient calcium for example, from the intake of half a liter of milk and a couple of slices of cheese.</p>
Recommended daily food choices	Reason to intake
<p>Lean meat, fish at least two times per week of various species of fish:</p> <p>Choose a lean meat (fat \leq 7%)</p> <p>Choose a ready meals which is low fat and salt counting</p>	Meat, fish and eggs provide protein and vitamins A and B, iron and zinc. Fish is an good source of vitamin D.
<p>A slice of bread, baking, cooking and salads, soft fat products:</p> <p>-A Slice of bread with vegetable oil-</p>	Dietary fats are rich in energy, and A, D and

<p>containing margarine</p> <p>- Cooking and baking oil or margarine</p> <p>Salad dressing ,vegetable oil or vegetable oil containing salad dressing</p>	<p>E vitamin.</p>
<p>Sugar-containing products:</p> <p>-Baking products</p> <p>-Desserts can be sweetened with a little sugar or artificial sweetener</p>	<p>Sugar contains only the carbohydrate and energy. A rich sugar and sugar-containing products, such as confectionery makes it difficult to use the blood glucose level of diabetic control and is bad for your dental health.</p>
<p>Additional sweetness in other sweeteners:</p> <p>-Suitable for sweetening beverages, artificial sweeteners materials</p> <p>-Confectionery and chewing-gum, xylitol is preferred sweetening</p>	<p>Artificial sweeteners are safe when used reasonable.</p>
<p>Diabetes products, dietary supplements and functional foods are not generally necessary:</p> <p>- Sterols and stanols containing products may be used, provided that plasma LDL cholesterol.</p>	<p>The use of dietary supplements is necessary in some special situations (E.g., vitamin D for children and elderly)</p>

APPROVAL TO CARRY OUT THIS RESEARCH

KEMI-TORNION AMMATTIKORKEAKOULU
Sosiaali- ja terveysala

OPINNÄYTETYÖN AINEISTON KERUUN LUPA-ANOMUS

1. Luvan anoja	Kemi-Tornion ammattikorkeakoulun terveysalan koulutusyksikön opiskelija/t Binita Ghimire, Sita Rayamajhi, He Danmei
2. Opinnäytetyön aihe	Nutrition in type 2 diabetes
3. Opinnäytetyön tarkoitus	To provide information about the effect of nutrition therapy
4. Opinnäytetyössä tarvittava aineisto	Interview,
5. Aineiston keruumenetelmät	Interview, books, websites, journals
6. Aineiston keruun suunniteltu ajankohta	25-26 25 April 25-04-2013
7. Opinnäytetyön arvioitu valmistumisaika	10-05-2013
8. Opinnäytetyön suunnitelma on hyväksytty	KEMI-TORNION AMMATTIKORKEAKOULU, terveysalan koulutusyksikkö 10 päivänä 05 kuuta 2013
9. Allekirjoitukset	Opinnäytetyön ohjaaja <u>Eik Hakkim</u> Opinnäytetyön tekijä/tekijät, osoite ja puhelinnumero Binita Ghimire, Meripuistokatu 25 B, 0445645038 Sita Rayamajhi, Sammakatu 4 E2, 0413100241 He Danmei, Sammakatu 4 D3, 0407715102

Lupa tutkimustyöhön

myönnetty hakemuksen mukaisena
myönnetty korjauksin
hakemus hylätty

☒
☐
☐

päiväys

26/4 2013

allekirjoitukset

Pave Rintala

KEMI-TORNION AMMATTIKORKEAKOULU
Sosiaali- ja terveysala

OPINNÄYTETYÖN AINEISTON KERUUN LUPA-ANOMUS

1. Luvan anoja	Kemi-Tornion ammattikorkeakoulun terveysalan koulutusyksikön opiskelija/ Binita Ghimire, Sita Rayamajhi, He Danmei
2. Opinnäytetyön aihe	Nutrition in type 2 diabetes.
3. Opinnäytetyön tarkoitus	To provide information about effect of nutrition therapy.
4. Opinnäytetyössä tarvittava aineisto	Interview
5. Aineiston keruumenetelmät	Interview, books, website, Journals
6. Aineiston keruun suunniteltu ajankohta	29-04-2013
7. Opinnäytetyön arvioitu valmistumisaika	10-05-2013
8. Opinnäytetyön suunnitelma on hyväksytty	KEMI-TORNION AMMATTIKORKEAKOULU, terveysalan koulutusyksikkö 10 päivänä 05 kuuta 2013
9. Allekirjoitukset	Opinnäytetyön ohjaaja <u>Eira Hakkinen</u> Opinnäytetyön tekijä/tekijät, osoite ja puhelinnumero Binita Ghimire, Meripuistotietä 25B, 0445645038 Sita Rayamajhi, Sammonkatu E2, 94600, 0478100247 He Danmei, Sammonkatu 4D3, 0407715102

Lupa tutkimustyöhön

myönnetty hakemuksen mukaisena ☐
myönnetty korjauksin ☐
hakemus hylätty ☐

päiväys 29/4 2013

allekirjoitukset

Eira Hakkinen
Opetusneuvos, opettaja

KEMI-TORNION AMMATTIKORKEAKOULU
Sosiaali- ja terveysala

OPINNÄYTETYÖN AINEISTON KERUUN LUPA-ANOMUS

1. Luvan anoja	Kemi-Tornion ammattikorkeakoulun terveysalan koulutusyksikön opiskelija/t <i>Binita Ghimire , Sita Rayamajhi , He Danmei</i>
2. Opinnäytetyön aihe	<i>Nutrition in type 2 diabetes</i>
3. Opinnäytetyön tarkoitus	<i>To provide nutrition therapy information about the effect of nutrition therapy.</i>
4. Opinnäytetyössä tarvittava aineisto	<i>Interview</i>
5. Aineiston keruumenetelmät	<i>Interview, books, websites. Journals</i>
6. Aineiston keruun suunniteltu ajankohta	<i>30 April, 2013 30-04-2013</i>
7. Opinnäytetyön arvioitu valmistumisaika	<i>10-05-2013</i>
8. Opinnäytetyön suunnitelma on hyväksytty	KEMI-TORNION AMMATTIKORKEAKOULU, terveysalan koulutusyksikkö <i>10 päivänä 05 kuuta 20 13</i>
9. Allekirjoitukset	Opinnäytetyön ohjaaja _____ Opinnäytetyön tekijä/tekijät, osoite ja puhelinnumero <i>Binita Ghimire Meripuistokatu 25B, 0445645038</i> <i>Sita Rayamajhi Sammonkatu 422, 0413100241</i> <i>He Danmei , Sammonkatu 403. 0407715102</i>

Lupa tutkimustyöhön

myönnetty hakemuksen mukaisena ☐
myönnetty korjauksin ☐
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päiväys

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Kouzi Vilela